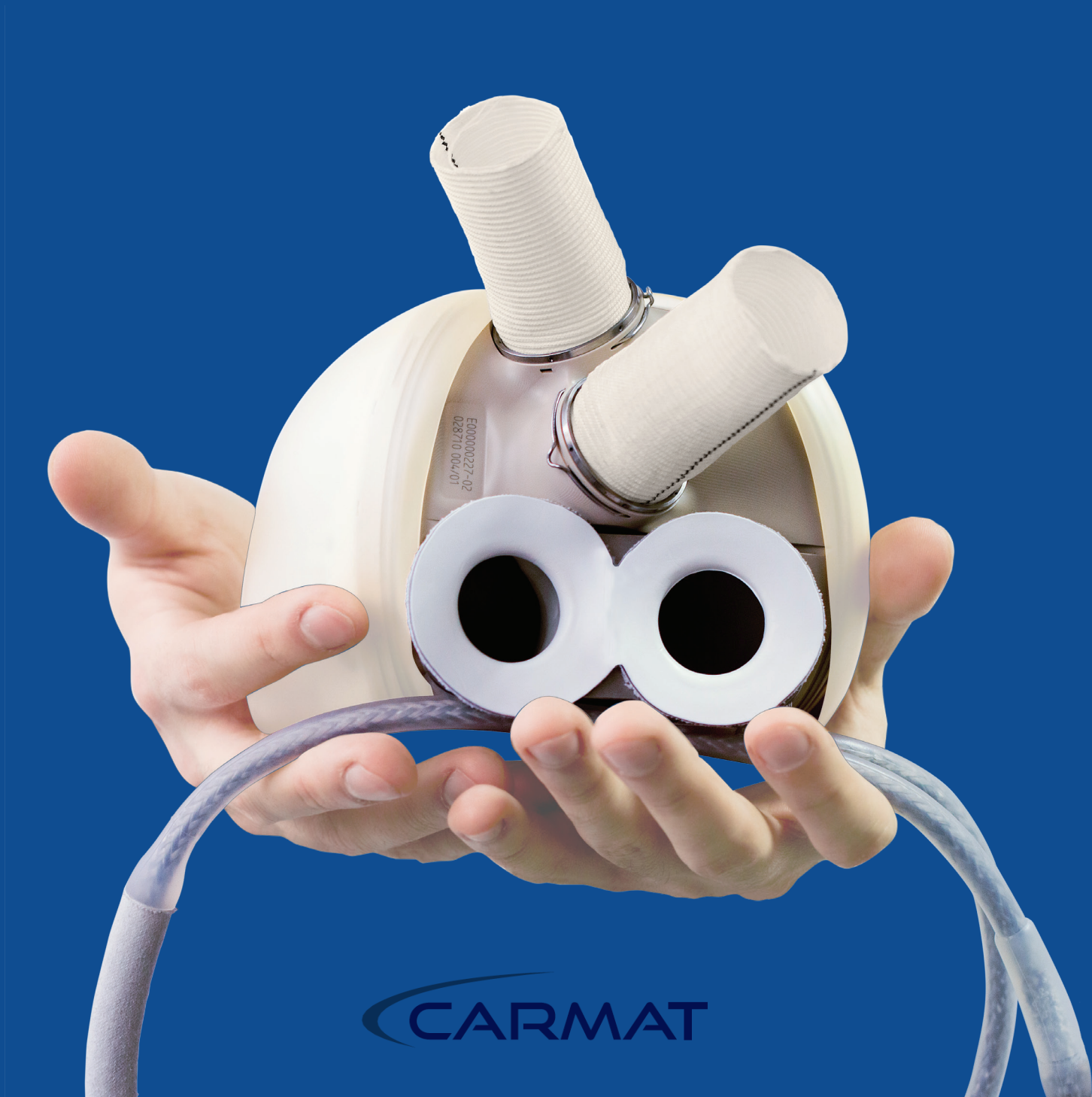
CARMAT

2019 Universal Registration Document

Including Annual Financial Report



CARMAT

GENERAL REMARKS

In this universal registration document, the terms “CARMAT” or the “Company” shall mean the company, CARMAT.

This universal registration document contains information on the Company’s objectives and its avenues for development. This information is sometimes identified by the use of the future or the conditional, and terms that refer to the future, such as “consider”, “envisage”, “think”, “have as an objective”, “expect”, “intend”, “must”, “aspire”, “estimate”, “believe”, “wish”, “can” or, where appropriate, the negative form of these verbs, or any other variation or similar terminology.

The reader’s attention is drawn to the fact that these objectives and avenues for development depend on circumstances or events which may or may not occur.

These objectives and avenues for development are not historical data and must not be interpreted as guarantees that the events and data set out will occur, that the hypotheses will be verified or that the objectives will be achieved.

By their very nature, the objectives and avenues for development in this universal registration document could be affected by known and unknown risks, or by uncertainties linked specifically to the very nature of clinical trials, the regulatory, economic, financial and competitive environment or by other factors which could lead to the Company’s future results, performance and achievements being significantly different from the objectives that have been formulated or suggested here.

In particular, these factors may include the factors set out in Chapter 2, “Risk Factors”, of this universal registration document. It is therefore possible that these objectives and avenues for development may not be achieved, and the statements or information in this registration document may turn out to be erroneous. As such, the Company will under no circumstances be required to provide updates, subject, that is, to the applicable regulations and in particular the General Regulations for the French Financial Markets Authority (AMF).

This universal registration document also contains information relating to the Company’s activity, as well as the market and industry in which it operates. This information specifically comes from studies carried out by internal and external sources (analysts’ reports, specialist studies, sector publications and any other information published by market research companies, public bodies and corporations and learned societies).

The Company considers that this information presents a faithful picture of the market and the industry in which it operates, and that it faithfully reflects its competitive position. However, although this information is considered to be reliable, it has not been verified by an independent expert, and the Company cannot guarantee that a third party using different methods to gather, analyze or calculate data on the markets would obtain the same results.

Investors are invited to consider carefully the risk factors described in Chapter 2, “Risk Factors”, in this universal registration document. If some or all of the risks materialize, this could have a negative impact on the Company’s activity, its position, its financial performance or its objectives.

In addition, other risks, not currently identified or considered as non-significant by the Company, could have the same negative effect.

Drawings, images, graphics and photographs used in this document are purely for illustration purposes, and shall in no case constitute a commitment of any kind on the part of CARMAT. The reproduction in any form of any part of this document is strictly prohibited.

To assist the reader’s understanding, this universal registration document has a glossary attached. Words identified by an asterisk “*” when they first appear can be found in this glossary. A summary of references used in the document and their sources is provided at the end of the document.

AMF AUTORITÉ DES MARCHÉS FINANCIERS

The French version of this universal registration document (URD) was filed with the Financial Markets Authority (AMF) on Friday March 13, 2020, as the competent authority under Regulation (EU) 2017/1129, without prior approval in accordance with the article 9 of the said regulation.

The URD may be used for the purposes of a public offering of securities or the admission of securities to trading on a regulated market if it is supplemented by a securities note and, if applicable, a summary together with all amendments to the URD. The whole is approved by the Financial Markets Authority in accordance with Regulation (EU) 2017/1129.

CONTENT

Items forming part of the Annual Financial Report are clearly identified in the table of contents by the symbol *.

Items forming part of the Corporate Governance Report are available within the 4.1, 5.6, 5.2.6 and 4.4.3 paragraphs

Q&A WITH THE CHAIRMAN

JEAN-PIERRE GARNIER

How do you see the potential of CARMAT after more than a year as president of the company?

I am more than ever convinced that the CARMAT artificial heart is a breakthrough technological innovation without equivalent on the market and that the Company has the potential to become a leading player worldwide. Given the low number of grafts available for patients suffering from heart failure, the CARMAT bioprosthesis was developed to be a real alternative to transplantation and it is this vision that continues to drive all of our teams within the Company. We are delighted that everyone's efforts are gradually turning into successes as the pivotal study progresses.

To date, the longest duration of individual support exceeds 2 years, which is particularly encouraging. Crossing this symbolic 2 years milestone for a patient confirms the fundamentals of the prosthesis, namely its reliability and biocompatibility, and illustrates its potential to become a long-term solution for patients, in line with our objectives. We have achieved more than 7 years of cumulative support as part of our clinical studies, which is an exceptional achievement for such a complex medical device.

In addition, we have observed excellent results in patients eligible for transplantation, five of whom have successfully received a human graft following the improvement in their health thanks to the initial support provided by the CARMAT artificial heart. This shows that the procedure for explanting the prosthesis is well mastered and reproducible, thus opening up real potential for development in the bridge to transplant therapy (BTT).

What does this imply in terms of market access strategy?

The bridge to transplantation approach is a real opportunity to move quickly in validating the device in real life and thus quickly establish the credibility of our device on the European market, and then worldwide. The data we have in the pivotal study certainly demonstrate the value of our artificial heart in a bridge to transplant (BTT) configuration.

This BTT option actually expands our initial vision, to make our artificial heart a definitive solution (Destination Therapy - DT) for patients not eligible for transplant. I would add that probably the border between the BTT and DT no longer exists and we are already observing it in the pivotal study when a patient eligible for transplantation receives our artificial heart but then he is not lucky enough to benefit from a human graft afterwards.

Are the goals you set for the Company achievable?

When I took office a little over a year ago, our objectives were clear: to make the prosthesis available to as many people as possible, to make progress in the United States and to successfully transform CARMAT into an industrial and commercial company.

From this point of view, the CE marking which is expected this year, will be a major achievement for CARMAT, and above all the realization of hope for many European patients in a therapeutic impasse.

As for our desire to internationalize, the recent positive moves with the FDA bring us decisively closer to the American market and we consider it realistic to start implantations as part of the feasibility study in the United States, in the 4th quarter of this year.

Finally, I am very satisfied with the progress made by the Company in terms of transformation into an industrial and commercial company, in particular with the transfer and reliability of all of our production activities on the new Bois-d'Arcy site in 2019.

MESSAGE FROM THE CEO

STÉPHANE PIAT

What were the highlights for you in 2019?

2019 was a structuring year for CARMAT in several respects. First of all, we were able to resume production in May at the Bois-d'Arcy production site following final technical adjustments which make us particularly confident about the quality of the prosthesis, an essential criterion for its long-term reliability.

Following this, the pivotal study was able to resume gradually with the agreements of the competent authorities received in Denmark, the Czech Republic and Kazakhstan. At the end of the year, it was therefore the 12th patient in the study who benefited from our prosthesis, which has enabled us to achieve cumulative continuous support of more than 7 years to date. This record duration corroborates the intermediate results of the first part of the study and again shows that the prosthesis fulfills its role perfectly, with no serious complications observed in the implanted patients.

In parallel, our very positive discussions with the American health authority (the FDA, Food & Drug Administration) enabled us to obtain a conditional approval in September for a feasibility study in the United States. Since then, we have been able to answer all of the remaining questions from the FDA and obtain its full approval in early 2020, which will speed up discussions with the 7 selected renowned American hospitals, but also with the «Centers for Medicare & Medicaid Services "(CMS) to obtain compensation for the costs of the study.

From an organizational point of view, the appointment of Alexandre Eleonore within our managerial team as Industrial Director supports our market access strategy. His expertise will notably facilitate the ramp-up of the Bois-d'Arcy production site, in line with the further transformation of CARMAT into an industrial and commercial company.

Finally, we have considerably strengthened our financial structure thanks to a private placement with investors who share our long-term vision for a total amount of €60 million in September 2019. This fundraising provides us with financial visibility up to the third quarter of 2021 and the resources necessary to confidently consider the next steps in our project.

Will 2020 be the year of obtaining CE marking?

We are working to quickly finalize the pivotal study, and are indeed working in concert with our notified body DEKRA to obtain the CE marking by the end of the year.

But CE marking is not an end in itself since it is important that our prosthesis can benefit the largest number of patients. On this point, we are delighted that in France, the French National Authority for Health (HAS) has deemed our device eligible, with a few observations, for a clinical study as part of the 'Forfait Innovation' program. This program facilitates the testing of innovative devices in France, by covering the costs of the study. If our prosthesis demonstrates its benefits in the context of this clinical study, we can positively envisage its reimbursement in the long term, in our country.

The development in the United States, the leading market for medical devices in the world, is another important strategic pillar for CARMAT in 2020. The protocol for the American feasibility study has been extended to 10 patients eligible for transplantation, and we will thus be able to work with 7 of the most renowned centers in the United States. If our discussions on the cost of the study with the CMS are concluded quickly, American hospitals will be able to include the first patients in the study as early as the 4th quarter of this year.

Quality, finally, remains at the top of our concerns. In 2020, we will therefore continue to work on the continuous improvement of our production processes, which must respond perfectly to production imperatives on a commercial basis.

MISSION AND VISION

With its artificial heart, CARMAT is dedicated to providing doctors with innovative technologies to save lives and improve the quality of life of patients with terminal heart failure. Ultimately, the company aims to become the No. 1 alternative to heart transplantation. CARMAT relies on the commitment of its teams and the support of its shareholders

CARMAT aims to meet a major public health challenge related to cardiovascular diseases, heart failure, the leading cause of death in the world. More specifically, CARMAT aims to provide a lasting solution to the treatment of terminal heart failure, a disease for which there are very few effective options today, mainly cardiac transplantation.

Heart failure is a progressive disease that affects 20 million patients in Europe and the United States. Within this population, tens of thousands of people are terminally ill. The number of human grafts available is only 4,000 to 5,000 per year. The artificial heart CARMAT is intended to offer a permanent solution to these patients who are facing a therapeutic impasse.

MARKET

A fast-growing, high-potential market with more than 200,000 patients suffering from terminal biventricular heart failure each year

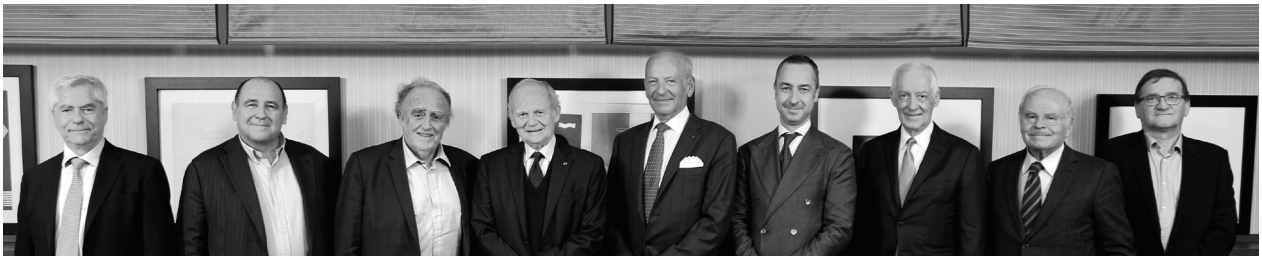
ONLY 5,000 GRAFTS AVAILABLE PER YEAR

CARMAT TEAM

A multidisciplinary and highly qualified team of more than 100 employees.

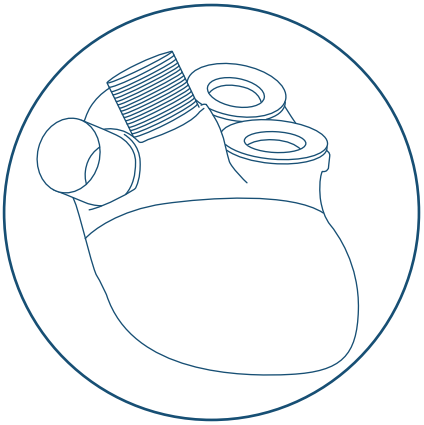
A Board of Directors chaired by Jean-Pierre Garnier, including 9 directors, 5 independent and 2 internationally recognized cardiology experts.

Stéphane Piat, as Chief Executive Officer, leads all of CARMAT's activities.



Board members as at December 31, 2019
(Alain Carpentier is Honorary President of the Board, Karl Hennessee is missing on the picture)

CARMAT PROSTHESIS



An innovative leader position with strong intellectual property and significant barriers to entry thanks to the scientific leadership of Pr. Carpentier and the technological excellence of the Airbus Group.

The first physiological cardiac bioprosthesis aimed at becoming a credible therapeutic alternative to heart transplantation.

A prosthesis :

- highly biocompatible,
- self-regulating which automatically adapts to the patient's needs,
- pulsatile.

- a nominal surgical technique that is easily reproducible by any cardiac surgeon,
- a return to home of the patient, after implantation, allowing a good quality of life.

2019 NEW FINANCING

Financing

€60.0M

In September 2019, CARMAT raised € 60.0 million from investors specialized in healthcare and from strategic partners.

CARMAT PROFILE

Founded in 2008, after more than 15 years of research, CARMAT develops a total artificial heart, orthotopic *, bioprosthetic *, self-regulating, pulsatile and implantable, as well as its external power supply system.

The name CARMAT originated from the meeting in the early 1990s between Professor Alain Carpentier and Jean-Luc Lagardère, then Chairman of Matra Defense (Airbus Group). This resulted in a very active cooperation starting in 1993 with the aim of designing a bioprosthetic artificial heart.

This unique partnership combines:

- the experience of more than 30 years of Professor Alain Carpentier, father of modern valvular heart surgery. Professor Carpentier has developed treatments for biological tissues of animal origin, which have enabled him to design the most widely used biological valves in the world (Carpentier-Edwards® valves). He has also developed the technics of restorative surgery and mitral annuloplasty used today all over the world, on the principle that a device must always be associated with a reproducible procedure; and

- Matra Defense's (Airbus Group) expertise on embedded systems and their constraints (reliability, severe environments, mass and volume) enabling engineers to work on the concept using simulations, modeling, testing.

The Company's goal is to address a global public health need that is the treatment of advanced heart failure. It is a severe, progressive, and often fatal disease that is constantly increasing in developed countries.

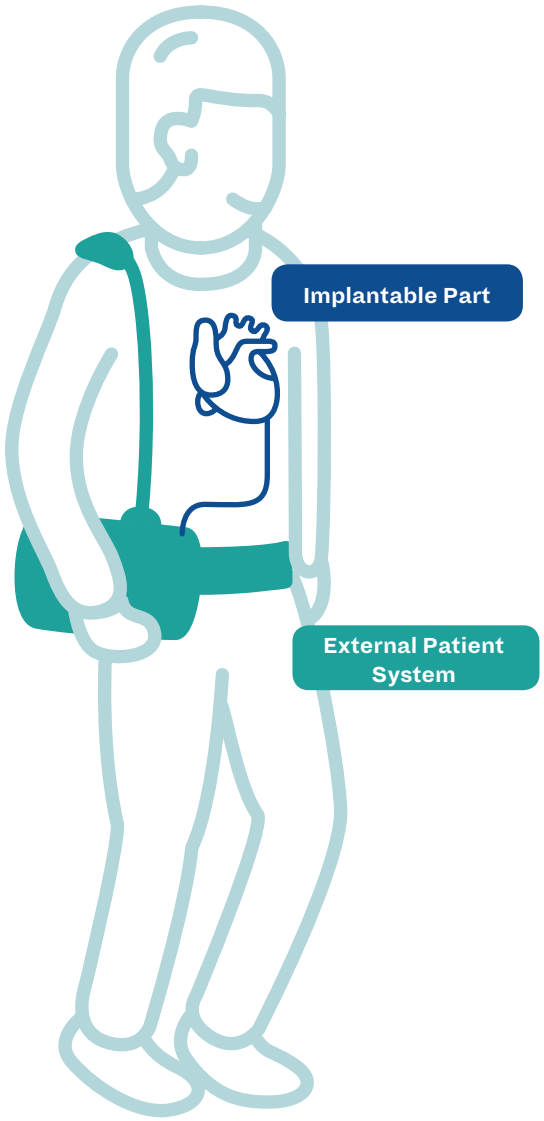
The CARMAT bioprosthetic artificial heart project thus aims to offer a long-term therapeutic solution to patients suffering from advanced biventricular heart failure, who are not eligible for transplantation or awaiting transplantation, who have exhausted all treatment possibilities and to whom no satisfactory solution is currently offered.

To date, the artificial heart CARMAT highlights 3 major technical achievements, leading to undeniable competitive advantages compared to other medical devices on the market:

- The only artificial heart whose surfaces in contact with blood are made of biologically compatible materials to reduce thromboembolic risks;

- The first intelligent artificial heart which adapts immediately and automatically to the metabolic needs of the patient;

- Special attention paid to patients' quality of life, with the development of light external equipment and quiet operation.



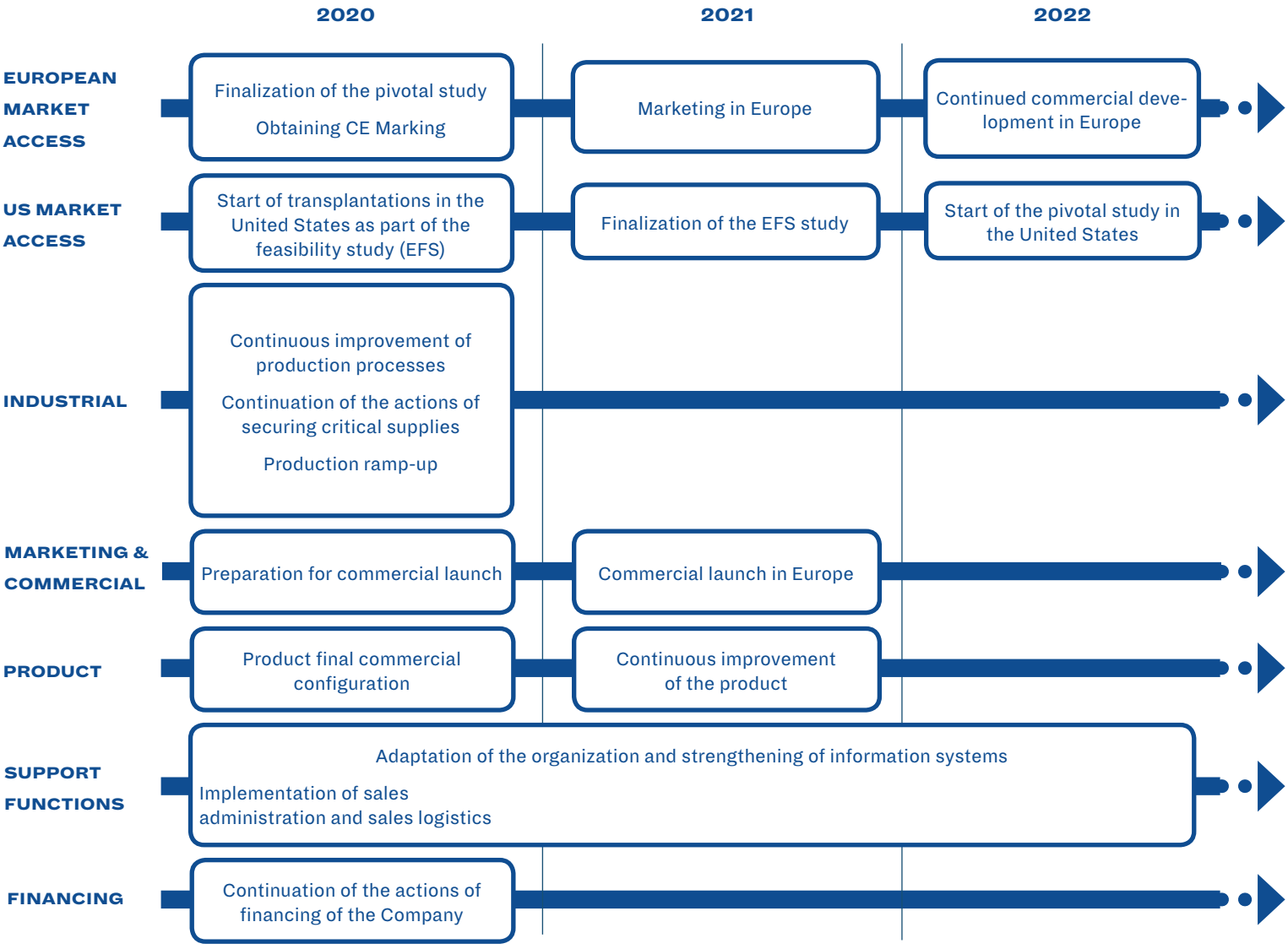
CARMAT initially aims for CE marking to be able to market its prosthesis soon in Europe. To this end, CARMAT submits for analysis and review to a certification body, DEKRA, the elements of a dossier comprising a technical part and a clinical part. The clinical part of the dossier includes the clinical results obtained during the preclinical trials, the feasibility study of 4 patients finalized early 2016 and the ongoing pivotal study started in August 2016.

As a reminder, the pivotal study aims to validate the safety, efficiency and performance of the system and will contribute to the CE marking filing process. The objective of the Company is to implant around 20 patients and to demonstrate the survival of these patients over a 6-month horizon.

CARMAT also aims to obtain PMA (pre-market approval) over the next few years, which would allow the Company to market its prosthesis in the United States. In this context, the Company obtained authorization in September 2019 from the FDA (Food & Drug Administration) to start a feasibility study in the United States on 10 patients. If successful, this study would be followed by a larger pivotal study to achieve PMA.

The clinical, industrial and commercial development of CARMAT will generate additional financial needs which the Company estimates to date that they could exceed € 100 million. Fundraising or other types of financing will therefore be required beyond, in particular, the fundraising of € 60 million carried out in September 2019, and the drawing of the two remaining tranches of € 10 million each of the loan conditionally granted by the EIB in December 2018.

SCOPE OF ACTIVITY



Source CARMAT – Provisional project schedule

HISTORY OF THE COMPANY

2008

Creation of CARMAT by Matra Défense (Airbus Group), Truffle Capital and Professor Alain Carpentier

33 M€

Grant to CARMAT and its partners of €33 million in subsidies and repayable advances by Bpifrance under the Strategic Industrial Innovation scheme, the largest amount ever granted to a Young Innovative Enterprise by Bpifrance

2009

Completion of modeling and optimization work on the artificial heart (900 grams) in readiness for the assembly and implantation phase for the preclinical trials

Appointment of Marcello Conviti as chief executive officer of CARMAT

2010

CARMAT granted the status of "Innovation Enterprise" by Bpifrance for Mutual Funds for Investment in Innovation (FCPI)

€ 16 M

Capital increase of €16 million, including issue premium, on the occasion of CARMAT's flotation on Euronext's Alternext market in Paris

2011

Edwards

Conclusion of an agreement with Edwards Lifesciences, the world leader in the cardiac valves sector and hemodynamic monitoring, for the use of Carpentier-Edwards biological cardiac valves in the CARMAT bioprosthetic artificial heart

2012

Approval from the CPP (patient protection committee*)

CARMAT presents preclinical hemocompatibility data to the 25th Annual Congress of the European Association for Cardio-Thoracic Surgery

€ 29,3 M

Capital increase in the amount of €29.3 million (issue premium included)

2013

EUROPEAN MEDISCIENCE AWARDS 2012

CARMAT is a winner at the European Mediscience Awards in the Best Technology category

Further elements added to the ANSM file, notably the results of the implants on animals and the intermediate results on the durability tests

2014

First successful implantation performed on December 18, 2013 at the Georges Pompidou European Hospital by Professor Christian Latrémouille

CARMAT obtains authorization from the ANSM to conduct a feasibility study in France involving four patients

€ 5 M

CARMAT receives €5 million in research tax credits (CIR) for the year 2012, in line with the Company's 2013 financing plan

2015

€ 5,3 M

bpifrance

CARMAT secures its future funding, reaching the 5th milestone of its agreement with Bpifrance and receiving €5.3 million

Authorization received to recommence feasibility trials on the CARMAT bioprosthetic heart

The patient receiving an implant of the CARMAT bioprosthetic heart at Nantes Teaching Hospital on August 5, 2014 went home and benefited from the prosthesis for almost nine months before he died

Kepler Cheuvreux

€ 11 M

CARMAT puts in place a new flexible equity financing arrangement with Kepler Cheuvreux, a mechanism enabling CARMAT to raise over €11 million over the year

In November CARMAT receives authorization from ANSM and from the CPP for completion of the clinical feasibility study

2016

A third implantation of the CARMAT heart is carried out on April 8 by the cardiac surgery department at the Georges Pompidou European Hospital

A fourth implantation of the CARMAT heart is carried out on December 22 by the team at La Pitié Salpêtrière on a patient suffering from severe biventricular failure

€ 50 M

At the end of April, CARMAT raise €50 million though a private placement, with the support in particular of certain historical shareholders and also with the arrival of new investors

The feasibility study relating to four patients being completed, the experience gained allows CARMAT to start work on preparation of the pivotal study, after both ANSM and the CPP authorizations

At the end of August, the first implantation under the pivotal study is carried out. However, the patient concerned died at the end of November, the analyses performed showing no involvement of the CARMAT prosthesis in the patient's death

2017

Stéphane Piat replaces Marcello Conviti as chief executive officer to define and support CARMAT's commercial strategy to address the market

Resumption in May 2017 of the trials corresponding to the pivotal study (after approval of the ANSM in France) and enlargement in Europe (Kazakhstan and Czech Republic) of this pivotal study. Discussion also initiated in the United States with the FDA

2018

€ 53 M

In December 2017, CARMAT received more than €50 million following the completion of a fundraising exercise open to the public, a transaction carried out notably with the support of two historic shareholders (Pierre Bastid and Antonino Ligresti)

Finalization, with positive results, of the first part (cohort 1 of 10 patients) of the pivotal study. Beginning of the implantations of cohort 2.

The Bois d'Arcy plant is certified and commissioned.

€ 30 M

In December 2018, CARMAT was granted a conditional loan of €30 million by the European Investment Bank (EIB)

European Investment Bank

2019

€ 60 M

In September 2019, CARMAT raised €60 million through a private placement, with in particular the participation of certain historic shareholders and the entry of new shareholders (family offices and entrepreneurs).

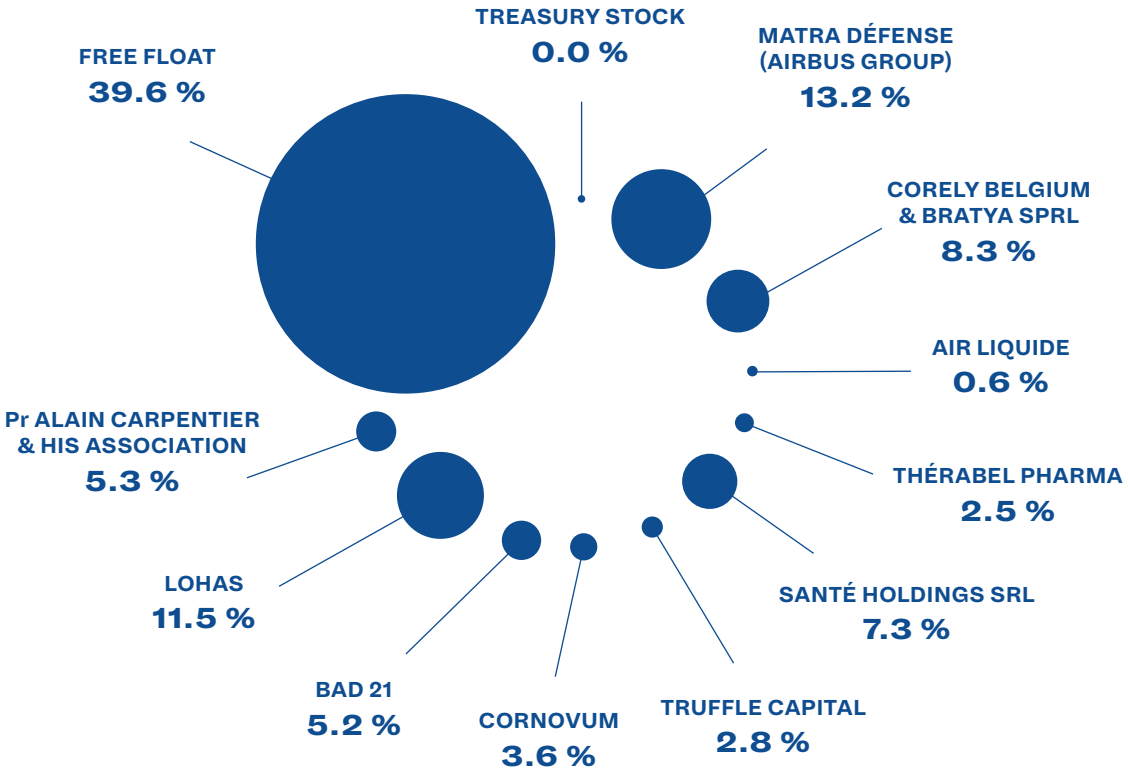
Full transfer of production to the Bois d'Arcy plant.

Authorization received from the FDA to initiate a feasibility study (EFS) in the United States.

CARMAT AND ITS SHAREHOLDERS

SHAREHOLDERS AS AT DECEMBER 31, 2019

(to the knowledge of the Company)



ANALYSTS' COVERAGE

Broker / Analyst	Opinion	Target share price	Opinion's date
Gilbert Dupont	Accumulate	€24.00	February 12, 2020
Portzamparc	Buy	€22.90	February 12, 2020
Oddo-BHF	Buy	€27.00	March 10, 2020
Edison	- *	€68.01	September 27, 2019

*: Edison does not give any recommendation but only an evaluation of the company.

INFORMATION ON THE CARMAT SHARE

Market	Number of shares outstanding (December 31, 2019)	Mnemonic & ISIN code	Share price & market capitalization (December 31, 2019)	Average liquidity (12 months during 2019)	Status
Euronext Growth	12,609,649	ALCAR FR0010907956	€19.28 / share €243.1 m	8,186 shares / day	ELIGIBLE PEA PME

CONTACTS

Chairman	Chief executive officer	Chief financial officer and Head of investor relations	Head office	Website
Jean-Pierre Garnier	Stéphane Piat	Pascale d'Arbonneau + 33 1 39 45 64 50 contact@carmatsa.com	36, avenue de l'Europe 78 140 Vélizy-Villacoublay France	www.carmatsa.com

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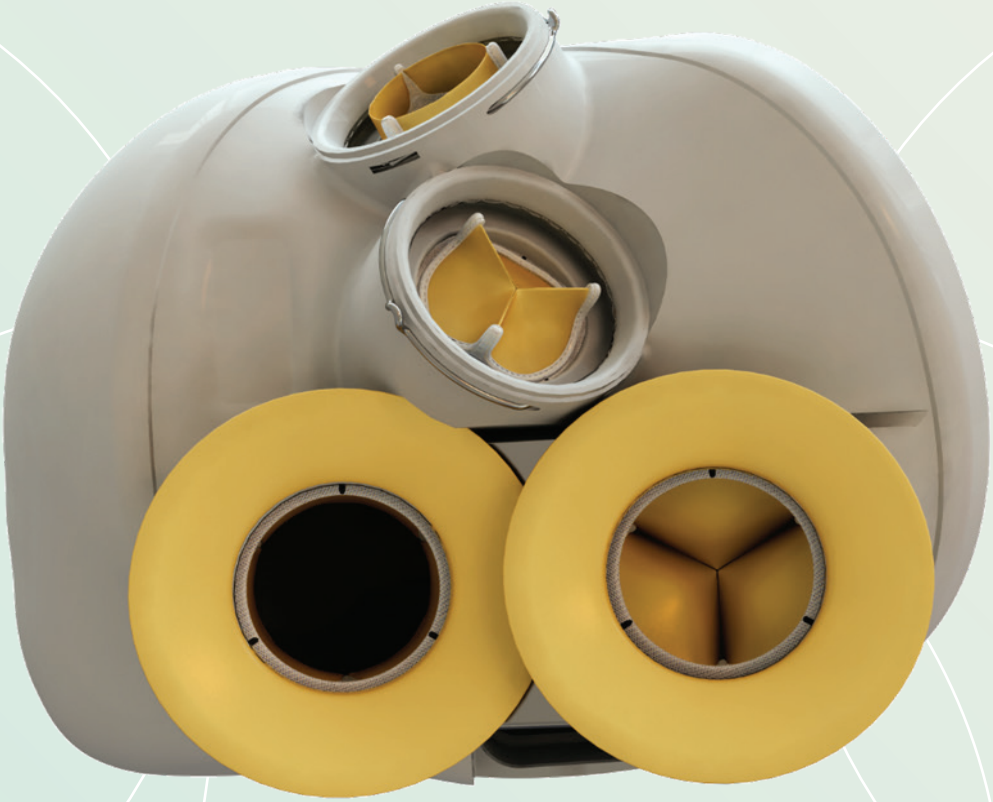
DESCRIPTION OF ACTIVITIES



1.1 HEART FAILURE

1.1.1 PATHOLOGY AND CAUSES *

Heart failure occurs when the myocardium (cardiac muscle) can no longer carry out its essential function as a blood "pump" and provide a sufficient cardiac output to satisfy the metabolic needs of the organism. When the failure reaches the left ventricle, one talks of left ventricular failure; when it reaches the right ventricle, one talks of right ventricular failure; when the failure reaches both ventricles, the left and the right, one talks of biventricular heart failure.

Essentially, the heart is unable to keep up with its workload. The heart tries to make up for this by enlarging in an effort to pump more forcefully and by pumping faster in order to pump more volume in unit time. The body also tries to compensate in other ways by making the blood vessels narrower and by diverting blood away from less important organs to favor key organs like the brain and kidneys.

These temporary measures mask the problem, but the muscle failure continues, at varying rates, until these compensatory measures are no longer effective. The patient then begins to experience the classic symptoms of heart failure in an ever-increasing way (see table on next page: NYHA classification).

The above is a description of the more common chronic condition but heart failure can also occur as an acute event, most commonly as a result of a heart attack caused by ischemic heart disease (IHD - coronary artery disease). Other causes of heart failure are listed in the following table.

Major causes of heart failure:

Condition	Description
Ischemic Heart Disease	A buildup of fatty deposits on the walls of the coronary arteries which limits the supply of blood to heart muscle.
High Blood Pressure	Increase the work that the heart needs to do which leads to increased muscle mass and a need for more blood supply.
Cardiomyopathy	A group of heart muscle diseases leading to functional and structural damage. Diverse causes including inherited, infections, some cancer treatments and substance abuse.
Rhythm Problems	Abnormal heart rhythms cause the heart to pump inefficiently. Types vary from relatively mild atrial (upper chamber) to disruptions of the ventricular (main pumping chamber). Can be treated by medications and/or pacemaker and automatic defibrillator devices. Often secondary to coronary disease.
Damage to Heart Valves	Valves can become stenosed (narrowed) or regurgitant (leaky) due to; older age, infections, coronary disease, congenital defects, high blood pressure and diabetes. Consequently, heart function is compromised to an extent depending on the number and degree of valvular defects.
Congenital Heart Disease	Structural defects that develop in the womb before a baby is born. These can vary from a small "hole in the heart" to major structural deformities. Most can be partially or fully repaired but may cause problems in later life.
Substance Abuse	Tobacco, alcohol and recreational drugs all cause damage to heart muscle and the vascular system. Some prescription drugs also have toxic side effects on the heart which depend on dosage and length of use.

Heart failure can affect the heart in different ways:

- The most common failure affects the left ventricle (the main pumping chamber) which can fail in two ways. It may lose its ability to contract forcefully enough (systolic failure) or it may not relax enough, in order to fill properly (diastolic failure).

- In right heart failure the weaker right ventricle is unable to pump enough blood through the lungs and since the left side relies on receiving blood from the right side, the entire pumping action of the heart is compromised. The right ventricle has much less resilience than the left and can therefore fail more easily. Right sided failure is most often secondary to left sided failure as blood volume backs up as a result of a compromised left function. Right heart failure may also be secondary to lung disease or an acute event such as an allergic reaction, infection or to a blood clot which lodges in the lungs. Up to 30% of patients whose left heart failure is treated with a left ventricular assist device develop right heart failure [01], [02], [03], [04].

Practitioners distinguish the severity of failure or extent of the handicap using the NYHA (New York Heart Association) classification which is based on symptoms and includes 4 classes.

There is also a number of other guidelines published by the various professional bodies such as that of *the European Society of Cardiology : Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure*.

Heart Failure being a progressive disease, the prognosis is poor: less than 50% survival, 5 years after the diagnosis [05], and more than 40% of deaths within a year following initial hospitalization [06].

In the NYHA, a shift to class III is a decisive moment [07] :

- for the patient: it marks the passage between a virtually normal life and a considerably reduced activity, very often involving a loss of autonomy;

- clinically this means more aggressive therapies, a dependence on drugs, and, with class IV, the start of repeated hospitalizations;

- for society, this represents an explosion of the costs, particularly due to hospitalizations: a class IV patient costs the community up to 15 times more than a class II patient [08].

Class III and class IV patients represent between 20 and 35% of the total, with class IV reaching up to 5% of heart failures.

NYHA	Class I	Class II	Class III	Class IV
Symptoms	No symptoms	Tiredness, palpitations, shortness of breath after a sustained effort	Symptoms and discomfort on the least effort	Symptomatic even at rest
Activity	No limitation	Modest limitation	Marked reduction	Inability for all activity, permanently confined to bed

01 Dang NC et al. Right heart failure after left ventricular assist device implantation in patients with chronic congestive heart failure. J Heart Lung Transplant 2006 ; 25 : 1-6.

02 Boyle AJ et al. Predictors of poor RV function following LVAD implantation. J Heart Lung Transplant. 2003 ; 22 : S205.

03 Kormos RL et al. Right ventricular failure in patients with the HeartMate II continuous-flow left ventricular assist device: incidence, risk factors, and effect on outcomes. The Journal of thoracic and cardiovascular surgery. 2010 ; 139(5):1316-24.

04 Cordtz J et al. Right ventricular failure after implantation of a continuous-flow left ventricular assist device: early haemodynamic predictors. EuropeanJournal of Cardio-Thoracic Surgery. 2014 ; 45(5):847-53.

05 Blackledge HM et al. Prognosis for patients newly admitted to hospital with heart failure : survival trends in 12 220 index admissions in Leicestershire 1993-2001. Heart. 2003;89:615-620.

06 Stewart S et al. More 'malignant' than cancer ? Five-year survival following a first admission for heart failure. Eur J Heart Fail. 2001;3:315-322.

07 Launois R et al. Coût de la sévérité de la maladie ; le cas de l'insuffisance cardiaque. Journal d'économie médicale. 1990, T. 8, n° 7-8, p. 395-412.

08 Kulbertus HE et al. What has long medical treatment to offer and what does it cost. Eur Heart J 1987 (suppl F) 26-28.

1.1.2 EPIDEMIOLOGY, PREVALENCE AND INCIDENCE

The prevalence* of heart failure is rising sharply in developed countries.

The prevalence of heart failure can be estimated at 1–2% in the western world and the incidence* approaches 5–10 per 1 000 persons per year [09]. Both prevalence and incidence vary by country [10] (Table 1 hereafter).

In Europe, the disease affects approximately 2% of the general population [11], [12] i.e. approximately 15 million Europeans [13], [14]. The prevalence increases greatly with age [15]. A French epidemiological study has shown that it can affect nearly 12% of patients over the age of 60 [16].

09 Mosterd A, Hoes AW. Clinical epidemiology of heart failure. Heart 2007;93:1137–1146.

10 Global public health burden of heart failure. Card Fail Review 2017 Apr ; 3(1) :7-11. Doi : 10.15420/cfr.2016 :25 :2.

11 Cowie MR, et al. The epidemiology of heart failure. Eur Heart J 1997; 18:208-225.

12 Davies MK et al. Prevalence of left ventricular systolic dysfunction and heart failure in the Echographic Heart of England Screening Study: a population based study. Lancet 2001; 358:439-444.

13 Remme WJ et al. Public awareness of heart failure in Europe : first results from SHAPE. Eur Heart J 2005 ; 26:2413-2421.

14 McMurray JJ et al. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012. Eur Heart J 2012 ; 33:1787-1847 (nombre incluant les 51 pays adhérents de la Société européenne de cardiologie).

15 Conrad N, et al. Temporal trends and patterns in heart failure incidence: a population-based study of 4 million individuals. The Lancet. 2018;391(10120):572-80.

16 Saudubray T et al. Prévalence et prise en charge de l'insuffisance cardiaque en France : enquête nationale auprès des médecins généralistes du réseau Sentinelles La revue de médecine interne 26 (2005) 845-850.

Table 1

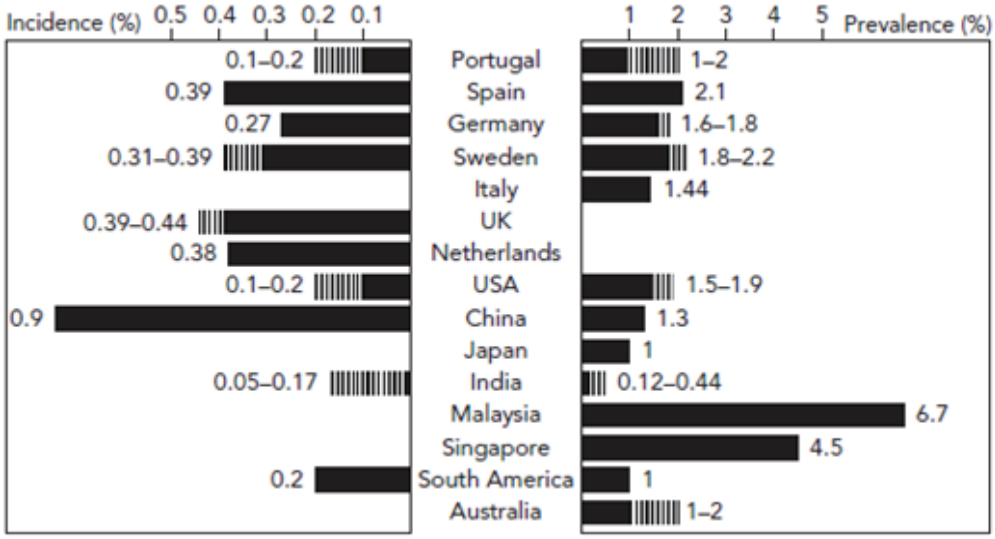
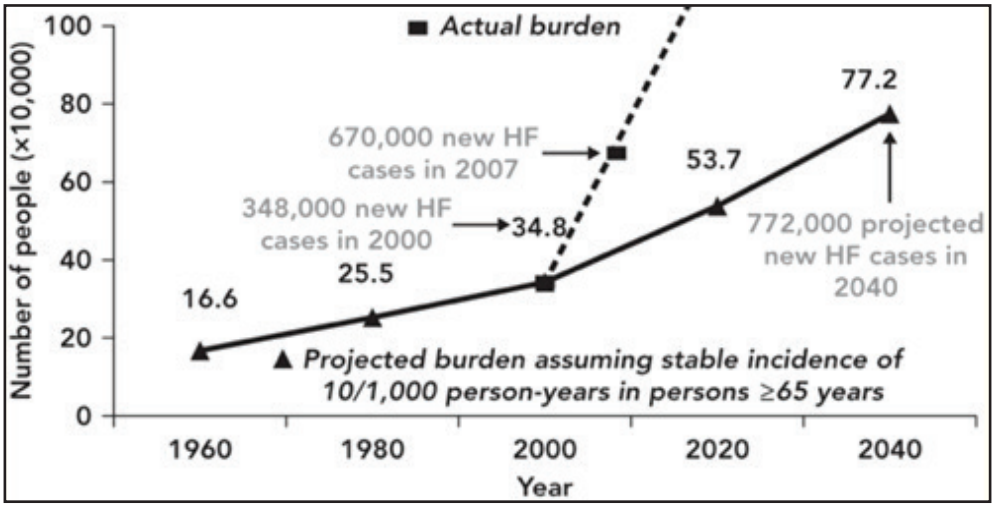


Table 2



Savarese G Global Public Health Burden of Heart Failure. Cardiac Failure Review 2017;3(1):7–11. DOI: 10.15420/cfr.2016:25:2

In the United States, over 5.8 million people were suffering from heart failure in 2012, with an annual incidence* of over 550,000 new patients annually. According to a new study published by an American Heart Association working group in May 2013, the prevalence of heart failure in the United States should increase by 46% between 2010 and 2030 [17], bringing the affected population to over 8 million people.

A more recent publication in 2017 predicts the number of new cases of heart-failures to hit 772.000 in the Unites-States in 2040 (see Table 2 on previous page).

In addition, end-stage chronic heart failure with altered ejection fraction*, focused market for CARMAT, would affect 4.1 million people in Europe and the United States [18], [19] (people under 75).

This progression of the epidemiology is linked to the aging of the population, but also, in the case of advanced heart failure, to the improved survival after a myocardial infarction and to the progress made in the medicinal treatments, such as betablockers* and diuretics* [20] or coronary stents.

The paradox is that the availability of these new medications or new technologies has enabled more effective treatment of acute coronary syndromes and considerably increased patient survival after an infarction which is the strongest predictor of left systolic dysfunction and the risk of heart failure: patients no longer die immediately but are treated long term, during which time the disease continues to develop. Consequently, the total number of people living with a compromised heart function and with clinical heart failure will increase considerably in the coming decades [21]. This evolution also leads to a population of older heart failure patients, suffering from various comorbidities, and thus even less susceptible to have access to transplants [22]. Out of the 8.5 million American people suffering from heart failure predicted by the AHA by 2030, only 2.5 million of these will be under 65 years old.

Currently heart transplantation is only available to some 5,000 patients per year, and durable MCS devices (mechanical assistance) offer a treatment to a further 8,000 patients, with variable results. This means that we currently do not have an effective therapy for most of the patients. More than 30% of patients supported by a durable MCS system require bi-ventricular support, currently only available with a Syncardia® TAH (see paragraph 1.2.2).

17 Heidenreich PA et al. Forecasting the impact of heart failure in the United States: a policy statement from the American Heart Association. Circ Heart Fail. 2013 ; 6:606-619.

18 The ECHOES study, Midlands, UK: Davies M, Hobbs F, Davis R, et al. Prevalence of left-ventricular systolic dysfunction and heart failure in the Echocardiographic Heart of England Screening study: a population based study. Lancet. 2001 Aug 11;358(9280):439-44.

19 CARLA study, Sachsen-Anthalt, Germany: Tiller D, Russ M, Greiser KH, Nuding S, Ebelt H, et al. (2013) Prevalence of Symptomatic Heart Failure with Reduced and with Normal Ejection Fraction in an Elderly General Population.

20 Évaluation de l'assistance ventriculaire en attente ou en alternative à la transplantation cardiaque. Rapport de l'ANAES (Agence nationale d'accréditation et d'évaluation de santé) – Avril 2001 – E.

21 Tendera M. Epidemiology, treatment, and guidelines for the treatment of heart failure in Europe. European Heart Journal Supplements (2005) 7 (Supplement J), J5-J9.

22 Croft JB et al. Heart failure survival among older adults in the United States : a poor prognosis for an emerging epidemic in the Medicare population. Arch Intern Med 1999 ; 159:505-510.

1.1.3 ECONOMIC CHALLENGE

Heart failure constitutes a real public health challenge which is set to increase: in Western countries, the cost of heart failure is now one of the largest of all chronic diseases.

According to study from the American Heart Association working group published in May 2013, the total cost of heart failure which was 31 billion dollars in the United States in 2012 is estimated to be 70 billion by 2030. The direct costs (medical costs) of patient treatment is expected to increase by 250% between 2012 and 2030. Taking account of all the direct costs from resulting co-morbidities, the cost will explode to 160 billion dollars in 2030.

Moreover, this study points out that 80% of the medical expenses are attributable to the hospitalizations.

There are no recent studies dealing with the cost of heart failure on a European level. As an example, the direct cost of advanced chronic heart failure in France was in the region of 1.5 billion euros [23] (3.3 billion euros for the long term condition class which combines serious cardiovascular diseases - ALD 5 in 2009, only for the general National Health Insurance system) and was reported to affect over 730,000 people in 2011 (a 9% increase compared to the previous year).

In a statement released on May 7, 2010 on the occasion of the European Heart Failure Awareness Day, the French Society of Cardiology and the French Federation of Cardiology recalled some figures. In France there are more than 100,000 new cases a year. 10% of these patients were hospitalized, the average length of hospitalization exceeding ten days and the rate of re-admission within six

23 Régime général de l'Assurance maladie (French National Health Insurance system)– www.ameli.fr/l-assurance-maladie/statistiques-et-publications/donnees-statistiques/affection-de-longue-duree-ald/.

months being 20%. In 2008, heart failure was the main diagnosis for 195,800 hospital stays in France for which the daily cost of a hospital stay in cardiology intensive care was over 2,000 euros.

Overall, heart failure represents 2.5% of the total expenditure on health care in Western countries, with costs linked to hospitalization alone representing more than 70% of the total cost of the disease [24]. Due to repeated hospitalizations, class IV chronic heart failure represents between 61% and 92% of the total cost of heart failure [25].

24 McMurray JJ, Stewart S. Epidemiology, aetiology, and prognosis of heart failure. Heart 2000; 83:596-602.

25 Clegg AJ et al. Clinical and cost effectiveness of LVAD for end stage heart failure – Health Technology Assessment NHS – 2005.

1.1.4 AVAILABLE TREATMENTS

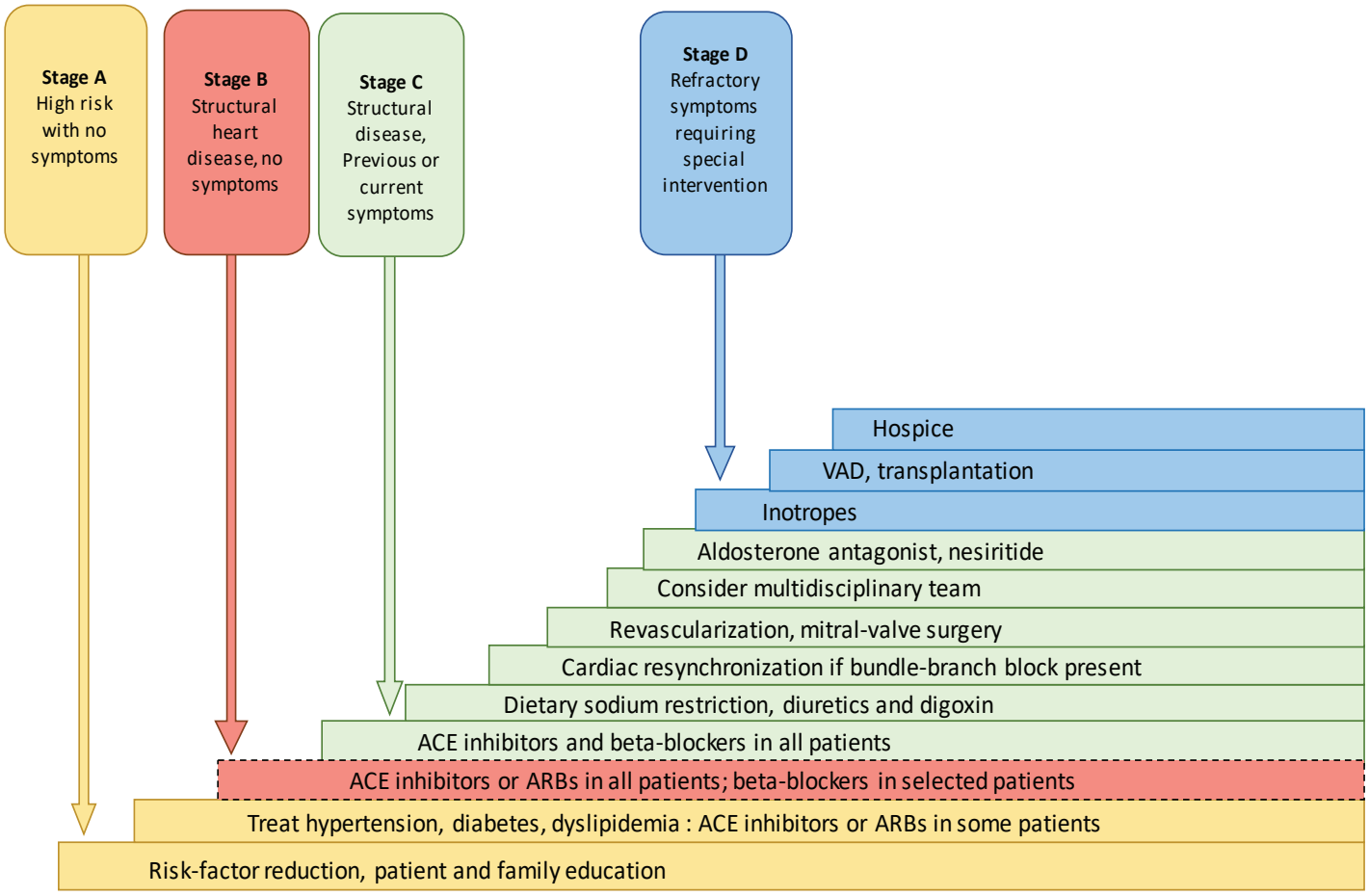
The onset of heart-failure may be prevented or delayed by a certain number of measures, such as treating high blood pressure. However, once this disease reaches the chronic phase it is essentially incurable and treatment goals are directed at improving clinical status, functional capacity, quality of life, minimizing hospital admissions and reducing mortality.

Heart Failure can be classified according to its severity and associated treatment plans. In this scheme 4 stages are identified, ranging from Stage A (high risk of developing heart failure) to Stage D (Advanced heart failure) [26], as shown in the below chart.

Various national regulatory and professional bodies also produce guidelines and recommendations.

The four stages of heart failure and associated treatment plans:

26 Cardiac Failure Review 2017;3(1):7–11. DOI: 10.15420/cfr.2016:25:2



From Yancy, C. W., et. al. "2013 ACCF/AHA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology

From Stage B onwards, treatment involves a tailored combination of medications and this is known as Optimal Medical Therapy (OMT). Unfortunately, because of the many drug related side effects, one of the constraints of OMT is compliance, with an estimated 40% of patients not adhering to their treatment plans.

Stage C patients may be suitable for surgical interventions ranging from coronary stenting, coronary artery bypass surgery, valve repair/replacements to surgical re-modelling of the heart. Patients with rhythm problems can be treated with a variety of pacemaker type devices including those incorporating a defibrillator function.

Patients in Stage D typically require strong heart stimulating intravenous drugs (inotropes) and become candidates for mechanical assistance (MCS) or heart replacement therapy by transplantation or an artificial heart.

Patients in Stages C & D also commonly develop a number of comorbidities (other medical conditions) as a result of a chronic inadequate blood supply.

MEDICATIONS

At early stages (typically at classes I and II of the NYHA classification), treatment is essentially drug-based [27] and, depending on the severity and symptoms, combines:

- anticoagulants* and anti-platelet aggregation medication* to prevent the formation of blood clots;
- angiotensin-converting enzyme inhibitors* to reduce vascular resistance;
- betablockers which reduce the cardiac rhythm and output to decrease blood pressure;
- diuretics to remove excess fluids and, in this way, lighten the burden on the heart to prevent pulmonary edema;
- vasodilators* which relax the blood vessels to increase the flow of blood and oxygen to the heart without increasing its workload;
- etc.

The complexity of treatment and the need for frequent adjustments leads to low patient compliance: 40% of patients do not take their treatment correctly after 3 months [28].

Positive inotropes* are generally also introduced at the most advanced stage of the disease. These are drugs, administered intravenously in the hospital setting, which increase the contractility of the cardiac muscle and that allow, at least temporarily, critical situations of low cardiac output in episodes of acute decompensated heart failure* or cardiogenic shock* to be resolved. Dependence on inotropes marks the terminal phase of heart failure with a mean survival of 3 and a half months [29].

DEVICES

From class III (NYHA classification), surgical options and the implantation of supporting medical devices are considered, such as:

- mono or biventricular pacemakers to prevent arrhythmias;
- implantable defibrillators to treat ventricular tachycardia and prevent sudden death;
- left ventricular reconstruction;
- restrictive mitral annuloplasty*;
- mechanical circulatory support systems (MCS), implantable or not, and artificial hearts.

For the most part, these options pursue the objective of recovering the heart's natural function. For example, biventricular pacemakers aim to reeducate the ventricles by synchronizing their contractions.

Restrictive mitral annuloplasty aims to reeducate the left ventricle by affecting its geometry. However, if these approaches temporarily relieve some patients, they face important difficulties in selecting patients [30] or technical implementation [31], which restrict their adoption and do not prevent the progression of the disease.

Finally, the use of stem cells to regenerate damaged heart muscle is a promising avenue of research, but remains relatively controversial [32], in particular due to difficulties in collection or generation, then in administration (a large number of cells "die" during the injection) and the lack to date of a clinical demonstration of long-term regeneration of the myocardium.

Mechanical Circulatory Support (MCS):

The mechanical circulatory support systems are the devices which could be considered as the closest, in function and indication, to the CARMAT artificial heart project. Their characteristics and evolution are detailed in Paragraph 1.2.2. « Technologies and market players ». However, in contrast to artificial hearts which replace both ventricles, the diseased heart is left in place and can continue to deteriorate.

27 American Heart Association – Heart Failure Medications - http://www. heart.org/HEARTORG/Conditions/HeartFailure/PreventionTreatmentof HeartFailure/Heart-Failure-Medications_UCM_306342_Article.jsp.

28 Benner JS et al. Long-term persistence in use of statin therapy in elderly patients. JAMA. 2002 ; 288:455-61.

29 Hershberger RE et al. Care processes and clinical outcomes of continuous outpatient support with inotropes (COSI) in patients with refractory endstage heart failure. J Card Fail. 2003 ; 9(3):180–7.

30 Marwick TH. Restrictive Annuloplasty for Ischemic Mitral RegurgitationToo Little or Too Much. J Am Coll Cardiol. 2008 ; 51(17):1702-1703.

31 Strickberger SA et al. Patient Selection for Cardiac Resynchronization Therapy, Circulation. 2005 ; 111:2146-2150.

32 Garbern J et al. Cell Stem Cell, Volume 12, Issue 6, 689-698, 6 June 2013.

Patients with chronic or acute heart-failure who cannot be stabilized with OMT are candidates for MCS. The devices are used to unload the failing heart and maintain an adequate blood supply to key organs. Patients in acute cardiogenic* shock are typically initially treated with a short-term support device to enable a full evaluation to take place whilst a definitive therapy can be planned and implemented. These decisions are guided by a categorization established by the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS). There are 7 categories of which the first 4 are amenable to MCS therapies :

Although LVAD is the most frequently recommended MCS intervention, up to 30% of these patients will have failure of both ventricles (Bi-Ventricular Failure), thus giving rise to inferior outcomes. There is currently no Bi-Ventricular (BiVAD) MCS device on the market and since the only current Syncardia® TAH device has relatively poor outcomes, surgeons tend to test solutions such as implementing two LVAD.

Top Four INTERMACS Categories

INTERMACS Level	NYHA Class	Description	Device
1.Cardiogenic Shock	IV	Unstable despite of maximum drug support and/or short-term MCS	ECLS * LVAD ** TAH ***
2. Progressive decline despite Inotropic support	IV	Acceptable blood pressure but rapid deterioration of kidney function and nutritional state	ECLS * LVAD ** TAH ***
3. Stable but Inotrope dependent	IV	Blood pressure stable but requiring intermittent inotropes	LVAD **
4. Symptomatic at rest	IV	Temporary cessation of inotropes but frequent treatment required for fluid overload	LVAD **

* : ECLS - Extracorporeal Life Support (short-term system connected to patient by tubes)

** : LVAD - Left Ventricular Assist Device

*** : TAH - Total Artificial Heart

The Criteria Committee of the New York Heart Association. Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels. 9th ed. Boston, Mass: Little, Brown & Co; 1994:253-256.

MCS Strategies

MCS devices can be used for a number of different strategies:

Acronym	Description	Application
CPR	« Cardio-Pulmonary Resuscitation »	Short term devices used to resuscitate and buy time
BTD	« Bridge to Decision »	Short or Medium-term devices used to evaluate best therapeutic way forward
BTR	« Bridge to Recovery »	Medium term devices used to attempt functional heart muscle recovery
BTT	« Bridge to Transplant »	Medium to long term devices used to support a patient awaiting a transplant
DT	« Destination Therapy »	Long term device used for permanent heart replacement therapy

TRANSPLANTATION

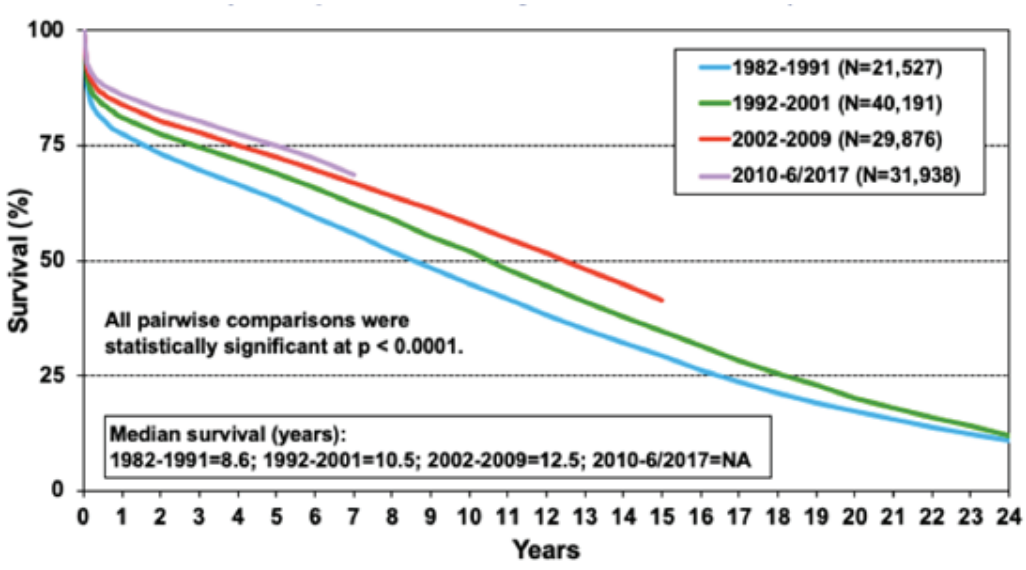
Patients who have reached NYHA IV can currently only be definitively treated by a heart replacement therapy (transplantation or artificial heart).

Although some LVADs and the only currently available TAH (Syncardia), are approved (or awaiting approval) for this chronic Destination Therapy (DT), they have yet to achieve the results available from heart transplantation

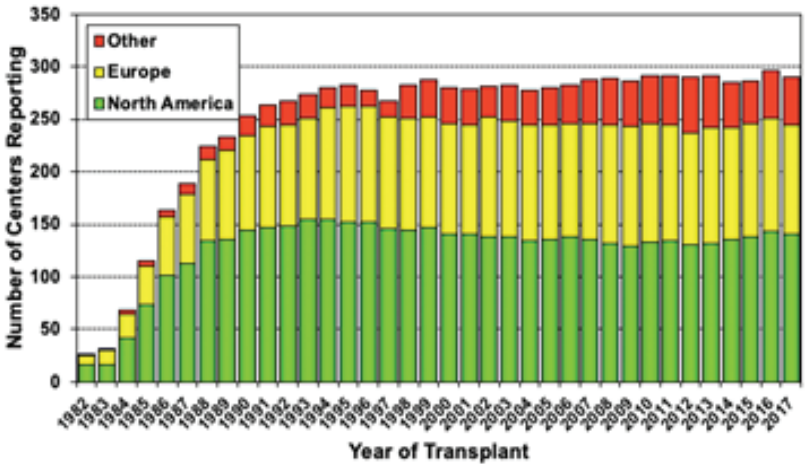
Professor Christian Bernard performed the first heart transplant in South Africa on December 3, 1967. The first transplant patients, with few exceptions, did not survive more than a few weeks after the operation, notably due to rejection (reaction of the host against the transplant which it considered as a foreign biological body). Several important advances have allowed the improvement of patient survival:

- the preservation of donor hearts thanks to refrigeration, allowing the removal at a distance from the place of transplantation;
- endomyocardial biopsy allowing the early diagnosis of rejection: a probe is introduced, under X-ray control and under local anesthesia, into a large vein and pushed until it is in the right ventricle, permitting a small piece to be sampled which is then analyzed under a microscope;
- finally, and above all, the arrival of ciclosporin, an immunosuppressant* the therapeutic use of which offered great hopes in organ transplantation from the early 1980s by preventing acute rejection.

Today some 4,500 transplants are carried out globally, with survival rates of 85% at 1 year and 69% at 5 years , in nearly 300 centers (see tables below). However, the attrition rates do not improve significantly.



Survival rate after transplantation: ISHLT Registry 2018



Number of transplant centers worldwide: ISHLT Registry 2018

The hopes placed on this treatment continue to face major problems that limit its mainstreaming.

The first reason can be found in the very strict eligibility criteria both for the harvesting of the organ and for the transplant. Notably, the donor [33] must, in principle, be under the age of 61 years, brain dead, not a carrier of certain viruses such as HIV or hepatitis B and C, not be a drug addict or have a cancer and, of course, not be suffering from heart disease. This therefore limits the possibility of donation mainly to trauma deaths (in particular road accidents, which are constantly decreasing). Only 435 hearts were therefore harvested in France in 2012 and 397 were implanted [34].

In France, 41% of donors were over 60 years old in 2011 compared to 22% in 2007, which explains why not all of the transplants harvested can be used.

Considering this shortage of organs, the eligibility criteria of the recipient are even stricter [35] in order to ensure the greatest chance of success with each transplant. Blood groups must be identical, weight and size equivalent. Irreversible pulmonary hypertension, an active infection or a cancer are formal contraindications. Other relative contraindications are also taken into account such as diabetes, advanced lung or liver disease, renal impairment and morbid obesity etc.

A psychological assessment is considered to ensure that the patient understands and undertakes to adhere to complex life-long medical treatment. Patients with psychiatric disorders, or addicted to alcohol or drugs are not considered.

Age of the patient, which must be usually below 65 years, even if there is no legislation in this area, is a particularly discriminating criterion. The organs are therefore reserved for the youngest patients, while the vast majority of chronic heart failure patients are over 60 years or suffering from comorbidities making them ineligible.

Furthermore, post-transplant survival decreases significantly with age. Only 80% of patients over 60 years are still alive after one month, and 67% after one year [36].

As a result the number of transplants has been stable or declining in all developed countries for over ten years, while the prevalence of heart failure has considerably increased.

Heart transplant waiting lists therefore do not reflect treatment needs, but simply the number of patients satisfying all the eligibility criteria, particularly age. The low diffusion of heart transplantation as treatment of choice for end-stage heart failure is shown in the following table where we can see the small number of patients who could expect to benefit (see following table).

33 Latrémouille C et al. Transplantation cardiaque. EMC - ©Elsevier, Techniques chirurgicales - Thorax, 42-748, 2006.

34 Agence de la biomédecine - Synthèse nationale de prélèvement et de greffe 2012 et annexe au bilan 2012.

35 Mehra MR et al. Listing Criteria for Heart Transplantation : International Society for Heart and Lung Transplantation Guidelines for the Care of Cardiac Transplant Candidates. J Heart Lung Transplant 2006 ; 25:1024-42.

36 Agence de la biomédecine – Rapport d'information au Parlement et au Gouvernement – septembre 2013 et bilan 2013 : http://www.agence-biomedecine.fr/annexes/bilan2013/donnees/organes/03-coeur/synthese.htm.

	France	United States	Germany ****	UK ******
Transplantations	450 *	3,244 **	312	177
Patients on waiting list	364 *****	3,782 ***	703	246

* : 2018 - Agence de la biomédecine (Biomedicine Agency)

** : 2017 - UNOS

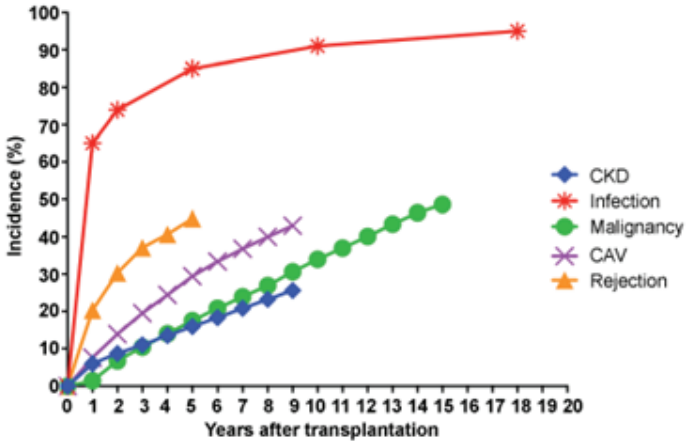
*** : As at January 17, 2019

**** : 2018 - EuroTransplant

***** : 2013 – Agence de la biomédecine (Biomedicine Agency) – annual report 2014 http://www.agence-biomedecine.fr/annexes/bilan2013/donnees/organes/03-coeur/synthese.htm.

****** : 2017 – NHS Organ Donation Annual Report

There is also a number of serious complications, associated with the transplantations.



Post transplant complication rate : Alba A Int J Tx Res and Med 2016. CKD = chronic kidney disease ; CAV = coronary artery disease.

As patients require lifelong immunosuppression, they are susceptible to a range of side effects including an increased incidence of infection and malignancy, chronic rejection, development of graft coronary artery disease, hypertension and kidney disease.

Despite all of these issues, heart transplantation is regarded as the « Gold Standard » for heart replacement therapy, so any potentially successful alternative needs to match or surpass its results. The *International Society of Heart & Lung Transplantation* (ISHLT) maintains a register and carries out extensive analysis of results, in order to guide recipient and donor selection, aimed at achieving the best outcomes with a limited resource.

However transplant rates are limited by the paucity of donors and it is unlikely that a figure exceeding 6,000 per annum will be achieved. The impact of changes to donation legislation, better donor management, innovative retrieval and storage techniques are offset by higher survival rates from road accidents and cerebral trauma.

Finally, a heart transplant is a heavy treatment at a very high price. The Milliman Institute has published a detailed report on the estimated cost of organ transplants in the United States. In terms of heart transplantation, its 2014 conclusions show a cost of 1,242,200 dollars, including 30 pre transplantation days and 180 post-transplantation days. It is difficult to make international comparisons in view of the very different health funding systems and figures available covering different pre- and post-implantation periods.

1.2 MARKETS AND MARKET PLAYERS

1.2.1 ADDRESSABLE MARKET FIGURES

CARMAT intends to market an artificial bioprosthetic valve for patients in NYHA classification end stage class IV heart failure which is either chronic or ischemic heart disease (of which «acute myocardial infarction» is only a sub-group), in a the Bridge To Transplant indication, i.e. pending transplantation (refer to paragraph 1.2.2 « Technologies and market players ») and/or for the Destination Therapy (final treatment).

The figures below refer to the indication for destination therapy.

Chronic heart failure affects approximately 15 million European patients [37] and 5 million patients in the United States [38], i.e. a total of approximately 20.8 million patients in this geographical area.

Referring to the indications obtained by similar devices, this artificial bioprosthetic heart could be indicated for patients suffering from acute or chronic end stage heart failure under 70 years old who cannot be transplanted, without obvious indication like cancer, reducing their life expectancy to less than 6 months.

Considering that:

- 2.3% of these patients will reach the end stage of the disease annually - involving the first hospitalisation - i.e. a population of approximately 478,400 patients [39] ;
- 38% of this population is under 70 years old, i.e. a population involving approximately 182,000 patients [40], [41] ;

37 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008. European Heart Journal (2008) 29, 2388-2442 (sur les 900 millions d'habitants des 51 pays adhérents de la Société européenne de cardiologie).

38 Heart Disease and Stroke Statistics – 2010 Update at a glance – American Heart Association and American Stroke Association.

39 Jhund PS et al. Long-term trends in first hospitalization for heart failure and subsequent survival between 1986 and 2003 : a population study of 5.1 millions people. Circulation 2009 ; 119:515-523.

40 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008. European Heart Journal (2008) 29, 2388-2442 (sur les 900 millions d'habitants des 51 pays adhérents de la Société européenne de cardiologie).

41 Heart Disease and Stroke Statistics – 2010 Update at a glance – American

- around 5,000 eligible patients are transplanted per year; and
- the anatomical compatibility of the CARMAT heart for men and women is 86% and 14% (with a weighting of 80/20 between men and women), it should be noted that the available clinical data indicate that these compatibility rates will increase in the near future.

There are therefore approximately 126,700 potential patients in Europe and the United States for the indication class IV end stage chronic heart failure.

Heart Association and American Stroke Association.

1.2.2 TECHNOLOGIES AND MARKET PLAYERS

The development of an artificial heart has long been the « holy grail » of medicine and early attempts go back to the late 1930's in Russia and then a series of developments in the USA, in the 1960's. The first BTT (Bridge to Transplant) was carried out by Cooley, in Texas in 1969 when an early device (Liotta Heart) was successfully used for 64 hours of support. One of the major innovators was Willem Kolff who assembled several teams to work on artificial heart development. One of the Kolff's designs was developed by Robert Jarvik and constituted the first successful clinical implant in 1982. The patient lived for 112 days and then followed a series of 4 further « permanent » implants of the Jarvik 7 TAH, but the program was abandoned when it became clear that the therapy was accompanied by too many complications and the equipment precluded a decent quality of life.

Attention then turned to a simpler univentricular approach when it became clearer that a significant number of ESHF patients could be adequately supported by just unloading the left ventricle, using a LVAD (left ventricule assistance device). These early partial success-stories and the large unmet need, stimulated a number of commercial efforts to develop LVADs and there was a steady improvement in engineering these devices, and patient selection and management.

While modern engineering has allowed much progress in pump design and fabrication. The weakness of these technologies remained the problem of the biological interface between the device and the patient, resulting in significant complications, particularly with regard to coagulation control and infection. The CARMAT PHRT design is aimed at overcoming these complications.

Although there have been many small companies involved in the development of these devices, today the principal market players are Thoratec® and Heartware® in the field of ventricular assistance, and Syncardia in the field of artificial hearts.

The key market players are Thoratec® and Heartware® in the field of ventricular assistance, and Syncardia in the field of artificial hearts.

These devices are indicated in two main cases:

- pending transplantation (BTT: Bridge to Transplant)

The device is implanted temporarily until an organ is available or until the patient's condition improves sufficiently to tolerate the operation. Given the thromboembolic or infectious complications of the available devices, they were, until recently, used mostly for this short-term indication.

- definitive treatment (DT: Destination Therapy)

This indication was, until recently, reserved for patients who were ineligible for a transplant, or who did not wish to have a transplant. However, under the pressure of a fast increasing prevalence and the shortage of organs, numerous patients temporarily implanted actually become destination therapy patients.

The aim of Destination Therapy is to offer a system providing a real quality of life to the patient. This should comprise a reasonable autonomy, a return to a home environment, a near normal social life and even a return to work. Complications and the burden of system management should be minimal. In terms of symptoms, this would represent an improvement of at least 2 NYHA classes.

Thoratec® obtained the first approval for the use of their HeartMate II in a Destination Therapy application in 2010. The use of these devices as a permanent solution has increased considerably in the USA and in other European countries, such as Germany, so that by 2015 more than 50% of LVAD implants were for a Destination Therapy strategy.

(N.B.: The following information concerning the other devices has been taken exclusively from public sources such as websites of the companies cited, publicly accessible presentations for investors or referenced scientific publications. Readers are encouraged to conduct their own research in order to form their own opinions. CARMAT accepts no liability concerning the accuracy of this information.)

VENTRICULAR ASSISTANCE DEVICES [42]

These devices are often and incorrectly referred to by the media as artificial hearts.

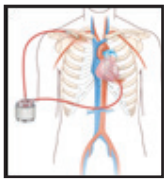
However, as their name indicates, they are implanted in parallel to the native heart, to assist it by supplementing its flow to meet the metabolic needs, but do not replace it.

Categories of Ventricle Assistance Devices (VAD)

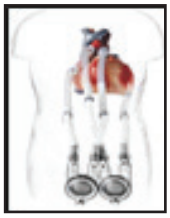
These devices can be categorized depending to their connection to the patient's vascular system (extra-corporeal, para-corporeal, or intra-corporeal) :

- The extra and para-corporeal devices are used for short to medium term applications such as Rescue Therapy 5RT), Bridge to Decision (BTD) and possibly, post-surgical bridge to recovery ;
- Modern VADs, used for BTT or DT applications are intra-corporeal and referred to as "durable" and implanted inside the body.

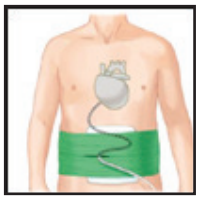
Extracorporeal :
- Pump connected by long tubes
- Short-term support



Paracorporeal
- Pump position outside body
- Medium-term support



Intra-corporeal
- Long-term / chronic support
- Intraventricular / Intra-pericardial / Abdominal Pocket



The historical leader in VAD category is the Thoratec® company with their HeartMate II® device, then their HeartMate III® device. The HeartWare® LVAD, now owned by Medtronic, is the main competitor.

42 The devices indicated awaiting recovery (Bridge to Recovery: BTR) are not mentioned here. Indeed, their indications and their technologies are very different. They can only provide limited assistance (approximately 2 liters / minute vs. 9 liters / minute for the CARMAT heart) for a very limited period (from a few hours to a few days) and are intended for patients without permanent ventricular deterioration, who need temporary hemodynamic support, for example after surgery or post-traumatic hemorrhage.

Thoratec® announced that it exceeded 18,000 implants for its HeartMate II® in 2014 (i.e. scarcely 5 years after its approval by the FDA for the destination treatment indication) and it was on this basis particularly that in the middle of 2015 this Company was acquired by Saint Jude Medical, based on a value of 3.3 billion dollars. In October 2015, the Company announced that it had obtained the CE mark for its product HeartMate III®.

More recently, in April 2016, the Abbott Group and Saint Jude Medical announced their merger, thus valuing Saint Jude Medical at approximately $ 25.0 billion. The new group created as a result of this merger is positioned as a global leader in medical devices, with applications in the cardiac field, diabetes treatment, or vision disorders.

The products of Thoratec®, entity now belonging to the Abbott Group, can theoretically assist the left (Left Ventricular Assist Device – LVAD) or right (Right Ventricular Assist Device – RVAD) ventricle or both ventricles. In the latter case, they are called biventricular assist devices (BiVAD). To date, however, there are no implantable devices *approved* for the right ventricle or biventricular application, all the devices having been designed for the left ventricle.

Right ventricular failure is a major complication of LVAD treatment of the left ventricule. Reported incidence varies from 3.9% to 53% using diverse definitions. However, BiVAD support outcomes are significantly worse than LVAD alone, (50% vs 80% survival). To our knowledge, only Medtronic, has expressed an intention to seek authorization for a right ventricular assist device (RVAD). The design of an RVAD or BiVAD is different from that of a LVAD. This is because the right ventricle operates in very different conditions than the left one. The operating pressures are much lower, the native muscle has much less resilience and unloading the left ventricle produces a change in the internal geometry of the heart. In addition, any BiVAD set-up requires the right and left flows to be carefully matched, to avoid damage to the lungs.

LVAD designs have evolved over time, from 1st generation designs with large pneumatic or electromagnetic pumping chambers incorporating mechanical valves used in open heart surgery, to 2nd and 3rd generation devices, smaller and larger sophisticated, described in the following paragraphs. They were connected to the heart via wide conduits and to an imposing control and power system, via a percutaneous cable. Improvements to external systems then allowed patients to be discharged from hospital while awaiting a transplant. However, these systems were relatively large, noisy, and associated with high levels of complications, including neurological events, infections, and device failures.

The *second-generation* pumps were developed in the 1990's using rotary pump designs, after animal studies showed that the non-pulsatile flow and pressure profiles produced by this type of pumping action, is compatible with chronic survival. This allowed the pump size to be significantly reduced and avoided the inclusion of valves. The most frequently used device of this design was the HeartMate II. Results were significantly better than with first-generation devices and the small size made for an improved patient quality of life. However, chronic loss of a pulse proved to produce complications relating to coagulation and abnormal blood vessel development and there were still issues with infection.

Third-generation designs comprise even smaller devices, such as HeartMate 3 and HeartWare, that can be more easily implanted right next to the heart, require less power, and can be controlled to produce a pseudo-pulse. Early results suggest that these designs have resulted in overall better outcomes with fewer complication rates. However, a recent INTERMACS annual report had the following conclusion: « adverse events continue to affect the field, contributing to death and an unacceptable high incidence of hospital readmissions ».

TOTAL ARTIFICIAL HEART: TAH

As in a heart transplant procedure, total artificial hearts replace both failing ventricles. Placement is called « Orthotopic » to distinguish grafts or implants which are placed elsewhere than at the position of the native heart in the thorax. The native ventricles are removed and TAH is connected to the remaining atria of the human heart, the blood of which fills the device, and to the main blood vessels carrying blood to the lungs (pulmonary artery) and the rest of the body (aorta) by two conduits.

Syncardia

The only total artificial heart currently on the market in Europe and the United States belongs to the eponymous private equity company Syncardia [43]. After facing financial difficulties («Chapter 11»), the company received in September 2016 the support of the private equity fund Versa Capital Management.

The Syncardia® device was designed in the 1970s and implanted for the first time in 1982 – under the name Jarvik 7. The patient survived for 112 days. In 1985, a patient reached the transplantation stage for the first time after surviving for 9 days with the artificial heart. In 1990, the FDA closed the Symbion, Inc. company which held the rights for Jarvik 7 and stopped the ongoing clinical study (IDE*) because of breach of its regulations. The technology was taken up again by an Arizona University Centre under the name CardioWest™. A new clinical study started again in 1992 in the United States and lasted 10 years. This led to FDA approval in 2004 for a bridge to transplantation indication and the CE marking. Meanwhile, a new privately funded company, Syncardia Systems, Inc., was created in 2001 to prepare for and then proceed to marketing [44]. Syncardia announced the 1000th implantation of its artificial heart in February 2012, which is 19 years after the first implant in December, 1982. Today, to our knowledge, the annual number of Syncardia implants is about 50.

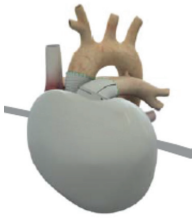
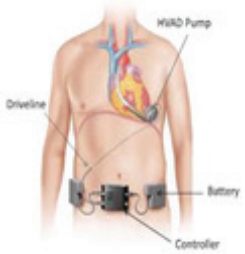
This means that the only TAH on the market has a design which is 40 years old. The two polyurethane ventricles are actuated by pneumatic pressure, provided by a large hospital driver incorporating a compressor and independent right and left controllers. The air pressure actuates the internal flexible membranes which separate each ventricle into blood and air compartments. Forward flow is achieved with the use of four mechanical heart valves : two on the inlets and two on the outlets. The system requires manual control, but some degree of automatic response is provided by running the system so that it only partly fills, at rest. Two percutaneous (exiting the abdominal wall) plastic tubes, approximately 2 meters long connect the device to the hospital driver. There is now a portable version, the Freedom™ portable driver, which weighs 6.12 kg (13.5 pounds) excluding carrying accessories such as the backpack or sling bag This allows the patient some independence and the batteries provide for 3 hours of independent operation [45].

43 www.syncardia.com – all information concerning Syncardia is taken from their website, unless specifically stated.

44 Historical information on Jarvik 7 can be found on the Jarvik Heart website www.jarvikheart.com.

45 Jaroszewski et al. The SynCardia freedom driver: A portable driver for discharge home with the total artificial heart. J Heart Lung Transplant 2011 Jul 30(7):844-845.

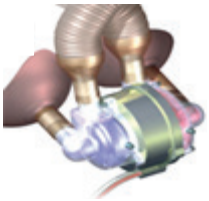
Comparative table of different devices addressing heart failure

	Total orthotopic artificial heart CARMAT	Total orthotopic artificial heart SYNCARDIA	Ventricular assistance devices THORATEC (HeartMate III®)	Ventricular assistance devices HEARTWARE
Visual of the system				
Corporate information	Listed company € 60 million last fund raising in September 2019	Company supported by the private equity fund Versa Capital Management since September 2016	Acquired by Saint Jude Medical in 2015 for $ 3.3 billion, Saint Jude Medical acquired by Abbott in 2016 for $25.0 billion	Acquired by Medtronic in 2016 for $ 1.0 billion
Market access	Non-marketed product Pivotal study ongoing	Bridge to Transplant approval: 2004 (USA) and 1999 (CE marking) Study for destination Therapy: Pending	Bridge to Transplant approval: 2017 (USA) Destination Therapy approval: 2015 (CE marking) and 2018 (USA)	Bridge to Transplant approval: November 2012 Destination Therapy approval: September 2017
Technology	Bioprosthetic artificial heart, biocompatible, autoregulated, pulsatile, hydraulic activation	Artificial heart, with pneumatic technology designed in the 70's (Jarvik 7)	Ventricular asistance device, with centrifugal rotary pump	Ventricular asistance device, with centrifugal pump
Advantages	Biocompatible materials reducing adverse events. Autoregulation matching patient physiological needs. Pulsatile.	Relatively simple technology. Pulsatile. Product already on the market.	Small devices – large patient size compatibility. Simple implantation. Better complication rates than earlier devices or current TAH.	
Disadvantages	Some patient size restrictions.	Relatively high complication rates. Limited automatic function. Noisy.	Left support only. Complication rates still relatively high. Native heart problems impact. Non-pulsatile. Minimal autoregulation.	

Other artificial hearts Projects

TAH research is a dynamic area of device innovation with, to our knowledge, 5 other devices in various stages of development, the most advanced of which is Bivacor:

CARMAT welcomes this investment by potential competitors as it underlines the belief in the potential and benefits of total artificial hearts.

Company	ReinHeart	RealHeart	SmartHeart	Bivacor	OregonHeart
Location	Aachen, Germany	Vâsteras, Sweden	Cleveland, USA	LA / Houston, USA	Seattle, USA
Stage	Design modifications	Design modifications	Bench testing, animal studies	Chronic animals	Design modifications
Visual of the prosthesis					

1.3 THE FIRST PHYSIOLOGICAL HEART REPLACEMENT THERAPY (*)

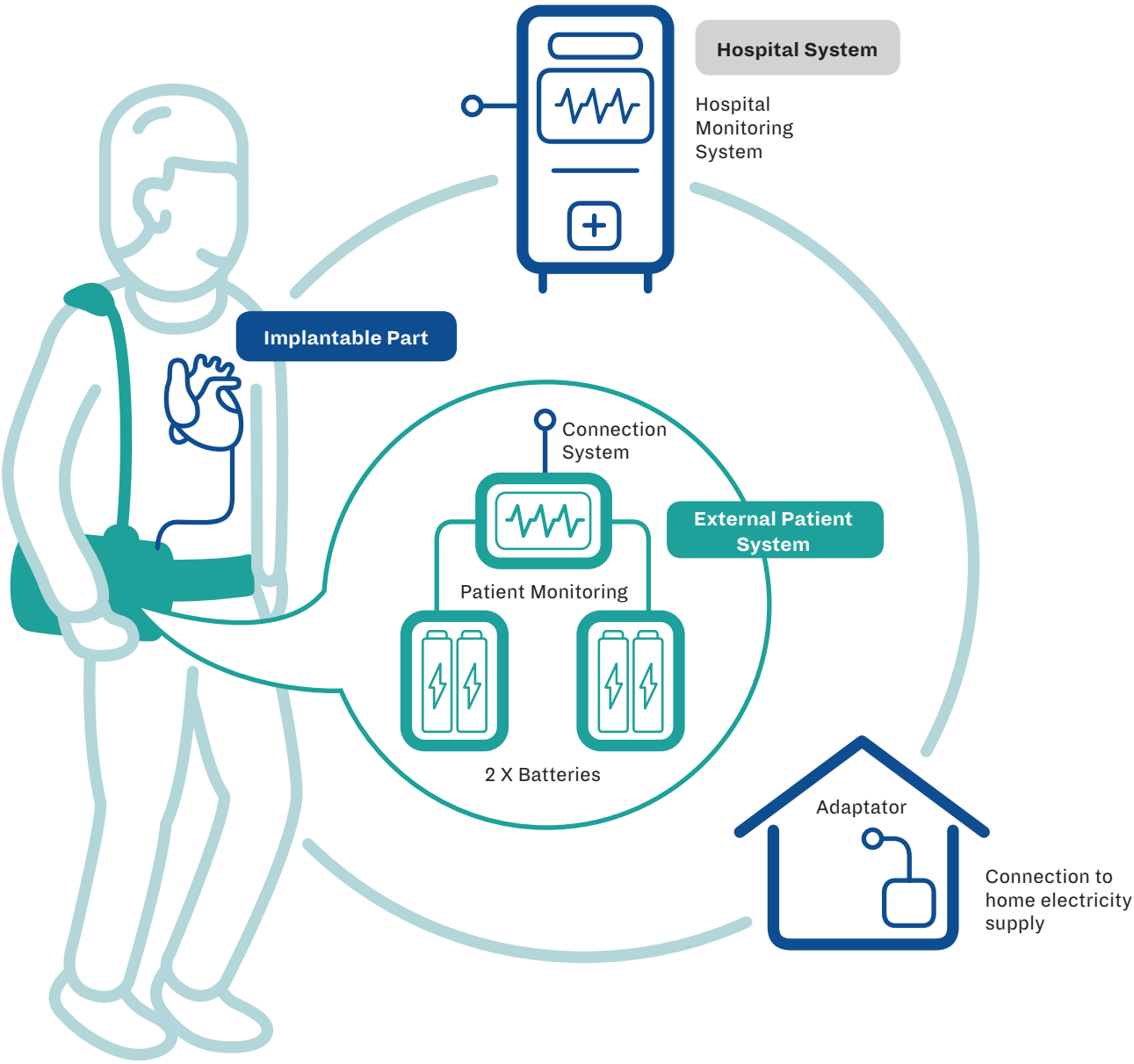
1.3.1 POSITIONING ON THE MARKET

The CARMAT artificial heart is intended to offer a permanent solution to patients with terminal heart failure who are facing a therapeutic stalemate due to the lack of human organs or illegibity to transplant.

The constraints on the adoption of mechanical heart replacement, as a major therapy, for the reasons detailed above, stimulated the design and development of the CARMAT PHRT, with special emphasis on improving the biological interface, and subsequent reduction in thrombotic and hemorrhagic complications.

A logical approach was to use the same materials already widely and successfully used, in bioprosthetic heart valves. Incorporated into this design was also a novel electrohydraulic drive system, which simulates human physiological blood flow and pressure profiles, together with a control system which provides a normal response to exercise.

* : hereafter PHRT for « Physiological Heart Replacement Therapy »



Source CARMAT – The complete CARMAT system

1.3.2 DESCRIPTION OF THE CARMAT PROSTHESIS

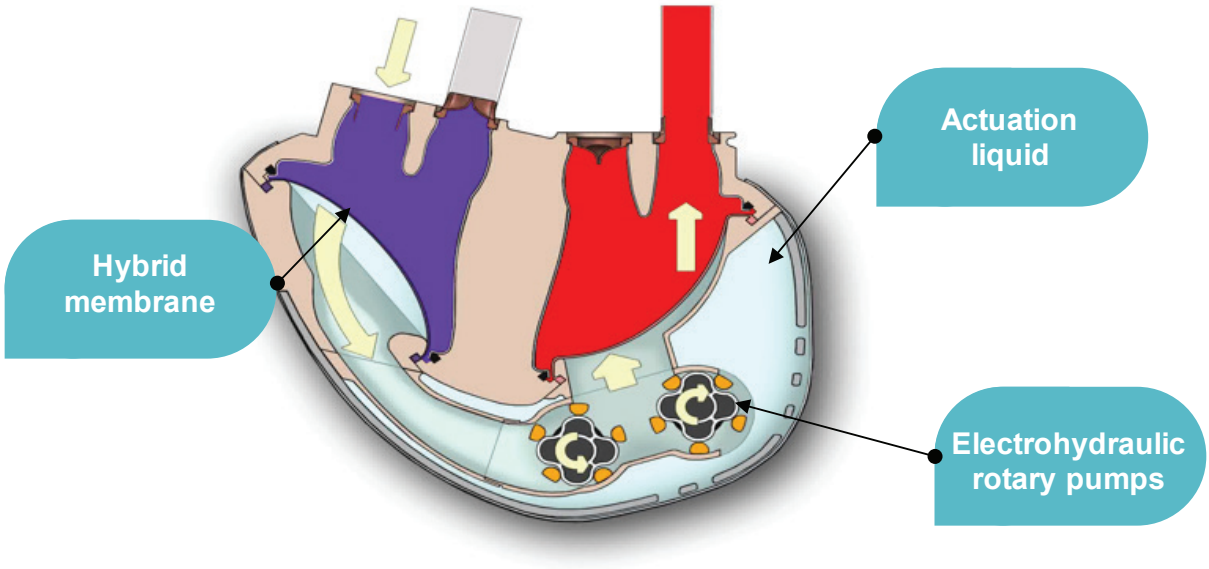
As presented on the above chart, the system consists of:

- an implantable part, the bioprosthetic artificial heart;
- an external wearable equipment allowing patient autonomy and return to home;
- a hospital system/monitor allowing system configuration and patient monitoring.

THE IMPLANTABLE PROSTHESIS

The CARMAT PHRT prosthesis is a single-unit device with bio-prosthetic blood-contacting surfaces designed for orthotopic placement, with a connection to an electrical supply (batteries or domestic network) via a percutaneous driveline.

Source CARMAT – Overview of the full prosthesis



Each ventricle consists of two compartments, separated by a hybrid membrane. The membrane consists of processed bovine pericardial tissue, on the blood-contacting surface, and a polyurethane layer at the hydraulic silicone fluid contacting surface.

Two electrohydraulic rotary pumps create systolic and diastolic phases by rapidly reversing the direction of silicon fluid-flow that alternately pushes and pulls the membranes.

Pressure sensors in each ventricle provide information on preload and afterload, while ultrasound transducers measure the position of the membranes.

At implant, and when required, the physician can adjust the beat rate (10–150 beats per minute), the left ventricular stroke volume (30–65ml) and the right to left stroke volume ratio (to correct for the bronchial (lung) circulation) and alarm thresholds. The resulting pulsatile blood flow can range from 2 to 9 l/min.

Once the patient is stable after implant, the device is switched to the Automatic mode, which automatically adjusts device performance to changing physiological needs.

The combination of membrane characteristics and hydraulic actuation provides for physiological pressure and flow profiles. Electronics and microprocessors are contained within the device.

Four Carpentier- Edwards® bioprosthetic valves (Edwards Lifesciences, Irvine, CA, USA) are located at the inlet and outlet of each blood compartment to maintain unidirectional flow.

The prosthesis is partially surrounded by a flexible polyurethane compliance bag that contains the hydraulic fluid.

Electrical Connection

The transfer of electrical energy from the monitoring console or portable batteries to the prosthesis is made via a flexible percutaneous driveline.

This small diameter (8mm) flexible percutaneous driveline delivers power to the CARMAT PHRT and retrieves information on device performance. The driveline connects to wearable system. These provide an electronic interface for displaying essential device data for the patient, and an uninterrupted power supply for the device. The clinician connects a hospital console to the controller for initial

setup and subsequent device monitoring and changes to the settings of the CARMAT PHRT.

THE WEARABLE SYSTEM

The wearable system provides for patient autonomy and mobility, and allows him/her to be discharged from hospital and return home with a good quality of life.

Once the patient is stable after implant, the wearable system is substituted to the hospital monitor. The patient then only uses the wearables, except during periods of outpatient reviews and for downloading data. Several ancillary bags and covers are available to use with the wearable equipment.

A stringent training and monitoring system are put in place to ensure that the patient and close companions fully understand the safe operating principles of the system.

The Wearable system comprising :
- A controller,
- Two battery packs,
- A carry bag.

The complete system weighs 3 kg.

The batteries provide at least 4 hrs of support at a blood flow of 6l/min.

Source CARMAT – The patient wearable system

THE HOSPITAL MONITORING SYSTEM

The hospital monitoring system is only used in implantation centers by certified medical staff. It allows the medical team to configure and pilot the prosthesis during implantation, and to perform the follow up during periodic control visits. It also allows, for example, the downloading of new functions or versions of the prosthesis' softwares.

The hospital monitoring system is used to:
- Configure the prosthesis during device implantation,
- Monitor prosthesis functions,
- Display alarms,
- Collect data from the prosthesis.

Source CARMAT – The hospital system

1.3.3 INNOVATIONS AND COMPETING ADVANTAGES

The CARMAT PHRT incorporates a number of innovative design features which, to our knowledge, are currently unmatched by any other MCS system on the market or, planned for any device under development.

HEMOCOMPATIBILITY

The most original feature is the use of bioprosthetic materials similar to those used for tissue heart valves over the past 35 years. This material is on the inner layer of the flexible membrane. The static surfaces of the ventricles are covered with polytetrafluorethylene, a material used in vascular surgery. Carpentier-Edwards bioprosthetic heart valves are used for the two inflow and outflow valves.

PULSATILE

The pumping action of the two ventricles is achieved by a viscoelastic movement, actuated by the embedded hydraulic pumps. This produces flow and pressure blood profiles which closely mimic those of the natural heart. This preserves valve durability and ensures optimal ventricular flow characteristics avoiding damage to blood cells and proteins.

AUTOREGULATION

Embedded electronics, microprocessors and ultrasonic sensors allow precise control and responses to changing patient physiological needs. In addition, they maintain an optimum balance between right and left pump flows.

In summary:

- All blood contacting surfaces are covered by proven biocompatible materials;
- Biological valves, which have been in clinical use for years, provide unidirectional flow;
- The pumping action closely mimics human heart dynamics;
- Blood damage and the activation of pathological changes are avoided;
- An automatic function responds to changes in patient activity and needs.

<u>Key Features:</u>

- Biologic:

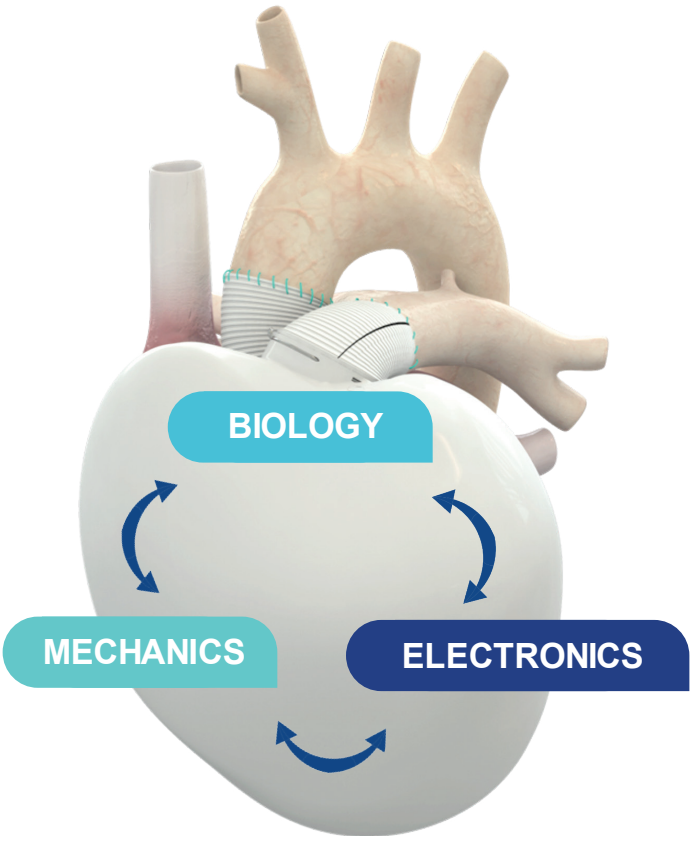
Hemocompatible : Biocompatible material for blood contact surfaces

- Electronics:

Auto-regulated : Automated response to the patient's physiological needs (activity adjustment, circadian rhythm)

- Mechanic:

Pulsatile : Hydraulic pumps mimic diastole & systole

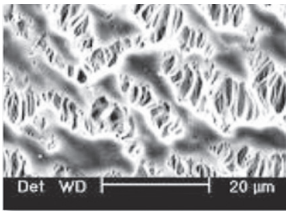


Source CARMAT

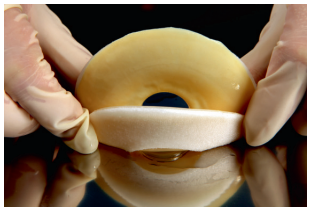
Evaluation of explanted clinical pumps has confirmed the efficacy of biocompatible surfaces (see picture below and refer to Section 1.4 – « Clinical trials »). Patients were managed with a minimal anticoagulation therapy which is likely to be reduced further in the future, to a level used for patients with vascular stents.

Biosynthetic membrane

Ventricle in micro-porous PTFE



Biosynthetic interface with the atria



Carpentier-Edwards® pericardial valve

Source CARMAT – Hemocompatible materials

OTHER COMPETITIVE ADVANTAGES

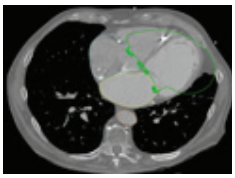
Compatibility to human thoraxes / implantability:

The shape and size of the CARMAT PHRT prosthesis have been adapted to the anatomy of the human thorax, in order to fit the largest number of patients. This involved making design adjustments which allow the ejection of a normal volume of blood with each beat, whilst taking up the minimum thoracic space.

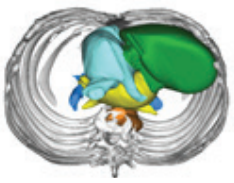
An advanced virtual 3D implantation system has thus been developed, based on a sophisticated three-dimensional simulation. This has produced a reliable non-invasive method for patient selection.

3D virtual Transplant simulator

Segmentation of CT image sections

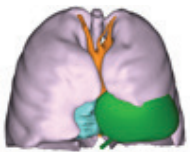


3D organ reconstruction



Insertion of the CARMAT 3D model

Assessment of compatibility

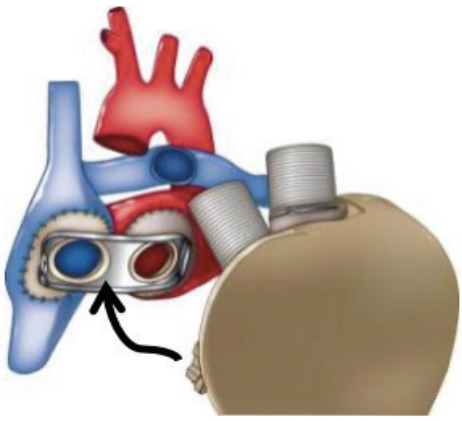


Source CARMAT – 3D virtual transplant simulator

Surgical Experience

An implantable device can only be a valid therapeutic solution if the implantation is simple and reproducible. Under the supervision of Professor Carpentier, the CARMAT teams have therefore worked in tight collaboration with several surgeons, anesthesiologists, perfusionists and nursing personnel of the surgical community, to design and develop a procedure that any experienced cardiac surgical team can perform, even in emergency situations.

Notably an original interface with the patient's atria (upper heart chambers) was especially developed, which allows the surgeon to have much more room to work, and ensure a better subsequent alignment of the prosthesis. Once this interface is sutured to the atria, the prosthesis can simply be clicked into place.



Experience gained during the pivotal study also shows that the implantation times of the CARMAT prosthesis are similar to those encountered for a human transplant.

The implantation procedure is also greatly facilitated by the fact that there is no adhesion of the tissues to the prosthesis.

1.4 GO-TO MARKET PROCESS

As an active implantable device, the CARMAT TAH (total artificial heart) needs to be approved by the Competent Authorities of the different countries where CARMAT is willing to sell it. The regulatory pathways differ from one country to the other but in all cases, for such a critical device, the manufacturer is required to demonstrate its safety and efficacy through evidences collected in laboratory testing and clinical studies.

At this stage, CARMAT's objective is to get approval to commercialize its device both in Europe and in the United-States.

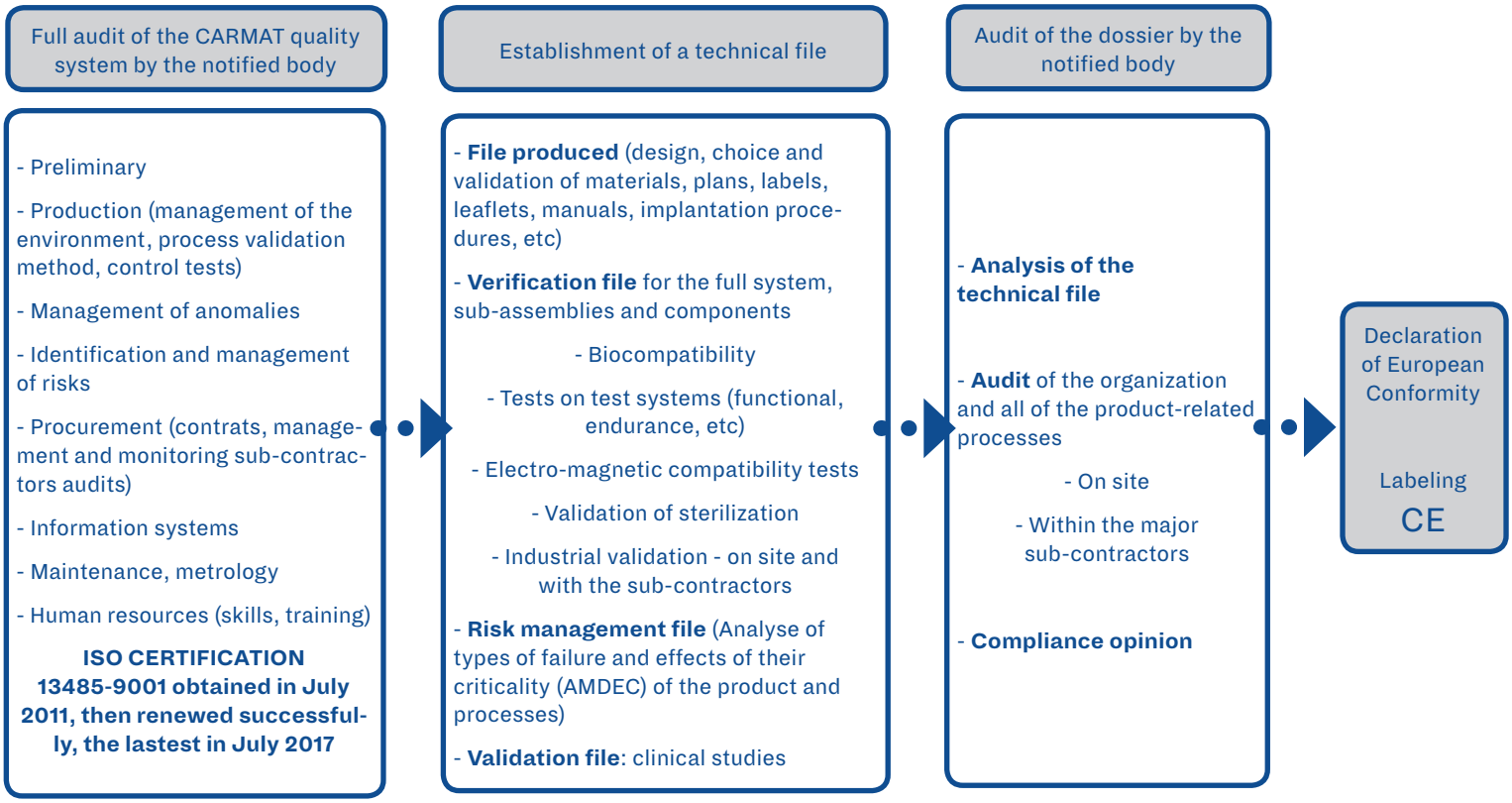
1.4.1 GO-TO MARKET PROCESS FOR EUROPE

PROCESS OVERVIEW

The active implantable medical device directive, or "MDD" (AIMDD 90/385/EEC, modified by the directive 2007/47) defines the requirements to be met in order for the device to get the CE mark.

Evidences of safety and efficacy of the device are reflected in a Technical File (TF) that is reviewed and audited by a Notified Body. CE marking is granted by the Notified Body following the successful completion of the TF's review and audit.

The full process is described in the following chart: (refer to Section 2 of this universal registration document for a description of the risks associated to this process)



Source CARMAT – CE marking procedure

The CE marking, authorizes the commercialization of the product throughout the European Union. However, certain member states have put in place additional conditions concerning, for example, the registration or notification of market introduction.

The Medical Device Directive (MDD) is going to be superseded by the Medical Device Regulation (MDR) from May 2020. This regulation strengthens the requirements to be met for a device to be granted the CE marking. If the certificate (CE Mark) is granted before May 26th, 2020, then it will remain valid until May 26th, 2024 as long as there are no significant changes in the design or intended purpose of the device during this so-called "Grace Period" ; and the Company complies with MDR requirements relating to post-market surveillance, vigilance, and registration of economic operators and devices.

CARMAT announced that it had submitted its technical dossier (including the intermediate results from the pivotal study as described on the following page) to the notified body (DEKRA) in July 2019, and continues to take, in conjunction with the notified body, all necessary steps to obtain the CE marking in 2020.

Sections 1.4.1.2 and 1.4.1.3 describe the design and summarize the results so far of the clinical studies performed by CARMAT as part of this CE mark process.

PREPARATION OF THE CLINICAL TRIALS

Before initiation of clinical trials, the potential benefit of the device has been assessed by literature research, aimed to compare the device to existing therapies for end-stage heart failure. Next, a serie of simulation tests, bench tests to assess device reliability, and animal implants have been performed – all to identify/reduce potential risks for the patient prior to clinical testing.

An overview of these steps is provided in the illustration below:

Clinical trials in Europe must be pre-approved before initiation by the Competent Authority in each participating country and the local Ethics/Patient-Protection Committees.

CLINICAL STUDIES

Feasability study

A first-in-man (FIM) study was conducted in France in 2013-2016, with a small cohort (n=4) of sick and elderly patients. During this early clinical experience, the surgical technique of device implantation was validated and the anatomic compatibility of the device confirmed. Technical upgrades to the prosthesis were implemented following device failures in the first two implanted patients. The Carmat TAH was capable of providing adequate blood flows, with a cumulative support duration of 618 days, allowing 2 patients to return home and recover an almost normal quality of life. Results of the FIM study have been published in peer-reviewed medical journals such as *The Lancet* [46],, *The Journal of the American College of Cardiology* [47] and *The Journal of Heart and Lung Transplant* [48].

Pivotal study

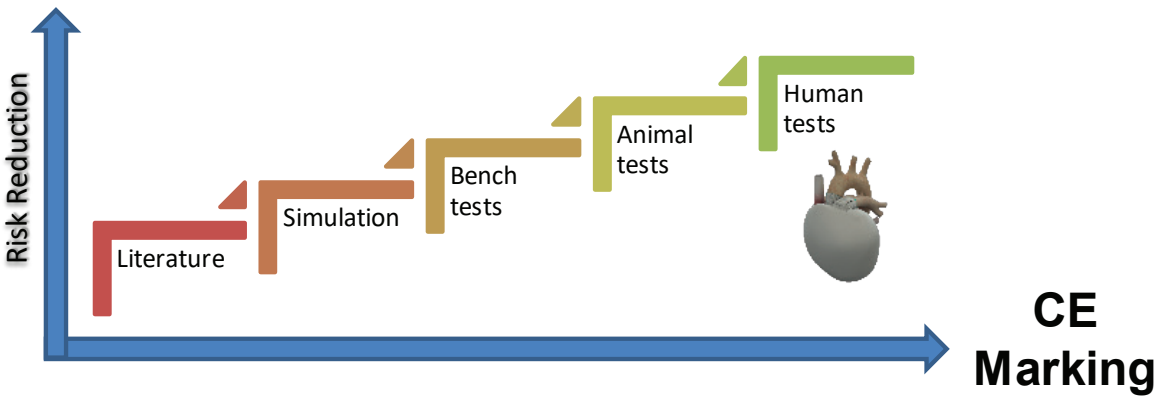
The FIM study was followed by the pivotal study involving 20 patients (two cohorts of 10 patients). The objective of this study, whih is still in progress, is to demonstrate the safety and performance of the CARMAT TAH, in patients suffering from irreversible biventricular heart failure.

The pivotal study began enrolling patients in 2016 with authorizations in France (2016), Republic of Kazakhstan

46 Carpentier A, Latrémouille C, Cholley B, et al. First clinical use of a bioprosthetic total artificial heart: report of two cases. Lancet. 2015 Oct 17;386(10003):1556-63.

47 Smadja DM, Bioprosthetic Total Artificial Heart Induces a Profile of Acquired Hemocompatibility With Membranes Recellularization. Journal of the American College of Cardiology 2017;70:404-6.

48 Latrémouille C, et al. A bioprosthetic total artificial heart for end-stage heart failure: Results from a pilot study. J Heart Lung Transplant. 2018 Jan;37(1):33-37.



Clinical Investigation is last step to demonstrate Device Safety and Performance

(2017), Czech Republic (2017) and then Denmark (2018) for an enrollment of 20 patients (ClinicalTrials.gov - Identifier: NCT02962973). The primary endpoint of the study is survival on a Carmat device at 180 days post-implant, or survival to cardiac transplantation, if occurring before 180 days post-implant. The results are analyzed in the Clinical Evaluation Report, which is an integral part of the Technical File for the CE marking dossier.

Interim results of the pivotal study

CARMAT plans to communicate on the overall progress of the CE marking and on the completion of significant milestones in the pivotal study. In accordance with good clinical practice and subject to regulatory requirements or special circumstances, CARMAT will not communicate individually on patient implantations and their health status.

Thus, CARMAT presented an update of the pivotal study in January 2019, and then most recently in November 2019. The interim analysis presented in November included 11 patients, recruited between August 2016 and August 2018. In total, the pivotal study foresees the inclusion of 20 patients with terminal biventricular heart failure.

Survival after implantation of the CARMAT TAH was 91% at 1 month, and 73% of patients achieved the primary objective of the study corresponding to 6 months of survival with the prosthesis or a successful heart transplant in the months following the implantation of the CARMAT device. Nine patients were discharged from the hospital to either a home-setting or to a rehabilitation unit, where they spent more than 70% of their time.

Of the 11 patients enrolled in the interim results, 5 transplant-eligible patients received donor hearts after 109, 155, 243, 304 and 308 days of CARMAT support without any procedure-related complications. Notably, there were no tissue adhesions around the device body, a known procedural challenge with other circulatory support devices. Moreover, explant analysis confirmed the early findings of ongoing endothelialization of all of the blood contact surfaces, thus attesting to the utility of using these particular biocompatible materials.

The experience and results of this cohort of 11 patients, in the pivotal study, have demonstrated a positive safety and performance profile, notably with the absence of haemocompatibility-related complications. This device compares favorably with the current TAH (Syncardia®) in terms of 6 months survival (73% vs 64%), neurological complications (0% vs 23%), non-surgical bleeding (0% vs 20%), driveline infection (0% vs 22%), anticoagulation (low-dose vs complicated regimen), noise (quiet vs noisy pneumatics), physiological response (near normal vs limited) and has shown to facilitate safe and quick implant/explant surgery.

Refer to the table below for a summary of the results obtained at this stage by CARMAT compared to other therapies at 6 months follow up:

The overall cumulative experience in the pivotal study now exceeds 6.5 patient years. Out of the 6 patients supported

Device	Survival rate at 6 months	Stroke	Bleeding / Reintervention	Gastrointestinal bleeding	Percutaneous cable-related infection
CARMAT prosthesis Faisability study (n=4)	50 %	0 %	75 %	0 %	0 %
CARMAT prosthesis Pivotal study (n=11)	73 %	0 %	36 %	0 %	0 %
SynCardia *	54 % - 62 %	23 %	41 %	20 %	22 %
BIVAD **	46 % - 68 %	7 %	na	7 %	7 %

* : Arabia F et al, J Heart Lung Transplant, 2018; 37; 1304-1312. Demondion P et al, Eur J Cardiothorac Surg. 2013 Nov: 44(5):843-8

** : Lavee J et al, J Heart Lung Transplant 2018; 37; 1399-1402

Source CARMAT – Intermediate results pivotal study (Cohort 1)

for longer than 6 months, 3 were transplanted as indicated above, and 1 has now been supported for nearly 24 months. Moreover, the longest freedom-from-failure now exceeds 5 years on bench tests.

The analysis of all information gathered from the experience accumulated with the first cohort of the pivotal study and data recorded on test benches, prompted CARMAT to halt patient enrolment and production in October 2018 in order to implement a number of changes to its manufacturing processes.

Subsequently, CARMAT restarted production in May 2019 and received approval to resume the Pivotal Study in Denmark (August 2019), Czech Republic (November 2019) and Kazakhstan (December 2019), with an implant in Czech Republic in November 2019, marking the 12th patient enrolled.

The clinical experience to date suggests that the benefits of improved health status and life quality, enjoyed by CARMAT TAH patients and notably those who are transplant-eligible, outweighs the risks associated with the device and that it has the potential to provide a significant contribution to the field of heart replacement therapy.

1.4.2 GO-TO MARKET PROCESS FOR THE UNITED STATES

Selling CARMAT heart in the United-States of America is subject to obtaining an approval (PMA: Pre-Market Approval) awarded by the American Health Authority (FDA: Food & Drug Administration).

In order to submit a PMA application to the FDA, CARMAT is required to supplement its existing clinical evidences with additional clinical results from a new multicenter clinical study performed on a larger population. Conducting this study in the United States requires an authorization (IDE: Investigational Device Exemption) to be obtained from the FDA following a successful review of all of the pre-clinical data (technical studies, animal studies, etc.) and clinical data obtained in other countries.

In October 2013, the FDA published a guidance document on «Early Feasibility Studies» (EFS). This approach to feasibility studies was designed to allow for acquisition of initial clinical knowledge when additional non-clinical testing methods are not available or are not sufficient to initiate a pivotal study. These studies may be initiated before the design of the device is finalized and may be justified on the basis of less evidence than for other types of clinical studies. This « EFS » approach was chosen by CARMAT. In 2014 the Company began preliminary work to support its regulatory strategy for the United States.

In August 2018, CARMAT submitted to the FDA, an application to start a feasibility study (EFS).

In September 2019, CARMAT received from the FDA a conditional approval to its application. This conditional approval allows CARMAT to initiate the patient enrollment process for its Early Feasibility Study in the United-States. The approval was granted for a study limited to 10 patients.

Upon successful completion of the EFS, CARMAT will submit another application to initiate a pivotal study in the USA, which results will support its PMA application. This strategy would allow for the integration of certain clinical data got in Europe into the PMA application, thus limiting the size of the pivotal study to be conducted in the USA.

Refer to Section 2 of this universal registration document for risks associated with getting a PMA from the FDA.

1.5 STRATEGY OF THE COMPANY

1.5.1 REGULATORY STRATEGY

CARMAT is currently seeking to obtain first the CE marking, which will allow it to market its prosthesis in Europe; and secondly, that of the PMA (pre-market-approval) which will allow the Company to market his prosthesis in the United-States.

The CE marking is issued by a « Notified Body » (in the case of CARMAT, it is the company DEKRA); while the PMA is issued by the American FDA (Food & Drug Administration).

The processes to obtain the CE marking and the PMA are specified in Section 1.4 of this document, as is CARMAT's progress in this area.

1.5.2 MARKETING STRATEGY

IN EUROPE

The Company will be able to market its product throughout Europe as soon as the CE marking is obtained, subject to the application of national systems covering the cost of the device (refer to Section 2 of this document, for risks associated with reimbursement and taking charge of the system).

To date, the Company intends to market its prosthesis through a direct sales force in the main European countries, and where appropriate distributors or agents rigorously selected in countries deemed less strategic, or when this modality seems to him more appropriate given the local context.

This choice for a direct sales force stems from two factors:

- rigorous selection of the indications and the need for technical and clinical support for each implantation. This support is provided primarily by the Company in the training and launch phase;
- a concentric approach strategy to the market involving focusing initially on the center of the target, i.e. the active heart transplantation centers (at least 20 cardiac transplants per year) followed by the less active centers, then the centres with teams dedicated to heart failure (surgery and cardiology) but who are not approved for transplantation and finally, if the local regulations permit, all cardiac surgery centers.

The sales force will therefore initially consist of very clinical profiles to ensure the training and adoption of therapy by the medical and surgical community.

This approach should allow progressive investments. Indeed, given the very limited number of human grafts, the number of truly active heart transplant centers - that is to say, which exploit their approval and perform a sufficient volume of transplants to keep teams available and trained - is very low, of the order of less than ten in each large country. For example, fewer than 10 centers in France and Germany perform more than 20 transplants per year.

The Company therefore considers that, to cover this target made up solely of centers of excellence, a direct sales force is the most appropriate response in the first phases of commercial development (3 to 5 years after commercial launch in Europe). In the longer term, when the Company has a larger clinical and medico-economic data base and has confirmed the adoption by the implantation centers, an expansion of the number of centers may be gradually implemented.

Regarding the order in which the different European countries will be approached, it will depend on the prevalence of cardiovascular diseases, the size of the centers, and the national systems for covering the cost of the device. To date, taking into account these elements, the first market targeted by CARMAT for the marketing of its prosthesis after obtaining the CE marking, should be Germany.

With regard to the pricing policy, the price targets for the CARMAT bioprosthetic artificial heart are consistent with current reimbursement practices for available devices. For example, an implantable device for left mono-ventricular assistance is today reimbursed in Europe between €60,000 and €110,000 excluding taxes (approximately €90,000 excluding taxes in France)[49]. Since the CARMAT heart treats both parts of the heart, and being made up of a system that includes an implantable part, but also external parts and associated pre- or post-operative ser-

49 Liste des Produits et Prestations remboursables – LPP (ameli. fr) : le prix unitaire réglementé (arrêté du 29/11/2012) du HeartMate II® monoventriculaire est de 87 565 euros.

vices, the pricing variables are numerous and could make it possible to adapt to the volume and reimbursement conditions specific to each center or each market, while maintaining overall price consistency at European level.

The reimbursement procedures are multiple and different for each country. The Company will therefore associate itself as necessary with local reimbursement experts in order to optimize and accelerate the management of its device. It also assembles the medico-economic data necessary to support the reimbursement and care procedures.

The Company considers that the absence of reimbursement would not be synonymous with the total absence of sales and income, in particular insofar as hospitals in certain countries have their own budgets to finance innovation, but would not allow the development of sales in line with its financial objectives.

Finally, it should be noted that Stéphane Piat, who joined CARMAT in September 2016 as Managing Director, has considerable experience in the field of the marketing of medical devices, in particular within Johnson & Johnson Cordis and Abbott.

IN THE UNITED-STATES

The development of a commercial approach to the American market is premature at this stage. However, at this stage, CARMAT intends to apply the same fundamentals as for Europe both in terms of commercial structure and development, reimbursement and prices.

1.5.3 INDUSTRIAL STRATEGY

CHOICE OF INTEGRATION MODEL

The Company designs or specifies all of the elements making up the CARMAT artificial heart, including its external elements as well as all the ancillary tools, packaging, systems and methods intended for the validation (test benches) and production of components, sub-assemblies and systems (clean room). It has also developed strong intellectual property rights concerning all of these elements. Nevertheless, considering the very high number of specialties and expertise involved in each component and sub-assembly of the system, it was impossible to develop and to produce them all internally.

The Company has therefore adopted a model of integration: it designs and specifies, but entrusts the manufacturing of most of the elements to specialized subcontractors, recognized in their domain of activity and selected following rigorous consultation - elements which it then integrates on its production site.

CARMAT integrates the components and sub-assemblies provided by manufacturers of very different sizes, methods and areas of expertise. Thus the Company has hundreds of manufacturers of elements or service providers linked to the CARMAT system.

The challenge for a company such as CARMAT involves federating these companies with different origins and methods (some are large sub-contracting groups in the space industry and others are very small specialist companies) with common strict processes as are required by the medical technologies field and regulatory authorities. This coordination relates to technical aspects, logistics and in particular, quality. Great efforts have been made by the Company to validate and qualify these suppliers, so that each one of them conforms to the very high level of quality standards required by the active implantable medical device domain.

CARMAT's mode of operation, its methods, and its integration process are therefore identical to those of a large group in the management of a project as complex as that of the bioprosthetic artificial heart.

In parallel, the Company actively continues a strategy of developing a secondary source of supplies, in particular the transformation of critical raw materials or the supply of key components. To initiate a second source involves the selection of a new supplier, help in producing the first parts, then qualifying them while ensuring that each part comes from a source that is strictly identical to those coming from another source, including the documentation which comes with them in particular to satisfy the imperatives of quality and traceability. It is important work but vital to reduce the dependency of the Company with regards to their suppliers and also so that CARMAT can have materials and components in sufficient volumes, and at the level of quality required, to meet its needs both in the development phase and in the marketing phase of its prosthesis.

INTERNALIZED PRODUCTION AND PRODUCTION CAPABILITIES

In contrast, the Company has kept and retained the production of the biosynthetic elements of the prosthesis (ventricular biomembrane, ventricular coverings and atrial connection interfaces) internal, protected by numerous patents and by industrial secrets.

2017 year was marked by the construction of a new dedicated site to manufacture up to 500 units per year, site that was opened and certified in 2018. This site, with an area of 1,600 m², located in Bois d'Arcy in the immediate

suburbs of Paris, has a 270 m² clean room complying with ISO 7 standards. The manufacture, integration and sterilization of prostheses are thus carried out in a controlled environment, by specialized and highly qualified personnel. The entire production of prostheses is now from this site.

The manufacturing, particularly on a large scale, of a device as complex as the CARMAT core remains a challenge. On the industrial level, in addition to its actions of securing supplies, the Company therefore constantly pursues the improvement of its information systems, and the adaptation of its production processes with an objective of reliability and better replicability, and in - fine quality. These improvements also aim to increase production capacities, in particular with a view to marketing the prosthesis. In 2019, CARMAT successfully carried out more than 50 changes to its production processes.

1.5.4 INNOVATION AND R&D MANAGEMENT

APPLICATION OF SKILLS

CARMAT benefits thanks to its history on the bioprosthetic artificial heart project and thanks to its teams, an exceptional and unique double know-how stemming from more than 15 years of development and collaboration between the medical world and the world of aeronautics and space, in the implementation of biomaterials and advanced technologies applied to the field of artificial bioprosthetic heart.

In addition, contributions specific to the medical world and to the world of aeronautics and space, the Company also knew how to bring together skills that had never used to collaborate together on such a complex project and acquire each of the know-how specific to these fields.

Emboldened by this unique capacity for creating synergies between skills from industry and from the medical world, CARMAT could eventually, beyond the field of bioprosthetic artificial heart, tackle in the future the development of new applications of its know-how in the cardiovascular field. Original simple devices derived from research already carried out by CARMAT and the patents that it holds, in particular with regard to hemocompatible biomaterials, could also be developed. Products derived from patents which have already been submitted - particularly in the field of digital simulation and ancillary implantation materials – may also result in commercial marketing or sale of rights. Original services could also be commercialized.

However, at this stage, the Company does not plan to devote resources to these potential applications, and remains focused on finalizing the development and improving and improving the reliability of its artificial heart with a view to its future commercialization. On the other hand, it pursues an aggressive policy of protection of its intellectual property and ensures a permanent technological watch of the technologies and methods corresponding to its fields of activity.

INTELLECTUAL PROPERTY

Patents and other intellectual property rights are of fundamental importance in the medical devices sector. CARMAT regularly files patent applications to protect its innovations.

- Patents:

CARMAT's portfolio of patents is made up of 11 patents held in the name of the Company, classified in two categories: firstly, patents associated with the architecture of the bioprosthetic artificial heart project and secondly, patents linked to the hemocompatible materials and sub-assemblies of the prosthesis.

Details of these patents are set out below:

Title	Geographical area	Submission / publication no.	Date of Submission	Status
« One-piece heart prosthesis implantable in an anatomical position »	France	FR0605333 FR2902345	June 15, 2006	Granted on September 05, 2008 Expiring on June 15, 2026
	Europe	EP07290725.6 EP1867352	June 11, 2007	Granted on July 15, 2009 Expiring on June 11, 2027
	International	PCT/FR2007/000962 WO2007/144497	June 11, 2007	Published on December 21, 2007
« Implantable one-piece heart prosthesis »	France	FR200800184 FR2926223	January 14, 2008	Granted on January 22, 2010 Expiring on January 14, 2028
	Europe	EP09290009.1 EP2078533	January 07, 2009	Granted on January 12, 2011 Expiring on January 07, 2029
	International	PCT/FR2009/000008 WO2009/112662	January 07, 2009	Published on September 17, 2009
« Composite hemocompatible material and the process through which this is obtained »	France	FR0511430 FR2892939	November 10, 2005	Granted on January 22, 2010 Expiring on November 10, 2025
	Europe	EP06291657.2 EP178515	October 25, 2006	Granted September 23, 2009 Expiring October 25, 2026
	International	PCT/FR2006/002471 WO2007/054637	November 07, 2006	Published on May 18, 2007
« Reduced radial volume rotatory volumetric pump »	France	FR0604206 FR2900988	May 12, 2006	Granted on January 01, 2010 Expiring on May 12, 2026
	Europe	EP7290571.4 EP1855005	May 07, 2007	Granted on January 28, 2009 Expiring on May 07, 2027
	International	PCT/FR2007/000778 WO2007/135261	May 07, 2007	Published on November 29, 2007

Title	Geographical area	Submission / publication no.	Date of Submission	Status
« Rapid connection device between a totally implantable cardiac prosthesis and natural atria »	France	FR0605331 FR2902343	June 15, 2006	Granted on September 05, 2008 Expiring on June 15, 2026
	Europe	EP07290723.1 EP1867350	June 11, 2007	Granted on September 24, 2008 Expiring on June 11, 2027
	International	PCT/FR2007/000959 WO2007/144495	June 11, 2007	Published December 21, 2007
« Connection device between a cardiac prosthesis and natural atria »	France	FR0605332 FR2902344	June 15, 2006	Granted on September 05, 2008 Expiring on June 15, 2026
	Europe	EP07290724.9 EP1867351	June 11, 2007	Granted on September 24, 2008 Expiring on June 11, 2027
	International	PCT/FR2007/000960 WO2007/144496	June 11, 2007	Published on December 21, 2007
« Process for producing a hemocompatible item with a complex configuration and item thereby obtained »	France	FR0703339 FR2915903	May 10, 2007	Granted on June 04, 2010 Expiring on May 10, 2027
	Europe	EP08290405.3 EP1992369	April 28, 2008	Granted on May 06, 2015 Expiring on April 28, 2028
	International	PCT/FR2008/000607 WO2008/145870	April 28, 2008	Published on December 04, 2008
« Process for obtaining a composite hemocompatible material and material obtained »	France	FR1001724 FR2959134	April 22, 2010	Granted on July 13, 2012 Expiring on April 22, 2030
	Europe	EP11161291.7 EP2380608	April 06, 2011	Granted on September 12, 2012 Expiring on April 06, 2031
	International	PCT/FR2011/050768 WO2011/131887	April 06, 2011	Published on October 27, 2011
« Process to ensure the connection of an anatomical duct »	France	FR1152364 FR2972919	March 22, 2011	Granted on July 04, 2014 Expiring on March 22, 2031
	Europe	EP12158011.2 EP2502577	March 05, 2012	Granted on November 02, 2016 Expiring on March 05, 2032
	International	PCT/FR2012/050449 WO2012/127145	March 05, 2012	Published on September 27, 2012
« Tissue endoprosthesis and the process through which this is produced »	France	FR1500457	March 10, 2015	Granted on March 24, 2017 Expiring on March 10, 2035
	Europe	EP16159051.8	March 07, 2016	Published on September 14, 2016
	International	PCT/FR2016/050525 WO2016/142617	March 07, 2016	Published on September 15, 2016
« Flexible barrier membrane and method of manufacturing the flexible barrier membrane »	France	FR1756847	July 19, 2017	Granted on July 26, 2019 Expiring on July 19, 2037
	Europe	EP18179971.9	June 26, 2018	Published on January 23, 2019
	International	PCT/FR2018/051562	June 26, 2018	Published on March 31, 2019

- Exclusive licence agreements:

Exclusive licence contract with the Pierre et Marie Curie University

In the terms of an exclusive licence contract dated 17 June 1993, modified by amendment no. 1 of June 27, 1995 and by amendment no. 2 of November 12, 1997, the Pierre et Marie Curie University gave Matra Défense the rights to use patent no. 8800381 to plan studies and further development with a view to creating prototype artificial hearts implantable into human beings.

Although initially it was Matra Défense which used the intellectual property rights thus granted, the benefit of this license was subsequently assumed by CARMAT, to which the Université Pierre et Marie Curie consented by way of an agreement duly signed by the Université Pierre et Marie Curie, Matra Défense, the Scientific Research Association of the Alain Carpentier Foundation and CARMAT. Under this agreement (i) the Université Pierre et Marie Curie expressly waived any benefit from all intellectual property rights linked to or resulting directly or indirectly from the work on the bioprosthetic artificial heart project and acknowledged that CARMAT was the sole owner of all the intellectual property rights that could have been attributed to the Université Pierre et Marie Curie; and (ii) in return, the Scientific Research Association of the Alain Carpentier Foundation granted at no cost, in its name and for its account and in the interest of Matra Défense, 400 CARMAT shares (equivalent to 10,000 CARMAT shares following the 25:1 stock split) to the benefit of the Université Pierre et Marie Curie.

Patent No. 8800381 has now expired since 2008. However, the exclusive license agreement stipulates that it will be valid for five years from the date of the first marketing of the product implementing the patent claims for the European countries as well as other countries and will be tacitly renewable for two successive five-year periods, unless one or the other party cancels one year before each deadline.

- Trade marks:

The Company has registered the « CARMAT » trademark in the following countries or geographical zones

Registration number	Statut	Date filed	Renewal date	Territories	Classes
023184827	Recorded	Sept. 23, 2002	Sept. 23, 2022	France	9, 10, 42
007374821	Recorded	Oct. 29, 2008	Oct. 29, 2028	Community (European Union)	10, 42
1022720	Recorded	June 19, 2009	June 19, 2019	International Designations: China, Japon, Switzerland, Russia	9, 10, 42
3663230	Recorded	January 07, 2009	August 04, 2019	United States (USA)	10, 42
1442665	Recorded	June 25, 2009	Sept. 27, 2026	Canada	10, 42
200911637	Recorded	June 24, 2009	June 24, 2019	South Africa	10
200911637	Recorded	June 24, 2009	June 24, 2019	South Africa	42
1838058	Recorded	July 09, 2009	July 09, 2019	India	10, 42

- Domain names:

The Company has filed the following domain names:

Domain name	Date reserved	Renewal date
aeson.eu	August 22, 2019	August 22, 2024
aeson.fr	August 22, 2019	August 22, 2024
aeson.uk	August 27, 2019	August 27, 2024
aeson-phrl.com	August 26, 2019	August 26, 2024
carmatsas.com	October 29, 2008	October 29, 2028
carmatsas.fr	October 29, 2008	October 29, 2028
carmatsas.eu	October 29, 2008	October 31, 2028
carmat.tel	February 20, 2009	March 22, 2019
carmatsa.fr	April 29, 2010	April 29, 2021
carmatsa.com	April 29, 2010	April 30, 2021
carmatsa.eu	April 29, 2010	April 29, 2021

1.5.5 PROVISIONAL PROJECT SCHEDULE

CARMAT made very significant progress in 2019, including:

- In terms of access to the European market:

- the submission of its CE marking technical file in July;

- confirmation in November of the positive interim results of its pivotal clinical study, based on the first 11 implanted patients; with in particular 73% of the patients having reached the primary objective of the study, and the confirmation of the very good profile of the device as regards safety (cf. details of the results in section 1.4.3 of this universal registration document).

- In terms of market access in the United States: the authorization (« conditional approval ») received in September from the FDA (Food & Drug Administration) to start a clinical feasibility study (EFS - early feasibility study) in the United States.

- On an industrial level: Finalization of the transfer of all production from the old Vélizy site to that of Bois d'Arcy, and the implementation of more than 50 process changes, intended to improve reliability and the quality of production, as well as to facilitate the ramp-up.

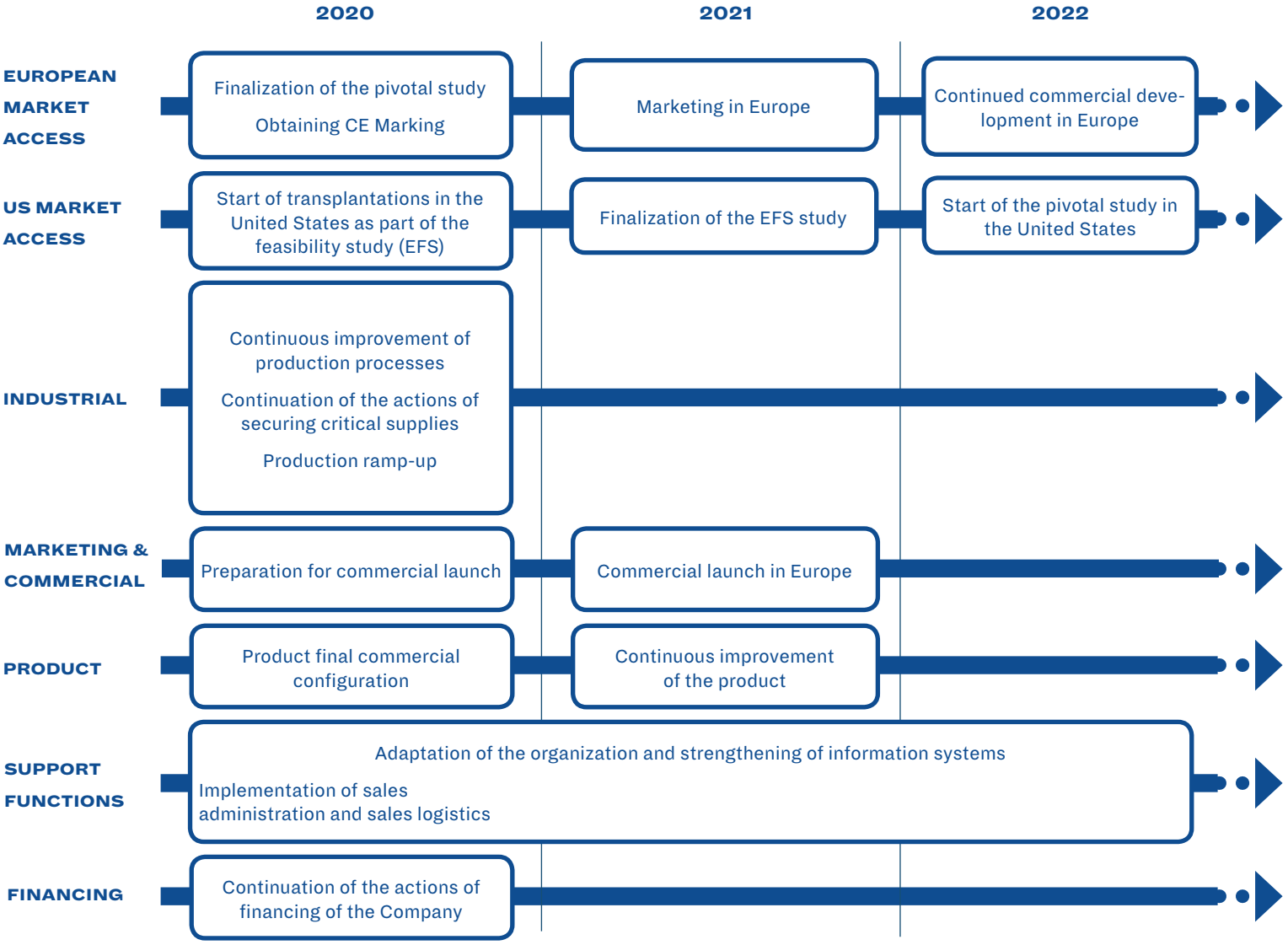
- In terms of transforming CARMAT into an industrial and commercial company: strengthening the Company's information systems, continuing to prepare for the commercial launch, and strengthening the team, particularly in the areas of production and information systems.

- In terms of financing: a fundraising of €60 million and the drawing of the first tranche (€10 million) of the loan granted in December 2018, under conditions, by the European Investment Bank .

In view of these advances, the CARMAT project calendar is updated as follows.

The reader is invited to refer to chapter 2 (« Risk factors ») of this universal registration document, for an informed assessment of this schedule, as well as to the Company's regular press releases on the progress of the project.

SCOPE OF ACTIVITY



Source CARMAT – Provisional project schedule

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2

RISKS FACTORS

Caution:

Investors are invited to take into consideration all the information contained in this Universal Registration Document, including the risk factors described in this Chapter.

When preparing this registration document, the Company carried out a review of the risks which might have a significant unfavorable impact on its activity, its financial situation, its performance, its development or its prospects, and it considers that there are no other significant risks than those presented.

However, investors' attention is drawn to the fact that other risks which are unknown or whose materialization is not considered, at the date of filing this registration document, as liable to have a significant unfavorable impact on its activity, its financial situation, its performance, its development or its prospects, might or may exist.

2.1 METHODOLOGICAL APPROACH

2.1.1 PREAMBLE

As part of the new Prospectus 3 regulations applicable from July 21, 2019, CARMAT has redesigned this Risk Factors chapter, in order to simplify the presentation of information relating to risks and to continue to improve its readability.

2.1.2 RISKS IDENTIFICATION AND CLASSIFICATION

During 2019, the Company identified and ranked its risks. The result of this analysis was presented to the Audit Committee on February 5, 2020 and is reflected in this universal registration document.

Methodology and risk assessment:

The risks were identified with the assistance of all the members of the management committee. The risks fall into 5 categories:

- Financial risks;
- Industrial risks (supply chain);
- Market access risks;
- Human, organizational and non-compliance to the regulatory environment risks;
- IT, data and transaction risks.

The level of criticality of a risk is assessed on the basis of two criteria:

- The impact, estimated on a scale [01] from 1 (not significant) to 5 (critical);
- The probability of occurrence, estimated on a scale [02] from 1 (almost zero probability) to 4 (very likely).

The combination of these two criteria makes it possible to give a score to each risk and thus to classify the risks into 4 levels of criticality [03] (criticality = impact x probability): Critical, Important, Moderate, Minor.

It is specified that the level of criticality is a «net» level, that is to say after taking into account the measures implemented by the Company, to prevent and mitigate the risk.

At a result of this analysis exercise, 12 risks were considered significant and specific by CARMAT, and are summarized in section 2.2.

CARMAT also assessed the trend for each risk. The trend can be positive, negative or neutral, depending on whether CARMAT considers that the risk level has increased, decreased, or has remained more or less the same, between fiscal year 2019 and fiscal year 2018.

01 Impact scale: 1 = not significant, 2 = minor, 3 = moderate, 4 = major and 5 = critical.

02 Probability scale: 1 = almost zero probability, 2 = possible, 3 = probable and 4 = very probable.

03 A risk is considered critical if its score is equal to or higher than 16, as important if its score is between 10 and 15, as moderate if its score is between 7 and 9, and as minor if its score is between 0 and 6.

2.2 SUMMARY OF SIGNIFICANT AND SPECIFIC RISKS

The table below summarizes the significant and specific risks of the Company. They are presented by category. Within each category, the most significant risk is mentioned first, if applicable.

For each risk are specified: its title, its probability and potential impact levels, its criticality (resulting from the two previous elements) and its trend.

Each of the risks is presented in more detail in section 2.3.

	Probability	Potential impact	Criticality				Trend *
			Critical risk	Important risk	Moderate risk	Minor risk	
Financial risks							
Financing risk	2	5		Important risk			+
Risk of economic and financial unsustainability	2	5		Important risk			=
Industrial risks (supply chain)							
Materials and components supply risk	4	3		Important risk			=
Risk related to production quality	2	5		Important risk			+
Risk related to production volumes	3	3			Moderate risk		=
Market access risks							
Risk associated with obtaining CE marking in Europe	2	5		Important risk			=
Risk associated with obtaining PMA in the United States	2	5		Important risk			+
Risk related to reimbursement on European markets	2	5		Important risk			=
Risk related to reimbursement on the American market	2	5		Important risk			=
Human, organizational and non-compliance to the regulatory environment risks							
Organizational and non-compliance to the regulatory environment risks	3	3			Moderate risk		=
Human resources risks	3	2				Minor risk	=
IT, data and transaction risks							
IT, data and transaction risks	2	4			Moderate risk		=

* the + sign indicates a positive trend, i.e. a decrease in risk.

2.3 DETAILED PRESENTATION OF SIGNIFICANT AND SPECIFIC RISKS

2.3.1 FINANCING RISK

Financial risks	Description of the risk	Potential impacts
Financing risk	Risk that the Company does not have the financial resources required to carry out its development project at the desired pace or to its point of self-financing.	Need to slow down or temporarily interrupt all or part of the activities of the Company. At the final stage, need to end the activities of the Company.

Taking into account, on the one hand, the financial resources at its disposal (see section 3.1.1 of this document), and in particular the available cash position of € 55.5 million as of December 31, 2019, the fundraising of € 60 million carried out in September 2019, the balance of € 20 million of the loan granted under conditions by the EIB in December 2018, the degree of progress of its project, and all the information at its disposal, the Company estimates that at this stage, the probability that she will not be able to find the financing needed to complete her project is relatively low, but this possibility cannot be excluded.

Indeed, the financial resources available (as described in Section 3.1.1) allow the Company to finance itself until the third quarter of 2021; excluding the Kepler Cheuvreux equity line contracted in September 2018; and the Company considers that by this deadline, the conditions, in particular in terms of the progress of the project, will be met to raise new funds, provided that unforeseen and significant events have not occurred.

The Company is constantly pursuing an active investor relations policy, and seeking new investors both in France and abroad and believes it can count on the support of certain existing shareholders for its next fundraising.

The Company has also carried out a specific review of its liquidity risk and considers that it is able to meet its maturities over a period exceeding 12 months.

2.3.2 RISK OF ECONOMIC AND FINANCIAL UNSUSTAINABILITY

Financial risks	Description of the risk	Potential impacts
Risk of economic and financial unsustainability	Risk that the Company will not succeed (or will succeed later than expected) to be profitable and / or reach its point of self-financing. This could in particular be due to lower revenues than forecasted due to lower than expected sales volumes, lower selling prices than expected, failure of the system to cover the various reimbursement systems, etc. This could also be due to costs or necessary investments higher than expected (research and development costs, cost of clinical trials, cost of production of the prosthesis, other operational costs, etc.).	Negative impact on the market valuation of the Company. Need to slow down or temporarily interrupt the activities of the Company. Need to find additional funding (fundraising, loans, etc.). At the final stage, need to end the activities of the Company.

CARMAT's ability to deliver positive cash flow and positive net income over time requires reaching a certain level of sales, controlling expenditure and investments, as well as controlling the production cost of the device. Although the Company considers its assumptions and estimates to be reasonable, it cannot be guaranteed that all of its objectives will be achieved within the expected timeframe.

The Company is still at clinical stage and has not yet obtained authorization to market its device in Europe and in the United States (see Sections 2.3.6 and 2.3.7). The device represents an expensive therapy, and there is no guarantee that it will be reimbursed at the levels expected by the Company (see Sections 2.3.8 and 2.3.9).

Furthermore, since the CARMAT heart is a unique and innovative therapy, there is no guarantee that the adoption by healthcare professionals and patients will be in line with CARMAT forecasts.

Finally, the profitability of CARMAT requires that it manages to produce its device at a competitive cost despite the complexity of the product and the level of quality required; and it is possible that CARMAT may have to face expenses and investments not anticipated to date, for example in the event that the authorities ask for additional clinical studies. This risk is further accentuated by the fact that CARMAT is only targeting the marketing of one product at this stage (namely its artificial heart) and is therefore dependent on its success.

2.3.3 MATERIALS AND COMPONENTS SUPPLY RISK

Industrial risks (supply chain)	Description of the risk	Potential impacts
Materials and components supply risk	Risk that the Company will not be able to obtain from its suppliers, in sufficient quantities / within the required time / to required quality standards, the various materials or components necessary for the production of prostheses. This can be linked in particular to the fragility of certain suppliers and / or to the limited capacity of certain suppliers, and / or to the fact that CARMAT is in single source on certain components or materials, and / or the obsolescence of sourced products. This may also be due to an insufficient quality of the CARMAT forecast.	CARMAT's inability to produce prostheses in sufficient quantities, which could lead to a delay or an interruption in its development, and / or an inability to meet the needs of the market; and therefore a negative financial impact.

As indicated in section 1.5.3 of this document, the Company depends for the manufacture of its device on a large number of suppliers and subcontractors, of extremely diverse sizes, some being more solid than others, and some having a capacity to ramp-up quicker than others. It cannot be excluded that certain components or materials must be substituted or modified to answer questions of obsolescence, or in the context of continuous improvement of the artificial heart. In addition, the validation of a new supplier or subcontractor is a long and costly operation; and the quality requirements imposed by CARMAT are high.

In order to secure its supplies, CARMAT regularly conducts a review of its supplier portfolio and an assessment of its needs in materials and components. In this context, a policy of « double-sourcing », modification of sourcing and / or capacity building at critical suppliers, is gradually implemented. However, despite the implementation of this program, the risk of temporary insufficient supply of certain components or materials remains a significant risk for CARMAT, especially when the volume of prostheses necessary to meet the needs of clinical trials and the commercial phase is growing.

2.3.4 RISK RELATED TO PRODUCTION QUALITY

Industrial risks (supply chain)	Description of the risk	Potential impacts
Risk related to production quality	Risk that the Company will not be able to routinely produce prostheses that meet the required quality standards, in particular due to manual or sub-optimal production processes and procedures, or due to the lack of competent resources, or due to an inadequate information system or organization.	CARMAT's inability to produce prostheses that meet the required quality criteria, which may cause a delay or an interruption in its development, and / or an inability to respond to market needs; and therefore a negative financial impact. Potentially, the patient's life is at stake in the event of an unexpected failure of an implanted prosthesis, with consequently a potential financial risk associated in the event of CARMAT being called into question.

CARMAT complies with the highest quality requirements and has set up a quality management system (QMS) certified ISO 13485-9001 in July 2011. The certification has been successfully renewed regularly since, and for the last time in July 2017. The Company considers, in particular on the basis of its internal audit results and on the basis of the audits carried out by the notified body DEKRA, that this system enables it in particular to quickly identify the quality defects which must be, and implement appropriate preventive and corrective actions.

However, and taking into account in particular the complexity of its artificial heart, the large number (several hundred) of materials and components used in its manufacture, the number of operations necessary for the manufacture of the heart, and the very high degree of precision required, it cannot be excluded on the one hand that the Company has to face quality challenges likely to temporarily slow down its production, and on the other hand to deal exceptionally with a product incident due to a defect quality.

2.3.5 RISK RELATED TO PRODUCTION VOLUMES

Industrial risks (supply chain)	Description of the risk	Potential impacts
Risk related to production volumes	Risk that the Company will not be able to produce a sufficient number of prostheses to meet its needs (in the pre-marketing phase or in the post-marketing phase), in particular due to manual or sub-optimal production processes and procedures, and / or the lack of production capacities and resources, and / or an inadequate information system; and also in the event of unavailability of the sole production site (due to a disaster for example).	CARMAT's inability to produce prostheses in sufficient quantities, which could lead to a delay or an interruption in its development, and / or an inability to meet the needs of the market; and therefore a negative financial impact.

In the MedTech segment in general, and more particularly for a product as complex as the artificial heart developed by CARMAT, the production of large series remains a challenge. Although the Company has an industrial tool (Bois d'Arcy production site) allowing it to produce several hundred of devices per year, the production process remains complex, and is based in part on very high precision manual operations.

The Company has already made, in particular in 2019, several dozen of modifications to its production processes, and will continue its actions of continuous improvement and automation in the coming years so as to make production operations more reliable and to facilitate ramp-up.

However, the Company considers it possible that the rate of ramp-up of its production may not be high enough to prevent demand from exceeding its production capacities, particularly in the short term.

2.3.6 RISK ASSOCIATED WITH OBTAINING CE MARKING IN EUROPE

Market access risks	Description of the risk	Potential impacts
Risk associated with obtaining CE marking in Europe	Risk that the Company will not obtain (or obtain later than expected) the CE marking, i.e. authorization to market its prosthesis in Europe. Risk that the indications obtained are less broad than those anticipated. This may in particular be due to clinical data deemed insufficient, and / or to a technical file and / or to audits deemed insufficiently satisfactory, and / or to changes in the regulatory framework.	Inability for CARMAT to market its prosthesis in Europe and in other countries recognizing the CE marking (or delayed marketing compared to forecasts), resulting in the absence of sales (or delayed or lower sales compared to forecasts) in these territories.

In order to be able to market its artificial heart in Europe, CARMAT must first obtain the « CE marking » (European declaration of conformity - CE marking), issued by a notified body. The process to obtain this CE marking is described in Section 1.5.1 of this document.

The Company considers that it has made considerable progress with this process, and in particular announced that it had submitted its technical file to the notified body DEKRA, in July 2019. Taking into account, in particular, these advances and the quality of its clinical results (see section 1.4.2), CARMAT considers reasonable to consider obtaining the CE mark for its artificial heart by the end of 2020.

However, the artificial heart being a unique device, and the decision to issue the CE marking being in the hands of the notified body, and therefore not controlled by the Company, CARMAT cannot guarantee that the CE marking will be obtained within this timeframe, or will even be ultimatly obtained.

In addition, the entry into force in May 2020 of the MDR (Medical Device Regulation), which replaces the MDD (Medical Device Directive) can potentially delay obtaining this marking.

2.3.7 RISK ASSOCIATED WITH OBTAINING PMA IN THE UNITED STATES

Market access risks	Description of the risk	Potential impacts
Risk associated with obtaining PMA in the United States	Risk that the Company will not obtain (or obtain later than expected) the PMA, i.e. authorization to market its prosthesis in the United States. This may in particular be linked to clinical data deemed insufficient, and / or to a technical file and / or audits deemed insufficiently satisfactory.	Inability for CARMAT to market its prosthesis in the United States (or delayed marketing compared to forecasts) resulting in the absence of sales (or delayed or lower sales compared to forecasts) in this territory.

In order to be able to market its artificial heart in the United States, CARMAT must first obtain a PMA (Pre-Market Approval), issued by the American health authority (FDA: Food & Drug Administration). The process to obtain the PMA is described in Section 1.5.1 of this document.

In September 2019, the Company announced that it had obtained the « conditional approval » to start an EFS (Early Feasibility Study) in the United States, which is the first step in the process of obtaining a PMA. Given, in particular, this progress, the quality of its clinical results (see section 1.4.2), and its discussions with the FDA, CARMAT considers it reasonable to consider, within a few years, obtaining PMA in the United States.

However, as the decision to issue the PMA is in the hands of the FDA, and the process for obtaining it is at any early stage, CARMAT cannot guarantee that the PMA will be obtained within this period, or even in the long term.

2.3.8 RISK RELATED TO THE REIMBURSEMENT OF THE PROSTHESIS ON EUROPEAN MARKETS

Market access risks	Description of the risk	Potential impacts
Risk related to the reimbursement of the prosthesis on European markets	Risk that despite having obtained the CE marking, CARMAT will not obtain reimbursement for its prosthesis in one or more of the targeted European markets, or even that the level of reimbursement obtained will be lower than forecasted by the Company.	Prosthesis sales levels may be much lower than forecast on the markets considered, with a potential impact on the economic viability of the Company.

The Company's ability to generate turnover with its artificial heart depends in part on the conditions of reimbursement in the countries where it intends to market its products, since many patients will not be able to finance by themself this relatively expensive therapy.

The CARMAT artificial heart will be, in terms of price, at the top of the range of all medical devices in Cardiology. The Company's ability to reach acceptable levels of reimbursement from government authorities, private health insurers and any other organization will therefore have an impact on its ability to successfully market its products. In Europe, the processes for obtaining reimbursement and support, as well as their levels are different in each country.

Given various parameters, including the quality of its clinical results (see section 1.4.2) and the reimbursement of existing devices and therapies (see section 1.5.2), CARMAT considers it reasonable to obtain reimbursement levels in line with its hypotheses, in the European countries targeted for the marketing of its prosthesis (it being recalled that Europe is the first geographic area in which CARMAT intends to market its prosthesis, and will remain so for a few years).

However, the Company cannot be sure of obtaining and maintaining optimal reimbursement in all the European countries concerned, in particular because there is constant economic, regulatory and political pressure to limit healthcare costs.

2.3.9 RISK RELATED TO THE REIMBURSEMENT OF THE PROSTHESIS ON THE AMERICAN MARKET

Market access risks	Description of the risk	Potential impacts
Risk related to the reimbursement of the prosthesis on the American market	Risk that despite having obtained the PMA from the FDA, CARMAT will not obtain reimbursement for its prosthesis in the United States, or that the level of reimbursement obtained is lower to the forecasts of the Company.	Prosthesis sales levels may be much lower than forecast on the American market, with a potential impact on the economic viability of the Company.

The Company's ability to generate turnover with its artificial heart depends in part on the conditions of reimbursement in the countries where it intends to market its products, since many patients will not be able to finance by themself this relatively expensive therapy.

The CARMAT artificial heart will be, in terms of price, at the top of the range of all medical devices in Cardiology. The Company's ability to reach acceptable levels of reimbursement from government authorities, private health insurers and any other organization will therefore have an impact on its ability to successfully market its products.

Given various parameters, including the quality of its clinical results (see section 1.4.2) and the reimbursement of existing devices and therapies, CARMAT considers it reasonable to obtain reimbursement and management levels in accordance with its hypotheses in the United States, which to date represents the largest target market for the marketing of its prosthesis.

However, the Company cannot be sure of obtaining and maintaining an optimal reimbursement in this country, in which CARMAT intends to start marketing its prosthesis in a few years.

2.3.10 ORGANIZATIONAL AND NON-COMPLIANCE TO THE REGULATORY ENVIRONMENT RISKS

Human, organizational and non-compliance to the regulatory environment risks	Description of the risk	Potential impacts
Organizational and non-compliance to the regulatory environment risks	Risk that the Company will fail to set-up or maintain an organization, processes and systems (including information systems) sufficiently adapted and robust to support its objectives and growth, and meet legal and regulatory requirements.	CARMAT's difficulty in achieving some of its objectives on time, with a possible negative financial impact. Failure to meet all legal and regulatory obligations, which may result in the delay in achieving certain objectives (for example obtaining CE marking or PMA in the United States, or even impossibility for the Company to be listed on the desired market), and / or financial penalties.

The Company plans to grow significantly, and is gradually expanding its activities, initially limited to research and development and clinical trials, to production, marketing and marketing of its artificial heart. It is also increasing its geographic presence and intends to continue to do so both in terms of clinical trials and in terms of marketing.

It must therefore constantly adapt its structure, organization, procedures and processes, as well as its systems, which is a challenge and can potentially mobilize significant resources. At the same time, the Company is subject to strong operational pressure, linked to the delivery of its objectives, and to a binding and constantly evolving legal and regulatory framework (regulatory obligations linked to obtaining CE marking and PMA in the United States, regulatory obligations related to conducting clinical trials,

quality-related rules, obligations related to its status of listed company, GPRD regulations, so-called « Transparency » law in France, etc.).

The Company strives to meet all of these imperatives by implementing the appropriate resources and systems. It implements constant legal and regulatory monitoring and calls on external consultants and specialists to assist it on those matters and implement appropriate measures. However, it cannot be excluded that CARMAT, on an ad hoc basis, will experience organizational defects and / or does not comply with all of its legal and regulatory obligations, which could have an unfavorable effect on the achievement of its operational and financial objectives.

2.3.11 HUMAN RESOURCES RISKS

Human, organizational and non-compliance to the regulatory environment risks	Description of the risk	Potential impacts
Human resources risks	Risk that the Company will fail to hire or retain the critical human resources required to achieve its objectives. This can in particular result from the departure of people deemed to be key or difficult to replace, and / or the difficulty of the Company in acquiring certain skills or levels of experience due to the characteristics of the Company (for example, 'start-up' considered potentially risky).	CARMAT's difficulty in achieving some of its objectives on time, with a possible negative financial impact.

CARMAT's success is largely based on the quality of its management and its teams, which means being able to attract and retain the appropriate talent and human resources. CARMAT believes that it takes the necessary actions (recruitment policy, salary policy, etc.) to be and remain an attractive employer. The Company also uses, as required and on a regular basis, of external resources (consultants in particular).

However, CARMAT competes in the acquisition and retention of its human resources, with a number of other companies, some with more means or potentially certain assets (career development possibilities or work environment for example) than cannot guarantee CARMAT. In addition, certain skills, particularly technical (in electronics and IT for example) are in tension on the job market.

Finally, given the size of the Company, certain skills are based on a very limited number of employees, sometimes even one.

In this context, it is possible that the Company may temporarily have issues on certain positions to attract or retain the human resources necessary to achieve its objectives.

2.3.12 IT, DATA AND TRANSACTION RISKS

IT, data and transaction risks	Description of the risk	Potential impacts
IT, data and transaction risks	Risk of vulnerability of the information system to computer attacks, risk of loss or theft of sensitive data, risk of unauthorized transactions or operations (by people internal or external to the Company).	Direct financial losses (in the case of fraud for example) or indirect (in the case of unauthorized use of sensitive research or production data). Potentially negative consequences on the reputation of the Company.

The Company is highly dependent on its information system to carry out its activities, and manages a large amount of data (data relating to its research and clinical trials, data relating to its intellectual property, financial data, etc.), some particularly sensitive, which are stored physically and / or electronically.

Access to the IT resources of the Company is given, depending on their needs, to employees, but also where appropriate, to external service providers or consultants working for the Company, some of them remotely (for example, foreign centers in which clinical trials are carried out).

The loss or theft of sensitive and / or confidential information for unauthorized purposes, the carrying out of unauthorized transactions, or even the corruption of information or systems rendering them unfit for use, temporarily or definitive, are all events likely to cause operational (for example temporary production stoppage) and financial (for example in the event of a fraudulent transaction) damage to CARMAT. The impact of such an event could also be accentuated by the media exposure of CARMAT, in particular if patient data were at stake.

The Company implements a security, access and protection policy for its systems and data, such as to limit the above risks.

However, an external computer attack or uncontrolled acts, carried out by internal or external people, cannot be totally excluded.

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FINANCIAL INFORMATIONS

3.1 NOTES ON ACTIVITY IN THE 2019 REPORTING PERIOD

3.1.1 SELECTED FINANCIAL INFORMATIONS

Income statement (simplified) (in thousands of euros)	12 months 2019	12 months 2018	12 months 2017
Net revenue	0	0	0
Other revenues	702	722	28
Operating expenses	-43,096	-43,489	-31,063
OPERATING RESULT	**-42,394**	**-42,766**	**-31,035**
Financial result	-1,787	-945	-472
EARNINGS BEFORE INTEREST AND TAX	**-44,181**	**-43,711**	**-31,507**
Extraordinary result	-104	-2	-56
Research tax credit	1,636	1,984	2,335
PROFIT OR LOSS	**-42,649**	**-41,729**	**-29,228**

Cash flow statement (simplified) (in thousands of euros)	12 months 2019	12 months 2018	12 months 2017
NET RESULT	-42,649	-41,729	-29,228
Self financing capacity	-40,028	-39,863	-27,227
Cash flow from operations	-40,245	-38,174	-24,279
Cash flow from investment operations	-636	-2,308	-3,709
Cash flow from financing operations	71,085	5,059	57,547
Change in cash and cash equivalents	30,204	-35,421	29,560
OPENING CASH AND CASH EQUIVALENTS	**25,302**	**60,723**	**31,163**
CLOSING CASH AND CASH EQUIVALENTS	**55,505**	**25,302**	**60,723**

CHANGE IN THE COMPANY'S ACTIVITY IN THE COURSE OF THE REPORTING PERIOD

CARMAT recorded no turnover during the year 2019, its artificial heart being still in clinical development.

The operating loss for the year amounted to €42.4 million, a slight improvement compared to the previous year (operating loss of €42.8 million in 2018).

During 2019, CARMAT devoted the main part of its operating resources to:

- studies and tests carried out as part of the process of obtaining CE marking on the one hand, and obtaining authorization to start a clinical study in the United States (EFS - early feasibility study) on the other hand ;

- the improvement of the reliability of its production processes and the preparation of the ramp-up in the Bois d'Arcy production site;

- the further transformation of the Company into an industrial and commercial company.

This translates into operating expenses of €43.1 million, slightly down by €0.4 million compared to the previous year, CARMAT having made a major effort to rationalize its expenses, especially in the second half of the year.

The financial result (€ -1.8 million), down by €0.8 million compared to 2018 is explained by the increase in loan interest, the Company having proceeded at the end of January 2019 to draw the first tranche (i.e. €10 million) of the €30 million loan granted under conditions by the European Investment Bank (EIB) in December 2018.

After taking into account the exceptional result (€-0.1 million) and the research tax credit of €1.6 million, the net result for the 2019 financial year translates into a loss of €42.6 million, compared to a loss of €41.7 million in 2018.

- Industrialization and production

During the first half of 2019, CARMAT finalized the transfer of all its production activities to its new industrial site in Bois d´Arcy.

Following the analysis of the information gathered from the experience accumulated during cohort 1 of the pivotal clinical study, and the data recorded on test benches, CARMAT proceeded to review its production processes, with aim to strengthen the reliability of his prosthesis. This analysis and the implementation of the changes decided following this review were accompanied by a shutdown of production from October 2018 to May 2019. Production resumed on the site in May 2019.

From now on, all the prostheses produced will come entirely from the Bois d'Arcy production site, and the Company will focus both on continuous improvement of its processes, on securing its supplies and on ramping up its production with a view to marketing its artificial heart.

- Clinical development and market access

Access to the European market:

Following the resumption of production at the Bois d'Arcy site in May 2019, and the authorizations received during the third and fourth quarters to resume recruitments as part of the pivotal study in Denmark, the Czech Republic and Kazakhstan, CARMAT announced in December 2019 that it had implanted a twelfth patient in the context of this study (10 for the first cohort of 10 patients, and 2 for the second cohort of 10 patients).

The positive results of the first cohort of the pivotal clinical study, presented in January 2019, were confirmed and reinforced with the presentation in November 2019 of the results of the study on the first 11 implanted patients.

73% of these patients achieved the primary objective of the study corresponding to 6 months of survival with the prosthesis or a successful heart transplant within 6 months of implantation of the device. The data collected from patients confirm the biocompatibility of the prosthesis and in particular its very good safety profile, never achieved by other technologies, with in particular the absence of stroke, gastrointestinal bleeding and related infection to the percutaneous cable.

In parallel, the Company confirmed having submitted in July 2019 to the notified body DEKRA, its CE marking technical file.

Obtaining the CE marking is necessary to allow the Company to market its prosthesis in Europe.

Access to the United States market:

Following the filing done in 2018, CARMAT received in September 2019, in accordance with its roadmap, the authorization (« conditional approval ») from the FDA (Food & Drug Administration in the United States) to start an early feasibility study (EFS) in the United States. The implantation of the first patient, as part of this study, is planned for 2020.

The authorization to start this clinical trial in the United States is the first step in the process which could ultimately allow CARMAT to obtain authorization to market its prosthesis in the United States.

- Transformation into an industrial and commercial company

In view of the commercial launch of its prosthesis in Europe (CE marking) and the necessary ramp-up of its production, CARMAT also continued in 2019 the adaptation of its organization and its information systems, and the preparation of the commercial launch, while expanding its teams as necessary.

Thus were recruited in 2019, a new Industrial Director, Alexandre Eléonore, who joined the CARMAT management committee in November; and a Director of IT Systems.

- Governance

Professor Alain Carpentier left his duties as Director of CARMAT at the end of the General Meeting held on March 28, 2019. He was appointed Honorary President of the Company, and as such continues to be involved in the life of the Company and to attend meetings of the Board of Directors, without however taking part in the votes.

In June 2019, Mr. Karl Hennessee, Senior Vice-President of Airbus, replaced Ms. Anne-Pascale Guédon, as permanent representative of Matra-Défense (Airbus Group) on the board of directors.

STRENGTHENED FINANCIAL STRUCTURE

As of December 31, 2019, the Company's cash stood at €55.5 million compared to €25.3 million as of December 31, 2018.

This significant strengthening of cash flow can be explained in particular by:
- a fundraising of €60 million carried out in September 2019 through a private placement;
- the draw, at the end of January 2019, of the first tranche of €10 million of the EIB loan;
- obtaining in June 2019 the last tranche of the €1.5 million BPI repayable advance;
- the use of the flexible Kepler Cheuvreux equity line for €2 million in 2019;

while the cash flow from operations and investments of the Company was negative by €41 million during the year, the Company not yet generating commercial income.

In addition, CARMAT also has at its disposal:

- two tranches of EIB loans of €10 million each, which can be drawn down when certain technical stages are reached;
- a drawdown possibility of €21.9 million until the end of September 2020, on the flexible Kepler Cheuvreux equity line contracted in September 2018.

Combined, and excluding the Kepler Cheuvreux equity line, all of these financial resources allow CARMAT to finance its activities, according to its business plan, until the third quarter of 2021.

In addition, the fundraising carried out in September 2019 enabled the entry into the capital of renowned entrepreneurial shareholders, in particular the family offices of the Gaspard family, owners of the Lyreco group (Corely Belgium SPRL and Bratya SPRL) and Mr. Pierre-Edouard Stérin, founder of Smartbox (BAD 21 SPRL), who have indicated their intention to support CARMAT in the long term. Historical shareholders have also renewed their confidence in the CARMAT project by participating in the fundraising, in particular the Airbus Group, the family offices of Mr. Pierre Bastid (Lohas) and Dr. Ligresti (Santé Holdings SRL), as well as the Therabel Group.

Given these elements, the Company is confident in its ability to carry out the clinical development of its prosthesis and the preparation of the commercial phase.

3.1.2 INVESTISMENTS MADE AND ENVISAGED

PRINCIPAL INVESTMENTS MADE IN THE LAST THREE FINANCIAL PERIODS

Over the 2019 fiscal year, the Company made €0.7 million in investments, distributed as follows:

- €701 k in tangible fixed assets,
- €36 k of intangible assets.

Investments are down compared to the previous two years, which were marked by the establishment of the Bois d´Arcy production site.

In the 2018 fiscal year, the Company had recorded €2.3 million in capital expenditure including €2.2 million in property, plant and equipment related to the installation of the Bois d´Arcy site and €0.1 million in intangible assets.

In 2017, the Company recorded €3.5 million in capital expenditure, including €2.8 million in fitting out the new production site at Bois d'Arcy.

PRINCIPAL ASSETS UNDERWAY

Tangible fixed assets in progress at the end of the 2019 fiscal year amount to €0.6 million and will be used for production once activated.

MAIN INVESTMENTS ENVISAGED

The main investments to come in the short term concern production equipment and tools to further streamline the production process and increase capacity.

3.1.3 PROGRESS MADE AND DIFFICULTIES ENCOUNTERED DURING THE REPORTING PERIOD

Following the analysis of the information gathered from the experience accumulated during the cohort 1 of the pivotal study, and the data recorded on test benches, CARMAT proceeded to review its production processes, in order to strengthen the reliability of his prosthesis.

This analysis and the implementation of the changes decided following this review were accompanied by a shutdown of production from October 2018 to May 2019. Production resumed on the site in May 2019. From now on, all the prostheses produced come entirely from the Bois d'Arcy production site.

3.1.4 ANTICIPATED DEVELOPMENTS, OUTLOOK AND SIGNIFICANT EVENTS AFTER THE END OF THE REPORTING PERIOD

CARMAT intends to continue to focus its efforts and resources on its strategic priorities:

- Finalization of the pivotal study with the short-term completion of recruitments for the second cohort of patients;

- Obtaining CE marking in 2020;

- The start of a feasibility study in the United States (EFS - early feasibility study), following the agreement received from the FDA (Food & Drug Administration) in September 2019;

- Continuous improvement of its production processes;

- The transformation of CARMAT into an industrial and commercial company, with a view to the commercial launch of the prosthesis by 2021.

SIGNIFICANT EVENTS AFTER THE END OF THE FISCAL YEAR

On February 5, 2020, CARMAT announced that it had received full approval from the FDA to launch its clinical feasibility study with its artificial heart in the United States and that the study population had been increased to 10 patients.

MAIN TRENDS SINCE THE END OF 2019 FISCAL YEAR

The Company does not have to report any significant change in its financial situation since December 31, 2019.

PROFIT FORECASTS OR ESTIMATES

The Company does not intend to make any profit forecasts or estimates.

3.1.5 STATEMENT OF RESULTS FOR THE PAST FIVE PERIODS

STATEMENT OF RESULTS FOR THE PAST FIVE PERIODS

(in euros)	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2016	Dec. 31, 2015
Capital at the end of the period					
Share capital	504,385.96	371,036.76	360,661.76	241,277.76	183,117.40
Number of existing ordinary shares	12,609,649	9,275,919	9,016,544	6,031,944	4,577,935
Maximum number of future shares to be created					
- by conversion of bonds	-	-	-	-	-
- by exercise of subscription rights	1,314,700	1,246,750	943,025	852,140	466,610
Opérations and results					
Revenue excluding VAT	0	0	0	0	0
Profit before tax, profit sharing, depreciation and amortization, and increases in provisions	-43,339,319	-42,784,848	-30,020,856	-25,378,370	-20,229,406
Corporation taxes	1,636,019	1,983,916	2,334,690	2,817,116	3,148,534
Profit sharing for the period	-	-	-	-	-
Profit after tax, profit sharing, depreciation and amortization and increases in provisions	-42,648,672	-41,729,066	-29,227,910	-22,980,178	-17,545,761
Distributed profit	-	-	-	-	-
Profit per share					
Profit after tax and profit sharing, but before depreciation and provisions	-3.31	-4.40	-3.07	-3.74	-3.73
Profit after tax, profit sharing, depreciation and amortization, and increases to provisions	-3.38	-4.50	-3.25	-3.81	-3.83
Dividend paid per share	-	-	-	-	-
Staff					
Workforce at year end	107	90	70	56	48
Wage bill for the period	8,364,741	6,819,510	5,220,243	4,371,200	4,069,741
Value of social benefits paid during the period	4,453,860	3,906,890	2,163,452	1,803,184	1,611,888

3.1.6 PROPOSED APPROPRIATION OF THE RESULT

We propose approval of the annual financial statements (balance sheet, income statement and annex) as presented.

These financial statements show a net loss of €42,648,672.

We propose appropriation of this loss to Losses carried forward, taking the balance of that item from €-187,480,075 to €-230,128,747.

3.1.7 PARTICULARS OF DIVIDENDS

In accordance with the provisions of Article 243 of the General Tax Code, it is recalled that no distribution of dividends has taken place for the last three fiscal years.

There are no plans to adopt a policy of paying dividends in the short term, taking into account the Company's stage of development.

3.1.8 PROPERTY, PLANT AND EQUIPMENT

The Company carries out its activities on the premises of which it is a tenant at the end of leases concluded at prices and market conditions with companies which have no direct or indirect link with its managers. CARMAT does not own any property.

For the current fiscal year at the date of this universal registration document, the Company considers that it has suitable premises which should enable it to cope with the planned growth and its workforce.

As a reminder, the transfer of production from the Vélizy site to the Bois d´Arcy site was finalized in 2019.

ENVIRONMENTAL ISSUES

As part of the search for non-thrombogenic materials *, CARMAT decided to follow an original path opened by the experience of biological valves of Professor Alain Carpentier, using chemically treated animal pericardium to make it inert and biologically stable, to avoid rejection by the human body.

Premises used by the Company as at December 31, 2019:

Lessee	Address	Nature of premises	Surface area	Lease start date	Lease expiry date
CARMAT SA	36, avenue de l'Europe Immeuble l'Étendard Energy III 78140 Vélizy-Villacoublay FRANCE	Business premises	1,053 m²	February 1, 2009	January 31, 2027
CARMAT SA	36, avenue de l'Europe Immeuble l'Étendard Energy III 78140 Vélizy-Villacoublay FRANCE	Business premises	595 m²	October 1, 2010	September 30, 2028
CARMAT SA	36, avenue de l'Europe Immeuble l'Étendard Energy III 78140 Vélizy-Villacoublay FRANCE	Business premises	595 m²	July 1, 2011	March 31, 2022
CARMAT SA	9, rue René Clair Batiment G Sis parc Spirit Meliers III 78390 Bois d'Arcy FRANCE	Business premises	1 558 m²	December 7, 2017	December 6, 2027

In the design and manufacture of the bioprosthetic artificial heart, the Company is therefore subject to chemical and biological risks. CARMAT therefore implements prevention and protection measures for its teams and to efficiently manage waste in accordance with the regulations in force. CARMAT considers that it complies with these regulations, taking into account the use, storage, handling and disposal of hazardous materials.

CARMAT entrusts two specialized subcontractors with waste management, including the traceability of the materials treated. In addition, a risk analysis is updated annually. Each risk situation is assessed according to quantified criteria of occurrence and severity, which gives rise to the implementation of appropriate prevention measures. Specific training is given to those exposed.

3.1.9 PARTICULARS OF PAYMENT PERIODS

PARTICULARS OF SUPPLIER PAYMENT PERIODS

In accordance with the provisions of Articles L.441-6-1 and D. 441-4 of the French Commercial Code, we bring your attention to the following details concerning supplier payment periods:

As at December 31, 2019, trade accounts payable totaled €2,376,881. A comparison of the figures from the financial statements is set out below:

(in euros)	December 31, 2019	December 31, 2018
Trade accounts payable and related payables shown under liabilities	5,345,899	7,615,547
Less: amounts receivable from suppliers shown under assets in balance sheet	0	0
Less: accrued charges included under this heading	-2,969,018	-4,334,470
Liabilities related to fixed assets and similar liabilities	0	0
Less: accrued charges included under this heading	0	0
TOTAL	**2,376,881**	**3,281,077**

The breakdown of this amount by maturity date is shown below, based on the payment terms negotiated with suppliers:

(in euros)	December 31, 2019	December 31, 2018
Due (including amounts receivable from suppliers)	316,519	404,414
Falling due on January 31	2,060,363	2,876,663
Falling due on February 28	0	0
Falling due on or after March 31	0	0

Detail of debts due at the end of the financial year:

Article D.441 I.-1 °: Invoices received not settled on the closing date of the financial year whose term has expired						
(in euros)	0 day	1 to 30 days	31 to 60 days	61 to 90 days	> 90 days	Total
(A) Late payment part						
Number of invoices concerned	50					
Total amount of invoices concerned (includ. VAT)	170,625	0	0	0	0	0
Percentage of the total amount of purchases for the year (includ. VAT)	0.50%	0	0	0	0	0
(B) Invoices excluded from (A) relating to disputed						
Number of invoices concerned	1 invoice for an amount of €145,894 includ. VAT					

PARTICULARS OF TRADE RECEIVABLES PAYMENT PERIODS

Non applicable.

3.1.10 IMPORTANT CONTRACTS

The important contracts to which the Company is a party are as follows:

- a royalties agreement signed on June 24, 2008 and amended on February 5, 2010, between CARMAT, Professor Alain Carpentier and Matra Défense (an Airbus Group subsidiary): please refer to Paragraph 5.6 « Regulated agreements »;
- an exclusive license agreement with the Pierre and Marie Curie University relating to patent no 8800381: please refer to Paragraph 1.5.4 « Innovation and management of the R&D »;
- an agreement with Edwards Lifesciences for an initial period of one year, renewable automatically each year, concluded in the 4th quarter of 2010 between CARMAT and Edwards Lifesciences, world leader in the segment of heart valves and in hemodynamic monitoring, for the use and the supply of Carpentier-Edwards biological heart valves in the CARMAT bioprosthetic artificial heart project;
- a 12-year agreement with Invibio Limited concluded in the 3rd quarter of 2012 between CARMAT and Invibio Limited for the supply and use of PEEK-OP-TIMA® polymeric material. This material is used by CARMAT for its biocompatibility characteristics, certified long-lasting implantable, and for its mechanical properties. The structural subsets of the prosthesis are machined from this material ;
- a framework aid agreement for the CARMAT Industrial Strategic Innovation (ISI) project and an agreement in support of the CARMAT project entered into on July 24, 2009 for a total sum granted by Bpifrance of €33 million ;
- a non-dilutive financing agreement concluded in December 2018 with the European Investment Bank for an amount of €30.0 million.

These last two contracts are detailed below:

FRAMEWORK AGREEMENT WITH BPIFRANCE

Initial conditions of the agreement

On July 24, 2009, the Company signed a framework agreement with Bpifrance to secure aid for the CARMAT Strategic Innovation (ISI) project. Under the terms of the agreement, Bpifrance undertook to pay a total amount of €33.0 million, of which €18.5 million as subsidies and €14.5 million as refundable advances, payable upon achievement of the key milestones set out in the agreement.

The Company acts as project leader, thus receiving all of the refundable advances and €17.4 million in subsidies, i.e. €31.9 million, the remaining €1.1 million to be paid to the four partners in the project: Dedienne Santé, PaxiTech, Vignal Artru Industries (Pack'Aero Group) and Iréis (formerly HEF R&D).

Under the Bpifrance Innovation framework agreement, each of the partners has undertaken to provide the resources necessary to complete the development project for the bioprosthetic artificial heart and its components. In return, Bpifrance will pay its subsidies and repayable advances as certain phases and milestones described below are executed.

Accounting and financial conditions

The subsidies accrue to the Company as of right and so will not be repayable in the event of success of the project.

Accordingly, they are accounted for in the « Subsidies » line of the income statement.

Repayable advances will have to be repaid by CARMAT according to the arrangement set out in the paragraphs below. Repayable advances are therefore accounted for on the liabilities side of the balance sheet under the « Other equity – Conditional advances » line.

The corresponding interest is shown on the liabilities side of the balance sheet under the « Sundry loans and financial debts » line.

By addendum to initial contract, signed in September 16, 2013, the Parties agreed to calculate the amount of the financial returns due by CARMAT based on thresholds of revenue generated by the products and services created by the project (reference products and services).

Threshold S1 (cumulative sales of reference products and services) is set at €38 million.

Threshold S2 (cumulative sales of reference products and services) is set at €2 billion.

If threshold S1 (as defined above) is reached, CARMAT will pay Bpifrance the following flat fees by June 30 of each year following the reference year:

Year 1 by June 30	€184,000
Year 2 by June 30	€368,000
Year 3 by June 30	€1,472,000
Year 4 by June 30	€2,784,000
Year 5 by June 30	€8,316,000
Year 6 by June 30	€11,300,000

The amounts will be reimbursed as indicated above, based on CARMAT's operating income from the project's products, in light of the annual income statement.

Should threshold S1 not be reached, CARMAT will not pay Bpifrance the amounts above.

From year 2 and for the remaining years, in case of a fall in sales exceeding 20% of the updated forecasts (in 2013), as defined in the amendment signed in September 2013, these amounts would be then capped.

In this scenario, CARMAT will generate new forecasts allowing it to draw up a new timetable for the reimbursements to Bpifrance.

Should sales of the reference products and services be in excess of the forecasts, the flat fees defined above will not be affected.

In any case, in the event that no reimbursement is due pursuant to this Article over a period of 10 years from payment of the last subsidy as set out in the agreement providing for a repayable advance, CARMAT will be released from any obligation to pay financial returns. Moreover, this agreement will be terminated ipso jure with no other formalities, provided that CARMAT has complied with all its obligations. CARMAT will be bound to pay specific fees as defined above, should threshold S1 be reached before this date, and until said date is reached.

If the advance payment has been reimbursed in accordance with the provisions above, CARMAT will pay Bpifrance during the year after the date said reimbursement is completed and provided sales of the reference products and services (excluding taxes) have reached at least €2 billion, 2.5% of the yearly revenue generated the previous year by sales of the Project's products and services.

The corresponding amounts will be payable on any generated sales, subject to a maximum financial return of €50 million at nominal value, if achieved before the end of 8 years.

Amounts received and still to be received at December 31,2019

The Bpifrance agreements provides for the payment of a total of €17.4 million in grants, all of which was received at the end of the 2019 financial year.

It also provides for the payment of a total sum of €14.5 million for repayable advances, all of which were received at the end of 2019 (the last €1.5 million due having been paid in June 2019).

EUROPEAN INVESTMENT BANK (EIB) FINANCING AGREEMENT

The financing agreement signed with the EIB allows CARMAT to borrow up to €30 million via three tranches of €10 million each.

Within the context of the positive interim results of the first part of the pivotal study, published by CARMAT on January 15, 2019 the Company carried out the drawdown on the first tranche of the EIB loan, i.e. €10 million, on January 31, 2019.

The drawdowns on the second and third tranches are subject to certain technical and financial milestones, including the successful execution of clinical trials and/or the raising of additional funds.

The amounts borrowed bear an average fixed interest rate of 8% for the first tranche, 8% for the second tranche and 5% for the third tranche. The reimbursement of each tranche will take place at the end of the loan period (bullet payment), i.e. five years from the date of the drawdown on this specific tranche.

The loan contract provides for certain information and operational commitments (such as limits on authorized debt, approval for external growth operations, etc.). Failure to comply with these conditions would give the EIB the right, if deemed necessary, to demand an early reimbursement of the loan.

The occurrence of certain changes in the shareholding structure or a change in management not approved beforehand by the EIB would also allow the latter, if deemed necessary following discussions with the Company, to demand an early reimbursement of the loan.

The loan is not secured. Any new Group subsidiary becoming material with respect to the financial contract would be personally liable for the Company. To date, CARMAT has no subsidiaries.

Furthermore, the Company has signed a royalty agreement with the EIB that provides for the payment to the latter of additional remuneration depending on the commercial performance of the Company. This agreement is valid for 13 years from the year during which the cumulative sales of CARMAT reach €500,000. The Company can decide to terminate the royalties contract at any time by paying a lump sum (net of any royalties already paid), which depends on the amount borrowed and the year during which the decision is taken.

Upon the occurrence of certain events (in particular should the EIB demand the early repayment of the loan or should a new shareholder reach 33% of the voting rights of CARMAT), the EIB could, if deemed necessary, demand from CARMAT an advance payment of royalties up to a certain percentage of the amount of the loan effectively used (this percentage would range from 100% of the borrowed amount if the event occurs during the first four years of the financial contract to 160% if the event occurs after the eleventh year).

3.2 FINANCIAL STATEMENTS AS AT DECEMBER 31, 2019

3.2.1 2019 ANNUAL STATEMENTS

INCOME STATEMENT

Income statement	December 31, 2019			December 31, 2018
(in euros)	France	Export	Total	Total
OPERATING INCOME				
Sales of merchandise				
Sales of finished goods				
Sales of finished services				
NET REVENUE				
Production left in stock				
Fixed asset production				
Subsidies (note 3.2.2.5)			14,000	14,000
Write-backs of amortization/depreciation and provisions, and transfers of expenditure			688,472	708,481
Other revenues				
TOTAL OPERATING INCOME (I)			702,472	722,481
OPERATING EXPENSES				
Purchases of merchandise				
Change in inventory (merchandise)				
Purchases of raw materials and other supplies			7,397,143	6,523,753
Change in inventory (raw materials and other supplies)				
Other purchases and external expenditure			20,901,665	24,148,661
Taxes, fees and similar payments			365,293	372,399
Wages and salaries			8,364,741	6,819,510
Social security costs			4,453,860	3,906,890
Amortization/depreciation and impairments				
- of fixed assets: amortization/depreciation (note 3.2.2.4)			1,163,537	919,829
- of fixed assets: impairments				
- of current assets: impairments				
Provisions (note 3.2.2.4)			382,592	716,786
Other expenses			67,452	81,059
TOTAL OPERATING EXPENSES (II)			43,096,284	43,488,886
1 - OPERATING RESULT (I - II)			-42,393,812	-42,766,405
SHARES IN RESULTS OF JOINT OPERATIONS				
Profits allocated or loss transferred (III)				
Loss or profit transferred (IV)				
FINANCIAL INCOME				
Financial income from equity interests				
Income from other securities and fixed asset receivables				
Other interest receivable and similar income				
Write-backs of impairments and provisions, transfers of expenditure				
Positive exchange differences			40,786	41,149
Net proceeds from sales of marketable securities				
TOTAL (V)			40,786	41,149

Income statement (in euros)	December 31, 2019			December 31, 2018
	France	Export	Total	Total
FINANCIAL EXPENSES				
Amortization/depreciation, impairments and provisions				
Interest expenses and similar charges			1,782,149	937,512
Negative exchange differences			45,572	48,425
Net expenses from sales of marketable securities				
TOTAL (VI)			1,827,721	985,937
2 - FINANCIAL RESULT (V-VI)			-1,786,935	-944,788
3 - EARNINGS BEFORE INTEREST AND TAX (I-II+III-IV+V-VI)			-44,180,747	-43,711,193
EXTRAORDINARY INCOME (NOTE 3.2.2.5)				
Extraordinary income from management operations				
Extraordinary income from capital operations			46,794	60,198
Write-backs of impairments and provisions, transfers of expenditure				
TOTAL (VII)			46,794	60,198
EXTRAORDINARY EXPENSES (NOTE 3.2.2.5)				
Extraordinary expenses from management operations			2,513	3,424
Extraordinary expenses from capital operations			60,767	58,564
Amortization/depreciation, impairments and provisions			87,458	
TOTAL (VIII)			150,738	61,987
4 - EXTRAORDINARY RESULT (VII-VIII)			-103,944	-1,789
Employee profit-sharing (IX)				
Income taxes (X) (note 3.2.2.5)			-1,636,019	-1,983,916
TOTAL INCOME (I+III+V+VII)			790,052	823,829
TOTAL EXPENSES (II+IV+VI+VIII+IX+X)			43,438,724	42,552,895
5 - LOSS (total income – total expenses)			-42,648,672	-41,729,066

BALANCE SHEET

Assets (in euros)	December 31, 2019 Gross	Amortization and depreciation	Net	December 31, 2018 Net
UNCALLED SHARE CAPITAL (TOTAL I)				
Fixed assets				
Intangible fixed assets (note 3.2.2.4)				
- Start-up costs				
- Development costs				
- Licenses, patents and similar rights	2,014,253	1,986,534	27,718	89,777
- Goodwill *				
- Assets under construction				
- Advances and payments on account				
Property, plant and equipment (note 3.2.2.4)				
- Land				
- Buildings				
- Technical plant, equipment and tooling	9,670,507	6,590,283	3,080,224	2,327,214
- Other property, plant and equipment	2,810,222	1,394,484	1,415,737	1,629,202
- Assets under construction	614,209		614,209	1,606,508
- Advances and payments on account				
Financial assets ** (note 3.2.2.4)				
- Holdings accounted for on an equity basis				
- Other holdings				
- Other equity investments				
- Loans				
- Other financial assets	473,503		473,503	485,877
TOTAL II	15,582,693	9,971,301	5,611,392	6,138,578
Current assets				
Stocks and work in progress				
- Raw materials, supplies				
- Work in progress – goods				
- Work in progress – services				
- Semi-finished and finished products				
- Merchandise				
Advances and prepayments on orders	494,132		494,132	375,721
Debtors ***				
- Trade accounts receivable				
- Other accounts receivable (note 3.2.2.4)	2,943,016		2,943,016	4,579,872
- Subscribed capital – called, not paid up				
Marketable securities				
Cash instruments				
Cash	55,505,492		55,505,492	25,301,658
Deferred charges *** (note 3.2.2.4)	121,610		121,610	433,318
TOTAL III	59,064,250		59,064,250	30,690,569
ADJUSTMENT ACCOUNTS				
Bond issuance costs to be amortized (IV)				
Bond redemption premiums (V)				
Unrealized foreign exchange losses (VI)				
GRAND TOTAL (I+II+III+IV+V+VI)	74,646,944	9,971,301	64,675,643	36,829,147
* including lease rights.				
** of which less than one year.			127,386	141,359
*** of which more than one year.				

Liabilities (in euros)	December 31, 2019	December 31, 2018
EQUITY (notes 3.2.2.3 and 3.2.2.4)		
Capital (of which, paid in: 504,386)	504,386	371,037
Issue, merger and acquisition premiums	254,053,133	194,560,697
Excess of restated assets		
Reserves		
- Legal reserve		
- Statutory or contractual reserves		
- Regulatory reserves		
- Other reserves	38,476	29,840
Losses brought forward	-187,480,075	-145,751,009
Result for the period (profit or loss)	-42,648,672	-41,729,066
Capital grants		
Regulatory provisions		
TOTAL 1	24,467,248	7,481,498
OTHER EQUITY		
Proceeds of issues of participating stock		
Conditional advances (note 3.2.2.6)	14,507,309	13,056,577
TOTAL II	14,507,309	13,056,577
PROVISIONS		
Provisions for risks		
Provisions for charges (notes 3.2.2.4 and 3.2.2.5)	685,560	991,440
TOTAL III	685,560	991,440
DEBTS *		
Financial debts		
- Convertible bonds		
- Other bonds		
- Loans from credit institutions	10,733,333	
- Bank overdrafts		
- Sundry loans and financial debts (note 3.2.2.4)	5,681,519	4,651,634
Advances and payments on account received for current orders		
Accounts payable (note 3.2.2.4)		
- Trade accounts payable and related payables	5,345,899	7,615,547
- Tax and social liabilities	3,254,774	2,985,907
Liabilities secured to property and related liabilities		
Other debts		46,544
ADJUSTMENT ACCOUNTS		
Deferred income *		
TOTAL IV	25,015,525	15,299,631
Unrealized foreign exchange gains		
TOTAL V	-	-
GRAND TOTAL (I+II+III+IV+V)	64,675,643	36,829,147
* debts and deferred income of less than one year.	8,600,673	10,647,998

CASH FLOW STATEMENT

Cash flow statement (in euros)	December 31, 2019	December 31, 2018
Net result	-42,648,672	-41,729,066
Amortization/depreciation and provisions	1,546,129	1,636,615
Write-backs of amortization/depreciation and provisions	-688,472	-708,481
Gains or losses on asset sales		
Investment subsidies transferred to income		
Other income and expenses with no impact on cash flow	1,763,219	937,484
SELF-FINANCING CAPACITY	-40,027,796	-39,863,448
Tax and social liabilities	268,867	866,933
Trade accounts payable	-2,269,648	1,790,159
Other debts	-46,544	46,544
Deferred income		
Stocks and work in progress		
Advances and prepayments on orders	-118,411	-194,015
Other accounts receivable	1,636,856	-754,231
Trade receivables		
Deferred charges	311,708	-65,826
CHANGES IN CASH POSITION (CHANGE IN WORKING CAPITAL)	-217,172	1,689,564
CASH FLOW FROM OPERATIONS	-40,244,968	-38,173,884
Acquisition of property, plant and equipment	-613,158	-2,176,599
Acquisition of intangible fixed assets	-35,568	-116,780
Acquisition of financial fixed assets	12,374	-13,335
Proceeds from financial fixed asset disposals		
CASH FLOW FROM INVESTMENT OPERATIONS	-636,352	-2,306,714
Increase in capital	133,349	10,375
ORA/BSA		
Issue premium and reserves	59,501,072	5,048,893
Capitalization of current accounts		
Loans and conditional advances	11,450,732	
CASH FLOW FROM FINANCING OPERATIONS	71,085,154	5,059,268
CHANGE IN CASH AND CASH EQUIVALENTS	30,203,834	-35,421,330
OPENING CASH AND CASH EQUIVALENTS	25,301,658	60,722,988
CLOSING CASH AND CASH EQUIVALENTS	55,505,492	25,301,658

3.2.2 ANNEX TO THE FINANCIAL STATEMENTS

Annex to the balance sheet for the year ended December 31, 2019, totaling €64,675,643, and to the income statement for the year ended December 31, 2019, presented in list form and showing zero revenue resulting in a loss of €42,648,672.

The financial year commenced on January 1, 2019 and ended on December 31, 2019, a duration of 12 months which is identical to that of the comparative period.

The notes and tables presented in the following are an integral part of the financial statements for the period ended on December 31, 2019 as approved by the board of directors on February 10, 2020. They are presented in euros unless otherwise stated.

3.2.2.1 FEATURES OF THE FISCAL YEAR

The Company's activity is devoted to the development of an artificial heart that responds to the challenges of terminal heart failure. The product is currently in the pivotal study phase.

During the year, the Company raised funds decided by the Board of Directors on September 18, 2019 on delegation of authority from the combined general meeting of March 28, 2019. This transaction resulted in a capital increase of €126,316, with a gross issue premium of €59,873,689, for a total amount of issue proceeds of €60,000,005.

This capital increase led to the creation of 3,157,895 new ordinary shares, with a nominal value of €0.04. Taking into account the costs related to the capital increase, in the amount of €3,044,708, which are deducted from the share premium in application of the preferential accounting method, the net amount of the share premium of this capital increase is €56,828,981 (or €56,955,297 including the capital increase).

As part of the equity line contract concluded with Kepler Cheuvreux in September 2018, fourteen subscriptions were made between January and December for a total of 105,000 BSA, allowing the capital to be increased by €4,200, by issue of 105,000 ordinary shares with a par value of €0.04, issued at an average unit price of €21.46, with an issue premium of a gross amount of €2,269,980. Taking into account the costs related to the capital increase, amounting to €43,035, which are deducted from the share premium in accordance with the preferential accounting method, the net amount of the share premium for this capital increase is €2,226,945 (or €2,231,145 including the capital increase).

Fifteen BCE exercises were carried out between January and December for a total of 1,245 BCE 2009-2, making it possible to increase the capital by an amount of €1,245, by issuing 31,125 ordinary shares with a par value of €0.04, issued at a unit price of €8.00, or with an issue premium of €7.96 per share.

A exercise of 904 BSA was carried out on June 10, 2019, making it possible to increase the capital by an amount of €904, by issuing 22,600 ordinary shares with a nominal value of €0.04, issued at a unit price of €8.00, or with an issue premium of €7.96 per share.

Three capital increases totaling €684.40 were noted between January and December, as a result of the final allocation of 17,110 AGAP which had provisionally been allocated in 2018.

All of the capital increases carried out during the fiscal year made it possible to increase the share capital by an amount of €133,349, by creating 3,333,730 new ordinary shares. The share capital of the company was thus increased from €371,037 to €504,386. The total amount of issue premiums was increased from €194,560,697 to €254,053,133.

The Company proceeded at the end of January 2019 to draw the first tranche of €10 million from the loan granted under conditions by the EIB (European Investment Bank) in December 2018. This loan for a total amount of €30 million consists of three tranches of €10 million, two of which therefore remain to be drawn provided that the technical and financial conditions provided for are met.

The Company received, on June 28, 2019, a total amount of €1,450,732.07 from BPI France, as a repayable advance, recognized on the « Conditional advances » line of liabilities on the balance sheet.

The Company maintains the option for the Research Tax Credit for the year 2019. The first option was exercised for the calendar year 2009 and renewed each year until 2019. The Research Tax Credit relating to the year 2019 has been recorded for €1,636,019 on the « Income tax » line in the

income statement (details in note 3.2.2.5 of this appendix) and appears on the « other receivables » line of the balance sheet.

The status of the project and the significant activities of the Company are detailed in section 3.1 « Notes on activity in the 2019 reporting period » of this document.

3.2.2.2 SIGNIFICANT EVENTS AFTER THE END OF THE REPORTING PERIOD

No event occurring after the end of the financial year is liable to alter the presentation or the valuation of the accounts as decided by the Board of Directors.

3.2.2.3 ACCOUNTING RULES AND METHODS

The valuation methods for this period have not been changed from those used in the previous financial year.

General principles and conventions

The accounts for the period have been prepared and presented in accordance with the accounting regulations and the principles laid down in Articles 120-1 et seq. of the General Chart of Accounts.

The basic valuation method for the items shown in the accounts is that of historical cost.

The accounting conventions have been applied in accordance with the provisions of the French Commercial Code, the Accounting Decree of November 29, 1983 and the CRC regulations concerning the redrafting of the General Accounting Plan applicable as at the end of the period.

The general accounting conventions have been applied in accordance with the prudent person rule, on the basis of the following assumptions:
- the business is a going concern;
- the accounting methods are consistent from one year to the next;
- there is a clear cut-off between accounting periods.

The board of directors has assumed that the business is a going concern, having taken the following points in particular into account:

- the level of cash and cash equivalents available as of December 31, 2019, for a total amount of €55.5 million;

- the possibility of using the flexible equity financing set up in September 2018 with Kepler Cheuvreux, whose balance at December 31, 2019 is equal to €21.9 million;

- the obtaining non-dilutive financing from the European Investment Bank (EIB) granted under conditions on December 17, 2018, and of which the amount remaining to be drawn on December 31, 2019 amounts to €20.0 million.

The Company's clinical, industrial and commercial development, even beyond obtaining the CE marking, will generate additional financial needs: financing of current operations, continuation of R&D efforts, commercial launch, clinical studies to United States, the working capital requirement linked to the development of sales and investments (especially in production). The Company believes, to date, that these additional needs could exceed €100 million. Fundraising will therefore be necessary beyond the use of the available balance of the Kepler equity financing lines and the EIB loan.

Supplementary information

- Applied research and development costs

Research and development costs are accounted for as expenses in the year in which they are incurred.

- Intangible fixed assets

Patents, licenses and other intangible fixed assets have been valued at their cost of acquisition, excluding the expenses incurred in acquiring them.

The methods and periods of amortization used are as follows:

Category	Mode	Term
Licenses and software	Straight line	1 to 3 years
Patents	Straight line	15 years

- Property, plant and equipment

The gross value of property, plant and equipment corresponds to their initial book value, inclusive of any expenditure required to render the items usable but excluding costs incurred in their acquisition.

The methods and periods of depreciation used are as follows:

Category	Mode	Term
Fixtures and fittings	Straight line	9 to 10 years
Technical plant	Straight line	3 to 10 years
Equipment and tooling	Straight line	2 to 6 years
Furniture	Straight line	8 years
IT equipment	Straight line	3 years

- Financial assets

OTHER SECURITIES CLASSIFIED AS FIXED ASSETS

In 2010, the Company entered into a liquidity contract, the purpose of which is to improve the liquidity of transactions and regularize the CARMAT share price, without impeding the normal operation of the market and without misleading

third parties. To this end the Company made an amount of €300,000 available.

On May 19, 2016, the Company transferred the liquidity contract to Gilbert Dupont for a period of 12 months, renewable by tacit agreement.

Treasury shares acquired through the implementation of this liquidity agreement are recorded under financial assets at their purchase price. If necessary, a depreciation is made for impairments based on the average official stock market price for the final month prior to the end of the reporting period.

OTHER FINANCIAL ASSETS

These comprise:
- guarantee deposits paid, which are shown at face value; and
- the unused balance of sums made available under the liquidity agreement for the acquisition of own shares.

- Receivables and liabilities

Receivables and payables are shown at face value. If necessary, impairments are recorded against receivables to take account of difficulties with recovery that are likely to occur. Any provisions for impairments are determined by comparison between the acquisition value and the likely realization value.

Receivables and payables in foreign currencies are converted into euros on the basis of the exchange rate at the date of the invoice.

- Stocks

The equipment in stock is not valued at the end of the financial year as these are intended to be integrated into the prostheses used for the pivotal study, their net realizable value is therefore nil.

- Cash in euros

Cash on hand or at bank is recorded at face value.

- Cash in foreign currencies

Cash in foreign currencies is converted to euros at the exchange rate ruling on the balance sheet date. Gains and losses on conversion are recognized immediately in the profit or loss for the period as exchange gains and losses.

- Cash instruments

These comprise time deposit accounts, shown under assets at their acquisition cost, plus accrued interest at the closing date of the reporting period.

- Cash and cash equivalents

For the purposes of the cash flow statement, cash and cash equivalents are defined as being the sum of the « Cash instruments » and « Cash on hand » items under the assets, less the current bank overdraft liability item, to the extent that cash instruments are available in the very short term and do not present a risk of a loss in value in the event of a change in interest rate. An analysis of cash according to this definition is provided at the foot of the cash flow statement.

- Repayable advances made by public bodies

Advances received from public bodies to finance the research activities of the Company and which are subject to repayment are shown under liabilities under « Other equity – Conditional advances ». The corresponding interest is shown in balance sheet liabilities under Sundry loans and financial debts.

- Operating subsidies

Subsidies are recorded as soon as the corresponding receivable becomes certain, taking account of the conditions set at the time the subsidy was granted. Subsidies are recorded under income taking account, if necessary, of the corresponding rate of expenditure in order to adhere to the principle of matching of expenses with revenue.

- Retirement indemnities

Future payments for benefits to members of staff are valued according to an actuarial method based on assumptions concerning changes in salaries, retirement age and mortality; the resulting valuations are then discounted to their present value. These commitments are the subject of provisions in the balance sheet liabilities.

- Sub-contracting expenses

The progress of third-party sub-contract agreements for certain research services is assessed at the end of each reporting period in order to allow the cost of services already rendered to be recorded under accrued charges.

- Share issue costs

In application of the reference method (ANC 2018-01), share issue costs are recorded in the balance sheet as deductions from the issue premium.

3.2.2.4 SUPPLEMENTARY INFORMATION ON THE BALANCE SHEET

- Schedule of fixed assets

(in euros)	Gross value at start of period	Additions	
		Line to line transfers	Acquisitions
Licenses, patents and similar rights *	1,978,684	35,568	
Assets under construction			
TOTAL	1,978,684	35,568	
Technical plant, equipment and industrial tooling **	8,068,236	1,199,230	490,499
General plant, sundry fixtures and fittings	2,430,861		
Office and IT equipment, furniture	376,175	3,185	
Assets under construction	1,606,508		245,684
TOTAL	12,481,781	1,202,415	736,183
Other financial fixed assets ***	485,876		2,515,417
TOTAL	485,876		2,515,417
GRAND TOTAL	14,946,342	1,237,983	3,251,600

(in euros)	Reductions		Gross value at end of period	Revaluation of original value at end of period
	Line to line transfers	Disposals		
Licenses, patents and similar rights *			2,014,252	
Assets under construction				
TOTAL			2,014,252	
Technical plant, equipment and industrial tooling **		87,458	9,670,508	
General plant, sundry fixtures and fittings			2,430,861	
Office and IT equipment, furniture			379,360	
Assets under construction	1,237,983		614,209	
TOTAL	1,237,983	87,458	13,094,938	
Other financial fixed assets ***		2,527,791	473,503	
TOTAL		2,527,791	473,503	
GRAND TOTAL	1,237,983	2,615,248	15,582,693	

* This item includes a sum of €411,284, accounted for as the share of the contribution in kind made on September 30, 2008, with a total value of €960,000, relating to the contribution of patents.

** This item includes the commissioning of the clean room at a total cost of €943,582. The item also includes a sum of €548,716 representing the proportion of the contribution in kind of €960,000 made on September 30, 2008 that related to the contribution of equipment and tooling.

*** This item includes the 4,170 own shares held in connection with the liquidity contract, valued at €74,201, and (i) the liquidities not invested in own shares as at the end of the period under the liquidity contract of €53,185 and (ii) guarantee deposits of €346,117, mainly comprising deposits under premises lease contracts.

- Schedule of depreciation and amortization

Statements and movements for the period (in euros)	Value at start of period	Allowances for the period	Reductions Write-backs	Value at end of period
Licenses, patents and similar rights	1,888,907	97,627		1,986,534
TOTAL	1,888,907	97,627		1,986,534
Technical plant, equipment and industrial tooling	5,741,430	849,261		6,590,691
General plant, sundry fixtures and fittings	855,287	200,839		1,056,126
Office and IT equipment, furniture	322,140	15,811		337,950
TOTAL	6,918,857	1,065,910		7,984,767
GRAND TOTAL	8,807,764	1,163,537		9,971,301

- Schedule of provisions

Provisions (in euros)	Value at start of period	Increases Allowances	Reductions Amounts used	Reductions Amounts not used	Value at end of period
Sundry risks					
Pensions and similar commitments *	302,968	110,938			413,906
Social charges on free preferential shares **	688,472	271,654	688,472		271,654
TOTAL	991,440	382,592	688,472		685,560
Impairment of other equity investments					
TOTAL	0	0	0		0
GRAND TOTAL	991,440	382,592	688,472		685,560
Including operational allowances and write-backs		382,592	688,472		
Including financial allowances and write-backs					

* See note 3.2.2.6

** See note at the end of section 3.2.2.4

- Schedule of maturities of receivables and liabilities

Schedule of receivables (in euros)	Gross amount	Up to 1 year	More than 1 year
Staff and related accounts	5,132	5,132	
Social security and other social bodies	32,380	32,380	
Income taxes *	1,715,376	1,715,376	
Value added tax	1,110,898	1,110,898	
Sundry debtors	78,730	78,730	
TOTAL	2,943,016	2,943,016	

* The receivable corresponds to:

- the CIR for the year 2019 for an amount of €1,636,019;
- the balance on the CIR for the year 2018 for an amount of 79,357 euros (collective deduction of 4% collected by Predirec as part of the CIR 2018 mobilization)

Schedule of liabilities (in euros)	Gross amount	Up to 1 year	1 to 5 years	More than 5 years
Loans from credit institutions *	10,733,333		10,733,333	
Sundry loans and financial debts **	5,681,519		5,681,519	
Accounts payable	5,345,899	5,345,899		
Staff and related accounts	1,707,234	1,707,234		
Social security and other social organizations	1,412,384	1,412,384		
Value added tax	31,717	31,717		
Other taxes, charges and similar	102,939	102,939		
TOTAL	25,015,525	8,600,673	16,414,852	

* Loan from the European Investment Bank (EIB): the EIB loan contract provides for certain information and operational commitments (such as limitations on authorized debt, authorized external growth operations, transfers of assets etc), the non-compliance of which would allow the EIB, if it deemed it necessary, to declare the early payment of the credit. The occurrence of certain changes in shareholders and in a change of management not approved in advance by the EIB, would also allow the EIB if it deemed it necessary and after discussion with the Company, to declare the early payment of the credit. To date, CARMAT complies with all of the commitments required by the EIB.

** This amount corresponds to the accrued interest expected at year-end on the repayable advances from Bpifrance (details in 3.2.2.6).

- Capital

Composition of the share capital

Categories of shares	Nominal value in euros	Number of shares			
		Opening	Created	Redeemed	Closing
Ordinary shares	0.04	9,275,919	3,316,620		12,592,539
Preferential shares	0.04		17,110		17,110
TOTAL		9,275,919	3,333,730		12,609,649

The capital increase, following the fundraising carried out in September 2019, resulted in the creation of 3,157,895 ordinary shares, with a par value of €0.04.

The capital increase, through the exercise of BSA on the part of Kepler Cheuvreux, which took place during the 2019 fiscal year, resulted in the creation of 105,000 ordinary shares, with a par value of €0.04.

The capital increase, through the exercice of BCE during the 2019 fiscal year, resulted in the creation of 31,125 ordinary shares, with a par value of €0.04.

The capital increase, through the exercise of BSA, which took place during the 2019 fiscal year, resulted in the creation of 22,600 ordinary shares, with a par value of €0.04.

The capital increase, resulting from definitive allocations of free preferential shares (AGAP), which took place during the 2019 fiscal year, resulted in the creation of 17,110 preferential shares, with a par value of €0.04.

Changes in equity

EQUITY AT THE START OF THE PERIOD	7,481,498
Capital increase following the fundraising carried out	56,955,297
Increase in capital through exercising of BCE warrants	249,000
Increase in capital through exercising of BSA warrants	180,800
BSA subscription	18,180
Increase in capital through exercising of Kepler BSA warrants	2,231,145
Result for the period	-42,648,672
EQUITY AT THE END OF THE PERIOD	24,467,248

Stock-options

2018 stock-options

On the authorization of the combined general meeting of April 27, 2018, the board of directors decided, on December 3, 2018, to grant 46,000 options to subscribe for common shares, distributed as follows: 23,000 Options A and 23,000 Options B. These options entitle holders to subscribe to 46,000 new shares, representing the achievement of attendance and / or performance criteria, representing 0.37% of the existing capital as of December 31, 2019, at unit price of €20.35, issue premium included.

2019 stock-options

On the authorization of the combined general meeting of March 28, 2019, the board of directors decided, on April 1, 2019, to grant 46,000 options to subscribe for common shares. These options entitle holders to subscribe to 46,000 new shares, representing the achievement of attendance and / or performance criteria, representing 0.37% of the existing capital as of December 31, 2019, at unit price of €22.70, issue premium included.

Preferential shares («AGAP»)

2017 plan:

On the authorization of the combined general meeting of April 27, 2017, the board of directors' meeting decided, on May 15, 2017, to allocate provisionally 5,250 preferential shares, distributed as follows: 270 AGAP 2017-01, 1,800 AGAP 2017-02, 3,180 AGAP 2017-03, and on September 25, 2017, to allocate provisionally 560 preferential shares, distributed as follows: 50 AGAP 2017- 01, 200 AGAP 2017-02, 310 AGAP 2017-03.

These preferential shares may be converted based on the achievement of the performance criteria into a maximum of 421,000 ordinary shares: 32,000 ordinary shares under AGAP 2017-01, 40,000 ordinary shares under AGAP 2017-02, and 349,000 ordinary shares under AGAP 2017-03.

2018 plan:

On the authorization of the combined general meeting of April 5, 2018, the board of directors'meeting decided, on April 16, 2018, to allocate provisionaly 12,080 preferential shares, distributed as follows: 580 AGAP 2018-01 and 11,500 AGAP 2018-02; then on September 27, 2018, to allocate provisionaly 370 preferential shares (AGAP 2018-03); then on February 11, 2019, to allocate provisionaly 370 preferential shares (AGAP 2018-03).

These preferential shares may be converted based on the achievement of the performance criteria into a maximum of 301,500 [01] ordinary shares: 58,000 ordinary shares under AGAP 2018-01, 169,500 ordinary shares under AGAP 2018-02, and 74,000 ordinary shares under AGAP 2018-03.

2019 plan:

On the authorization of the combined general meeting of March 28, 2019, the board of directors'meeting decided, on April 1, 2019, to allocate provisionaly 11,900 preferential shares, distributed as follows: 4,760 AGAP 2019-01, 4,760 AGAP 2019-02 and 2,380 AGAP 2019-03; then on September 23, 2019, to allocate provisionaly 4,700 preferential shares, distributed as follows: 2,240 AGAP 2019-01, 2,240 AGAP 2019-02 and 220 AGAP 2019-03; then on December 2, 2019, to allocate provisionaly 3,000 preferential shares, distributed as follows: 1,000 AGAP 2019-01, 1,000 AGAP 2019-02 and 1,000 AGAP 2019-03;

These preferential shares may be converted based on the achievement of the performance criteria into a maximum of 193,000 [02] ordinary shares: 78,800 ordinary shares under AGAP 2019-01, 78,800 ordinary shares under AGAP 2019-02, and 35,400 ordinary shares under AGAP 2018-03.

Stock warrants

BSA 2009-1

At the general meeting and the meeting of the board of directors of July 8, 2009 and following the board of directors' meeting of September 8, 2011, 3,096 BSA 2009-1 warrants were issued; of these 556 were canceled following the resignation of one of the directors and 2,540 have been exercised.

BSA KEPLER CHEUVREUX

In accordance with the board of directors' decision of December 9, 2014, as authorized by the combined general meeting of April 2, 2014, then in accordance with the board of directors' decision of December 12, 2016, as authorized by the combined general meeting of June 28, 2016, a total number of 900,000 BSA warrants were issued, 742,600 of which had been exercised as at July 20, 2018, expiry date of the contract. The 157,400 BSA warrants not exercised on the same date became lapsed.

By decision of the board of directors on September 27, 2018, as authorized by the combined general meeting of April 5, 2018, 400,000 BSA warrants were issued, of which 139,000 BSA warrants were exercised on December 31, 2019.

01 these figures take into account on the one hand the departure of an AGAP 2018-02 beneficiary and on the other hand the non-achivement of a performance criterion attached to AGAP 2018-02.

02 these figures take into account the departure of an AGAP 2019-01, 2019-02 and 2019-03 beneficiary.

The 261,000 BSA warrants not exercised on the same date confer subscription right to 261,000 new shares, representing 2.07% of the existing capital as at 31 December 2019, at unit price defined contractually between CARMAT and the Kepler Cheuvreux, the holder of the BSA warrants, as being equal to the average share price at the time of the drawdown, less a discount of not more than 6%.

BSA 2017

By decision of the board of directors dated May 15, 2017, 12,000 warrants were issued pursuant to a delegation of authority granted by the combined general meeting of April 27, 2017, none of which had been exercised as at December 31, 2019. 12,000 warrants not exercised on the same date entitle them to subscribe for 12,000 new shares, representing 0.10% of the existing capital as at December 31, 2019, at unit price of €30.10.

SUMMARY TABLE OF BSA WARRANTS

BSA 2018

By decision of the board of directors dated June 11, 2018, 10,000 warrants were issued pursuant to a delegation of authority granted by the combined general meeting of April 5, 2018, none of which had been exercised as at December 31, 2019. 10,000 warrants not exercised on the same date entitle them to subscribe for 10,000 new shares, representing 0.08% of the existing capital as at December 31, 2019, at unit price of €20.93.

BSA 2019

By decision of the board of directors dated June 24, 2019, 6,000 warrants were issued pursuant to a delegation of authority granted by the combined general meeting of March 28, 2019, none of which had been exercised as at December 31, 2019. 6,000 warrants not exercised on the same date entitle them to subscribe for 6,000 new shares, representing 0.05% of the existing capital as at December 31, 2019, at unit price of €20.21.

	Issued	Subscribed	Lapsed	Reserve	Exercised	Balance	Lapsing on
BSA 2009-1 GM of July 8, 2009	3,096	3,096	556	0	2,540	0	July 8, 2019
BSA Kepler Chevreux (old tranches)	900,000	900,000	157,400	0	742,600	0	July 20, 2018
BSA Kepler Cheuvreux (new tranches)	400,000	400,000	0	0	139,000	261,000	Sep. 26, 2020
BSA 2017	12,000	12,000	0	0	0	12,000	May 15, 2027
BSA 2018	10,000	10,000	0	0	0	10,000	June 11, 2028
BSA 2019	6,000	6,000	0	0	0	6,000	June 24, 2029

Start-up company stock warrants (BCE)

BCE 2009-1

At the general meeting and the meeting of the board of directors of July 8, 2009 and following the board of directors' meeting of September 8, 2011, 3,108 fully assigned and subscribed BCE-2009-1 warrants were issued, exercised.

BCE 2009-2

At the general meeting and the meeting of the board of directors of July 8, 2009 and following the board of directors' meeting of September 8, 2011, 7,566 fully assigned and subscribed BCE-2009-2 warrants were issued, 4,475 of which have been exercised and 3,091 of which have lapsed and been canceled.

BCE 2012-1

In accordance with the board of directors' decision of June 27, 2012, as authorized by the combined general meeting of April 26, 2012, 56,500 fully assigned and subscribed BCE-2012-1 warrants were issued, of which 45,000 have lapsed and been canceled. The 11,500 BCE-2012-1 warrants subscribed and not exercised as at December 31, 2019 confer subscription rights to 11,500 new shares, representing 0.10% of the existing capital as at December 31, 2019, at unit price of €108.483.

BCE 2012-2

In accordance with the board of directors' decision of November 8, 2012, as authorized by the combined general meeting of April 26, 2012, 6,700 fully assigned and subscribed BCE-2012-2 warrants have been issued. The

6,700 BCE-2012-2 warrants subscribed and not exercised as at December 31, 2019 confer subscription rights to 6,700 new shares, representing 0.06% of the existing capital as at December 31, 2019, at unit price of €122.003.

SUMMARY TABLE OF BCE WARRANTS

	Issued	Subscribed	Lapsed	Exercized	Balance	Lapsing on
BCE 2009-1 GM of July 8, 2009	3,108	3,108	0	3,108	0	Sept. 9, 2019
BCE 2009-2 GM of July 8, 2009	7,566	7,566	3,091	4,475	0	July 8, 2019
BCE 2012-1 GM of April 26, 2012	56,500	56,500	45,000	0	11,500	June 27, 2022
BCE 2012-2 GM of April 26, 2012	6,700	6,700	0	0	6,700	Nov. 8, 2022

- Other balance sheet details

Conditional advances

The conditional advances item comprises repayable advances received from Bpifrance, the total amount of which was €14,507,309 as at the end of the financial year. Note 3.2.2.6 below specifies the repayment conditions of these advances.

They are interest-bearing at the contracted rate of 5.59%. The interest accrued, calculated using the capitalization method, stood at €5,681,519 at the year end and appears in liabilities under Sundry loans and financial debts.

Accrued income

Value of accrued income included in the following balance sheet items	Value
Other debtors	76,111
Total	**76,111**

Accrued charges

Value of accrued charges included in the following balance sheet items	Value
Loans from credit institutions	733,333
Sundry loans and financial debts	5,681,519
Trade accounts payable and related payables	2,968,394
Tax and social liabilities	2,547,493
Total	**11,930,739**

Deferred income and charges

Deferred charges	Value
Operating expenses	121,610
Total	**121,610**

Deferred charges comprises the share of subscriptions, software license royalties and insurance premiums for the period after December 31, 2019, totaling €121,610.

Deferred income	Value
Operating income	None
Total	**None**

Information on related enterprises

The following balance sheet items include sums in connection with related enterprises:

Trade accounts payable and related payables	145,818

Provision for expenses

Four preferential share allocation plans, as at February 11, 2019; April 1, 2019; September 23, 2019 and December 2,2019, allowed for the provisional allocation of 19,970 preferential shares, which can be converted based on the achievement of the performance criteria to a maximum of 233,000 ordinary shares. The definitive vesting dates for these preferential shares are fixed at February 11, 2020 for 370 preferential shares, at April 1, 2020 for 11,900 preferential shares, at September 23, 2020 for 4,700 preferential shares and at December 2, 2020 for 3,000 preferential shares. At the end of the year, the Company booked a provision for expenses corresponding to the amount of

the employer contributions of 20% to be due in 2020, on a porata basis of the vesting period and based on the estimate of the value of the ordinary shares that could be converted at the end of the vesting period.

The calculation assumptions made were as follows:
- Determination of a percentage of achievement of each of the performance criteria;
- Value of a ordinary share of €19.70;
- Employer contribution rate of 20%.

3.2.2.5 SUPPLEMENTARY INFORMATION ON THE INCOME STATEMENT

- Operating subsidies

The Company received the sum of €14,000 as an operating subsidy from the Association nationale de la recherche et de la technologie (national research and technology association) for employment of 1 PhD student.

- Applied research and development costs

Research and development costs are accounted for under expenses. They amounted to €29,368,163 in 2019, compared to €27,193,406 in the previous year.

- Research tax credit

The income statement for the year shows a research tax credit amounting to €1,636,019, corresponding to the amount calculated for the year 2019.

In addition, CIR's claim for 2018 was sold to Prédirec, which collected it at the end of 2019. This operation generated a cost for CARMAT of €36,930 in 2019 (including commissions and interest).

- Auditors' fees

The total amount of auditors' fees paid over the year is €112,000 excluding taxes and disbursements and breaks down as follows:

Total amount (€)	PWC	LCA	Total
Account certification fees	50,500	35,000	85,500
Other Services fees			
- Other Services required by law	3,500	3,500	7,000
- Other Services	9,750	9,750	19,500
Total	**63,750**	**48,250**	**112,000**

- Extraordinary income and expenses

Type	December 31, 2019	December 31, 2018
Extraordinary income		
- Property disposal		
- Disposal of own shares	46,794	60,198
Total	46,794	60,198
Extraordinary expenses		
- Property disposal		
- Disposal of own shares	60,767	58,564
- Fines and penalties	2,513	3,424
- Exceptional depreciation charges	87,458	
Total	**150,738**	**61,987**

The extraordinary income result is relative to:

- disposals of own shares carried out under the liquidity contract;

- an allowance for exceptional depreciation relating to the scrapping of equipment that is not fully depreciated.

- Information on associates

The following income statement items include sums in connection with associates:

Other purchases and external expenditure	506,888

3.2.2.6 FINANCIAL COMMITMENTS AND OTHER INFORMATION

- Financial commitments

Commitments made

Repayable advances totaling €14,507,309 have been received at the end of the fiscal year from the BPI, of which €1,450,732 obtained in June 2019 corresponding to the last tranche. The corresponding accrued interest amounts to €5,681,519 at the end of the financial year. This amount is repayable subject to achieving cumulative revenue of at least €38,000,000. The Bpifrance agreement provides for supplementary payments if certain conditions are met, so that the total amount repayable could exceed the amount of the advance initially granted, up to a ceiling of €50,000,000.

On June 24, 2008 the Company signed a royalties agreement with Professor Alain Carpentier and Matra Défense, who still held shareholdings as at December 31, 2019. Under this Agreement, the Company undertakes to pay Professor Alain Carpentier and Matra Défense 2% of the net proceeds from sales of the CARMAT Artificial Heart

produced and distributed by CARMAT SA, with this sum being shared between the two beneficiaries in proportion to their respective shares in the capital of the Company on the date it was established. These royalties will be payable every six months within 30 days of the end of each six-month period, commencing after the first marketing of the CARMAT Artificial Heart post CE marking in Europe and FDA marketing authorization in the United States, and ending upon expiry of the patents shown in Annex to the agreement.

The Company is also authorized to repurchase at any time the right to benefit from these royalties for a sum of €30,000,000 less any royalties already paid under the agreement, with this total sum being shared between the two beneficiaries in proportion to their respective shares in the capital of the Company on the date it was established. This sum of €30,000,000 is index-linked to the Indice du Prix à la Production de l'Industrie des Services aux Entreprises - Matériel médicochirurgical et d'orthopédie-exportation zone euro [Index of Prices for the Industrial Production of Services to Businesses - Medico-surgical and orthopedic equipment - for export within the Eurozone].

The rights allocated to Professor Alain Carpentier and to Matra Défense in this way are non-transferable.

As at December 31, 2019, since the marketing of the CARMAT Artificial Heart had not started, no royalty had been paid by the Company under the agreement.

In addition, the Company has signed a royalty agreement with the EIB providing for the payment of additional remuneration to the EIB depending on the commercial performance of the Company. This agreement runs for 13 years from the year in which the cumulative sales of CARMAT will reach €500,000. At any time, the Company may decide to terminate the royalties contract by paying a lump sum (net of royalties already paid), depending on the amount borrowed and the year of the decision.

In the event of the occurrence of certain events (in particular in the event of the declaration of the anticipated repayment of the credit by EIB or if a new shareholder were to hold 33% of the voting rights of CARMAT), the EIB could, if it considered it necessary, ask the Company for the advance payment of royalties up to a certain percentage of the amount of the credit actually drawn (this progressive percentage ranging from 100% of the amount borrowed if the event occurs during the first four years of the financial contract, to 160% if the event occurs after the eleventh year).

Commitments received

None.

Pension and retirement commitments

The Company has not signed a specific agreement on retirement commitments. These are therefore limited to the agreed retirement lump-sum payment.

In application of the reference method (ANC 2018-01), the provision for retirement commitments has been booked as at December 31, 2019.

The calculation assumptions made were as follows:
- time-apportioned rights method in accordance with Regulation 2003 R-01 of the CNC;
- retirement on the initiative of the member of staff, at 62 years (non-management) or 65 years (management);
- salary increases of 2% per annum;
- low staff turnover;
- discount rate of 0.77% per annum (as against the rate of 1.57% used as at December 31, 2018 and 0.77% as at June 30, 2019).

The overall amount of the provision was €413,906 at the end of the period, an increase of €110,938 on the previous period.

- Other information

Information on the management

ADVANCES AND LOANS TO MANAGEMENT

No loans or advances were made to the management of the Company during the financial year, in accordance with the provisions of Article R.123-197 of the French Commercial Code.

MANAGEMENT REMUNERATION

Total directors' fees recognized in respect of 2019 amounted to €69,839 (amounts entered under « Other expenses » in the income statement).

The total remuneration paid to the management bodies was €650,135 for the financial year and breaks down as follows:

Type	2019	2018
Gross salaries	465,396	471,295
Benefits in kind	7,793	5,270
Bonuses	176,946	160,912
Total remuneration	**650,135**	**637,477**

Increases and reductions in future tax liabilities

Type of temporary differences	Value
Allowable loss carry-forwards	268,500,634

This amount comprises:

- the tax loss carried forward made during previous periods and available as at January 1, 2019, in the sum of €221,385,242;

- the tax loss made in the 2019 fiscal year in the sum of €47,115,392.

End of period staffing levels

Salaried staff	2019	2018
Managers	80	66
Supervisors and technicians	18 *	15 ***
Employees	9 **	9 *
Total	107	90

*: including 1 trainee **: including 3 trainees
***: including 2 trainees

3.3 AUDITORS' REPORT ON THE 2019 FINANCIAL STATEMENTS

CARMAT SA
36, Avenue de l'Europe
Immeuble l'Etandard energy III
78140 Vélizy-Villacoublay

OPINION

In execution of the mission entrusted to us by your general meeting, we have audited the financial statements of CARMAT for the year ended December 31, 2019, as attached to this report.

We certify that the annual accounts are, in the light of French accounting rules and principles, fair and accurate and give a true and fair view of the results of the operations of the past financial year and the financial position and assets of the company at the end of the year.

FOUNDATION OF THE OPINION

Auditing framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the evidence we have collected is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under these standards are set out in the «Auditors' Responsibilities for Auditing the Annual Accounts» section of this report.

Independence

We carried out our audit mission in accordance with the independence rules applicable to us, from January 1, 2019 to the date of our report, and in particular we did not provide services prohibited by the code of ethics of the profession of auditor.

JUSTIFICATION OF OUR ASSESSMENTS

Pursuant to the provisions of Articles L. 823-9 and R.823-7 of the French Commercial Code relating to the justification of our assessments, we inform you that the most important assessments that we have made, in our professional judgment, have the appropriateness of the accounting principles applied and the reasonableness of the significant estimates used and the overall presentation of the accounts.

The assessments thus made fall within the context of the audit of the annual financial statements taken as a whole and the formation of our opinion expressed above. We do not express an opinion on items in these separate annual accounts.

SPECIFIC VERIFICATIONS

In accordance with the professional standards applicable in France, we have also performed the specific verifications required by legal and regulatory texts.

Information provided in the management report and other documents on the financial position and the annual accounts sent to shareholders

We have no matters to report as to the fair presentation and the consistency with the financial statements of the information given in the management report of the Board of Directors and in the other documents with respect to the financial position and the financial statements addressed to the shareholders.

We certify the fairness and consistency with the financial statements of the information relating to the payment

periods mentioned in Article D.441-4 of the French Commercial Code.

Corporate governance information

We certify the existence, in the section of the management report of the Board of Directors devoted to corporate governance, of the information required by Article L.225-37-4 of the French Commercial Code.

Other information

In application of the law, we made sure that the various information relating to the identity of the owners of the capital or the voting rights were communicated to you in the report of management.

RESPONSIBILITIES OF THE MANAGEMENT AND THE PERSONS CONSTITUTING CORPORATE GOVERNANCE RELATING TO THE ANNUAL ACCOUNTS

It is the responsibility of the management to prepare annual accounts presenting a true and fair view in accordance with French accounting rules and principles and to set up the internal control that it deems necessary for the preparation of annual accounts that do not contain any significant anomalies, that they come from fraud or result from errors.

When preparing the annual accounts, it is the responsibility of management to evaluate the ability of the Company to continue operating, to present in these accounts, as the case may be, the necessary information relating to the continuity of operations and to apply the going concern accounting policy unless it is intended to wind up the company or cease its business.

The annual accounts have been adopted by the Board of Directors.

RESPONSIBILITIES OF THE AUDITORS RELATING TO THE AUDIT OF THE ANNUAL ACCOUNTS

It is our responsibility to prepare a report on the annual accounts. Our objective is to obtain reasonable assurance that the financial statements taken as a whole do not contain any material misstatements. Reasonable assurance corresponds to a high level of assurance, but does not guarantee that an audit performed in accordance with the standards of professional practice can systematically detect any significant anomaly. Anomalies may arise from fraud or error and are considered significant where it can reasonably be expected that they, taken individually or cumulatively, may influence the economic decisions that account users take in their business based on these.

As specified by Article L.823-10-1 of the French Commercial Code, our mission of certification of accounts is not to guarantee the viability or the quality of the management of your company.

As part of an audit conducted in accordance with the professional standards applicable in France, the statutory auditor exercises his professional judgment throughout this audit.

In addition :

- it identifies and assesses the risks that the annual accounts contain material misstatements, whether due to fraud or error, defines and implements audit procedures to address such risks, and collects considers it sufficient and appropriate to base its opinion. The risk of not detecting a significant anomaly from fraud is higher than that of a significant misstatement resulting from an error, as the fraud may involve collusion, falsification, voluntary omissions, misrepresentation or circumventing internal control;
- it becomes aware of the internal control relevant to the audit in order to define appropriate audit procedures in the circumstances, and not to express an opinion on the effectiveness of the internal control;
- it assesses the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as the information concerning them provided in the annual accounts;
- it assesses the appropriateness of management's application of the going concern accounting policy and, depending on the elements collected, the existence or otherwise of significant uncertainty related to events or circumstances likely to causes the company's ability to continue as a going concern. This assessment is based on the information gathered up to the date of its report, but it is recalled that subsequent circumstances or events could jeopardize the continuity of operations. If it concludes that there is significant uncertainty, it draws the attention of the readers of its report to the information provided in the annual accounts about this uncertainty or, if this information is not provided or is not relevant, it formulates a qualified certification or a refusal to certify;
- it assesses the overall presentation of the annual accounts and assesses whether the annual accounts reflect the underlying transactions and events so as to give a true and fair view.

Signed in Neuilly-Sur-Seine and Paris,
Thursday March 12, 2020,

The statutory auditors

PRICEWATERHOUSCOOPERS AUDIT	LISON CHOURAKI AUDIT
THIERRY CHARRON	LISON CHOURAKI

3.4 INTERNAL CONTROL AND RISK MANAGEMENT PROCEDURES RELATIVE TO THE PREPARATION AND PROCESSING OF ACCOUNTING AND FINANCIAL INFORMATION

One of the objectives of internal control is to prevent and control the risks of error and fraud in the accounting and financial fields. In this context, CARMAT did set up a system aimed at providing reasonable assurance of the reliability of its accounting and financial information produced and published.

The accounting and financial processes correspond to all the activities enabling the economic operations of the Company to be translated into accounting and financial information.

The two key processes that affect the reliability of CARMAT's accounting and financial information are:

- the process of producing accounting and financial information (including the accounting closing process);
- the process of publishing accounting and financial information.

The Company's objectives in this area are:

- the production of reliable information that complies with legal and regulatory requirements;
- prevention and detection of accounting and financial fraud or irregularities;
- the preservation of the assets of the Company;
- the application of the guidelines given by the Board of Directors;
- the reliability of the information used internally for monitoring and control purposes;
- the reliability of the accounts and other financial information communicated to the financial markets.

PRODUCTION OF ACCOUNTING INFORMATION

Accounting is carried out by CARMAT's accounting team, assisted by an accounting firm that has been supporting the Company for many years.

Payroll is provided by an external firm. And CARMAT is also assisted as needed by renowned specialist firms, particularly for legal and tax matters.

For the production of its accounts, CARMAT relies mainly in terms of information systems on its ERP (Enterprise Resource Planning), and on more specific software used by its accounting firm; as well as a set of policies, operating procedures and calendar of operations, which are updated regularly.

The organization set up aims in particular to ensure segregation of duties, thereby limiting the risk of error and fraud; and to allow an appropriate level of control, especially on the most sensitive points. It is specified that CARMAT draws up its accounts according to French accounting standards and does not draw up any consolidated accounts.

The accounts are closed and reviewed monthly by the finance department, with the accounting firm. A summary of the financial results, including a comparison with the budget approved annually by the Board of Directors, is presented monthly to the management of the Company. The operational departments also receive a monthly statement of their expenses, with comparison with the budget, which is prepared by management control. A financial update is presented by the CFO at each Board of Directors meeting.

CARMAT is still in the clinical phase and does not yet generate revenues, so a particular attention is paid to the financing plan of the Company, its cash flow forecasts and the liquidity risk. In this context, the Company's business plan is updated and presented to the Board of Directors, at least once a year (and more frequently if necessary), and the financing strategy and options regularly shared and discussed with the Board of Directors.

PUBLICATION OF ACCOUNTING AND FINANCIAL INFORMATION

The Company publishes its financial calendar for the current year in January.

The Company publishes its results semi-annually and annually. The annual financial report is integrated into the Universal Registration Document (formerly Registration Document) which is made available to shareholders and the public, within the legal deadlines.

The accounting and financial information published semi-annually and annually is prepared by CARMAT's administrative and financial department, under the control of the CEO and is then subject of an examination by the audit committee, then by the Board of Directors.

In addition, CARMAT's annual accounts are certified by the Company's Statutory Auditors, while the half-yearly accounts are subject to their limited review.

All press releases published by the Company, whether or not they are of an accounting or financial nature, are validated beforehand by the CEO of the Company.

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CORPORATE GOVERNANCE

4.1 COMPOSITION OF THE COMPANY'S ADMINISTRATIVE AND MANAGEMENT BODIES

4.1.1 COMPOSITION OF THE BOARD OF DIRECTORS

The Board of Directors now consists of 9 members, including 5 independent directors. Mr. Jean-Pierre Garnier is Chairman.

As a reminder, CARMAT had announced on December 3, 2018 the cooptation of Mr. Jean-Pierre Garnier to the Board of Directors of the Company to replace Mr. Jean-Claude Cadudal, Chairman of the Board of Directors resigned, for the remainder of his mandate, and his appointment as new Chairman of the Board. The appointment of Mr. Jean-Pierre Garnier as Director of the Company was ratified by the general meeting of March 28, 2019.

At the end of this same meeting, Mr. Alain Carpentier left his position as Director of CARMAT and was appointed Honorary President of the Company. As such, he remains invited to all board meetings, without however taking part in the votes.

On June 6, 2019, Mr. Karl Hennessee succeeded Ms. Anne-Pascale Guédon as permanent representative of Matra-Défense on the Board of Directors of the Company.

As a reminder, the general meeting of April 5, 2018 appointed Mr. Pierre Bastid as Director, for a period of 6 years expiring at the end of the ordinary general meeting to approve the accounts of the year ended December 31, 2023.

The table below details the information concerning each of the members of the Board of Directors (it being specified that the information on the other mandates of the directors are those of which the Company is aware and that the companies marked with a * are listed companies):

Full name or registered name of the member and business address	Term of office	Functions fulfilled within the Company	Other positions currently held in other companies	Previous other positions and functions in other companies over the last five years
Mr. Jean-Pierre Garnier (french & american citizenship)	First appointed: December 3, 2018 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Chairman of the board of directors	- Chairman of Idorsia* - Director at Radius Health* - Director at United Technology* - Director at Fondation Paul Newman	- Chairman of Actelion * (til its acquisition by Johnson and Johnson in 2017)
Mr. Stéphane Piat (french citizenship) CARMAT 36, avenue de l'Europe 78 941 Velizy Villacoublay	First appointed: April 27, 2017 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Chief Executive Officer ** Member of the Board of Directors	Board member of Triflo Cardiovascular Inc.	Division vice-president, Global Market Development, at Structural Heart Division - Abbott Vascular - San Francisco
Matra Défense **Represented by Mr. Karl Hennessee** (american citizenship) Airbus Group 42, avenue Raymond Poincaré 75016 Paris	First appointed: March 20, 2015 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Director	- Senior Vice President of Projic 9 - Senior Vice President of Matra Défense - Managing director of Matra Holding GmbH - Board member of Shiny T BV, Sunny T BV, Perpetual Ltd, Fast Express Investment Ltd and Aeropart	- Member of the executive committee of Projic 9

**: in accordance with the articles of association, the board of directors appoints the Chief Executive Officer, fixes the duration of his mandate, determines his remuneration and fixes the limits of his powers if necessary.

Full name or registered name of the member and business address	Term of office	Functions fulfilled within the Company	Other positions currently held in other companies	Previous other positions and functions in other companies over the last five years
Mr. Henri Lachmann (french citizenship) Association Marie Lannelongue 133, avenue de la Résistance 92 350 Le Plessis Robinson	First appointed: December 23, 2010 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Independent director	- Member of the supervisory board of Norbert Dentressangle SA* - Chairman of the board of directors of the Centre chirurgical Marie Lannelongue (Marie Lannelongue Surgical Center) (an association under the law of 1901) - Chairman of the Institut Télémaque (an association under the law of 1901) - Director of the Fondation Entreprendre - Chairman of the campaign committee of the Strasbourg University Foundation	- Director of various companies in the Schneider Electric Group* - Honorary vice-Chairman of the supervisory board at Vivendi SA* - Vice-chairman and treasurer of the Institut Montaigne (an association under the law of 1901)
Truffle Capital **Represented by Dr Philippe Pouletty** (french citizenship) Truffle Capital 5, rue de la Baume 75 008 Paris	First appointed: May 7, 2010 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Director	<u>In a personal capacity:</u> - Chairman of the board of directors of Abivax SA* - Manager at Nakostech SARL - Chief executive and director of Truffle Capital - Honorary chairman and director of France Biotech (an association under the law of 1901) <u>As representative of Truffle Capital:</u> - Director at Biokinesis SAS - Director at Pharnext SA* - Director at Deinove SA* - Director at Carbios SA* - Director at Affluent Medical SA - Chairman of the board of directors of Skinosive SASU - Director at Holistick Medical SASU - Director at Artedrone SASU - Chairman of the board of directors of Diaccurate SASU	- Director at Vexim SA* until 2017 - Director of Neovacs SA* until 2014 - Director at Plasmaprime SAS until 2015 - Director at Immune Targeting Systems Ltd (UK) until 2015 - Director at Altimmune, Inc. (United States) until December 2016
Mr. Pierre Bastid (french citizenship) Hougou 480, avenue Louise 1050 Brussels Belgium	First appointed: April 5, 2018 Term of office: Until GM to approve the accounts for year ending December 31, 2023	Independant Director	- Chairman of Babalia - Director at Hougou SA - Director at Cellectis - Director at Pharnext	None
Santé Holdings SRL **Represented by Mr. Antonino Ligresti** (italian citizenship) NCTM Via Agnello 12 20121 Milano Italy	First appointed: April 12, 2016 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Director	- Sole shareholder of Immobiliare Cosio SRL, Iniziative Immobiliari Due SRL and Iniziative Immobiliari Tre SRL	None

Full name or registered name of the member and business address	Term of office	Functions fulfilled within the Company	Other positions currently held in other companies	Previous other positions and functions in other companies over the last five years
Mr. Jean-Luc Lemercier (french citizenship) Edwards Lifesciences Chemin du Clusel 1 1261 Le Vaud Switzerland	First appointed: January 2, 2017 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Independent director	Corporate officer Edwards Lifesciences	None
Dr Michael Mack (american citizenship) The Heart Hospital Baylor Plano 1100 Allied Drive 4708 Alliance - S. 500 TX 75093 Plano USA	First appointed: January 2, 2017 Term of office: Until GM to approve the accounts for year ending December 31, 2021	Independent director	None	None

As far as the Company is aware:

- there is no family link between the Company's directors;
- no director has been convicted of fraud in the last five years;
- no director has been associated with any bankruptcy, sequestration of assets or liquidation in the last five years;
- no director has been found guilty of any offense or any official public sanction pronounced by the statutory or regulatory authorities (including designated professional bodies) in the last five years; and
- no director has been prevented by a court from acting as a member of an administrative, management or supervisory board of an issuer or from taking part in the management or conduct of the affairs of an issuer over the past five years.

It should be noted that no strategic and/or historical investors acts together with others in relation to CARMAT.

4.1.2 BACKGROUNDS OF THE MEMBERS OF THE BOARD OF DIRECTORS

KARL HENNESSEE

Karl Hennessee, Senior Vice-President of Airbus, has 25 years of experience in law, economics and regulation. He worked, in Europe and in the United States, as a business lawyer on some of the most important files for a very large company in the energy sector, then as Secretary General of this same company.

In addition to his management functions at Airbus, Karl Hennessee is the Chairman of the Board of Directors of the International Arbitration Tribunal within the International Chamber of Commerce. He also sits on the Board of Directors of many other non-profit organizations. He also lectures and regularly publishes articles on law and regulations.

DR JEAN-PIERRE GARNIER

Scientist and business leader, Jean-Pierre Garnier graduated from Louis Pasteur University (PhD in Pharmacology) and Stanford University (Master in Business Administration). He started his career in 1975 at the pharmaceutical company Schering-Plough where he held a number of management positions in Europe before becoming President of their American division. In 1990, he joined Smithkline Beecham Laboratories as President of the Pharmaceuticals Division and became President and CEO in 1999.

In 2000, Jean-Pierre Garnier achieved the merge of two of the largest pharmaceutical groups (Smithkline Beecham and Glaxo Wellcome), to create GlaxoSmithKline (GSK), which he chaired until 2008. He was also Chairman of Actelion from 2011 to 2017.

The Best Practice Institute has nominated Jean-Pierre Garnier as one of the world's top 20 CEOs. He is an Officier de la Légion d'Honneur (Officer of the Legion of Honour) and Knight Commander of the Order of the British Empire.

DR PHILIPPE POULETTY

Dr Philippe Pouletty is a pioneer in biotechnology and medical devices. He founded SangStat in 1988, a company specialising in organ transplant therapy, listed on the NASDAQ, then Conjuchem in 1993, a biotech firm specialised in developing next-gen medicines from therapeutic peptides, listed on the Toronto Stock Exchange.

He is the co-founder and CEO of Truffle Capital, founder and Chairman of Deinove, a biotech company that develops compounds for industry from rare microorganisms, and Abivax, an innovative biotech firm that targets the immune system to eliminate viral and inflammatory diseases. Dr Pouletty is also founder of Carbios, a green chemical company developing innovative enzyme processes to reshape the lifecycle of plastics, co-founder and board member of Pharnext, a leading biopharma company in combinatorial medicine, and Vexim, an innovative medical devices company, Chairman of Diaccurate, a biotech company specialising in immunomodulation, and board member at Myopowers, Biokinesis, Kephalios and all other companies in the Truffle Capital portfolio.

Dr Pouletty graduated as a doctor of medicine from the University of Paris VI and holds master's degrees in immunology and virology from Institut Pasteur. He is also a post-doctoral research fellow at Stanford University, the 1999 laureate of the American Liver Foundation and Chevalier de la Légion d'Honneur. Dr Pouletty is the former Chairman and Honorary Chairman of France Biotech, the French biotech industry association, former Vice Chairman of Europabio and the author of 29 patents.

HENRI LACHMANN

Henri Lachmann began his career in 1963 as an auditor at Arthur Andersen. Seven years later, he joined French metal company Strafor-Facom and became the company's CEO in 1981. He has been a member of the board at Schneider Electric since 1996 and became the company's CEO in 1999. He also held the position of Chairman of the Supervisory Board from 2006.

Mr Lachmann graduated from HEC business school and is a qualified chartered accountant.

He is Director and Vice-President of the Saint Joseph hospital / Marie Lannelongue hospital foundation.

PIERRE BASTID

Former manager at Schneider Electric then Valeo, Pierre Bastid becomes in 1998 Vice President of Thomson Television Components France (Thomson Multimedia Group). In 2004, via the Magenta Participations structure, it successfully participated in the acquisition of Alstom Power Conversion, a group that later became Converteam Group, sold to General Electric in 2011.

Since that date, Pierre Bastid manages his assets resulting from the sale of his shares of Converteam.

DR ANTONINO LIGRESTI

Dr Antonino Ligresti began his career in the Medical Clinic at Milan University and at the city's Fatebenefratelli Hospital. In 1979, following the gradual acquisition of several high-profile establishments in Lombardy, he created Italy's first private hospital group, acknowledged for the quality of its services and patient-centric care, as well as its ties with teaching and academic research. Dr Ligresti joined the Générale de Santé board of directors in 2003 and became its chairman a year later. He was also instrumental in creating the European Oncology Institute.

Dr Ligresti is a qualified physician and surgeon, specialising in cardiology and internal medicine.

JEAN-LUC LEMERCIER

Jean-Luc Lemercier draws on more than 30 years' experience and acknowledged leadership in medical devices. During his career, he has held a number of key positions in the field of cardiology, notably at Johnson & Johnson Cordis from 1996 to 2008, where he created and headed the Structural Heart Disease division. Since 2017, he has been Corporate Vice President EMEA, Canada & Latin America at Edwards Lifescience.

Mr Lemercier graduated in pharmacy from Claude Bernard Lyon 1 University.

DR MICHAEL MACK

Michael Mack is an internationally renowned cardiac surgeon with extensive experience in the introduction of medical devices and innovative procedures for cardiovascular disease. He has authored more than 650 scientific publications and has received the Presidential Citation from the American College of Cardiology (ACC) and the Transcatheter Cardiovascular Therapeutics (TCT) Lifetime Achievement Award.

Dr Mack is a graduate of Boston College, St Louis University and the University of Texas Southwestern Medical School. He is also the Director of the Cardiovascular department for pharmaceutical firm Baylor Scott & White Health, a Director on the American Board of Thoracic Surgery and a member of the FDA Medical Device Epidemiology Network Initiative (MDEpiNet) Advisory Committee.

STEPHANE PIAT

Stéphane Piat is an acknowledged specialist in the medical device business, particularly in the field of cardiology. He joined Carmat as Chief Executive Officer in September 2016.

Mr Piat started his career at Becton Dickinson European Headquarters as a Market Researcher in 1995. He was appointed European Platform Leader for Locoregional Anaesthesia five years later. In 2002, he joined Cordis, a Johnson & Johnson company, where he spent five years in several management positions ranging from Business Director France to European Marketing Director for Cardiology. In 2007, he moved to Abbott Vascular as General Manager for mid-size countries, EMEA, and two years later oversaw the integration of Evalve as the company's General Manager EMEA, heading clinical and commercial development of a new interventional cardiology product, Mitraclip. In 2014, he led Global Market Development of the Abbott Vascular Structural Heart Division in San Francisco as Division Vice President.

Mr Piat holds a master's degree in Management Science from IAE Dijon School of Management, and a post-graduate degree in Quantitative Marketing from ESA business school in Grenoble.

4.1.3 MEMBERS OF THE MANAGEMENT TEAM

STEPHANE PIAT

See above.

DR PIET JANSEN

Dr Petrus "Piet" Jansen has 20 years management experience in the circulatory support device industry. He began his career in 1997 as Director of Clinical Research for the Novacor Division of Edwards Lifesciences, a US company specializing in patient-focused medical innovations for structural heart disease. In 2001, he was appointed Vice President at Jarvik Heart Inc in New York, where he was responsible for the clinical programs. From 2004 to 2009, he was Chief Medical Officer with World Heart Corporation.

Dr Jansen holds a PhD in medicine from the University of Amsterdam and graduated as medical doctor from Radboud University Nijmegen, both in the Netherlands.

ÉRIC RICHEZ

Eric Richez joined CARMAT in September 2014 after a career in the European medical device industry.

He has over 13 years' experience in sales & marketing with Thoratec, a global leader in ventricular assistance devices, where he served as Sales & Marketing Director from 2002 to 2011 and Sales Director EMEA from 2011 to 2013. He then joined CircuLite, a company developing a circulatory support system to treat chronic heart failure, as Sales Director for Southern Europe.

Mr Richez holds a degree in Mathematics and training in Business & Management and Sales Force Management.

PASCALE D'ARBONNEAU

A graduate of the ESCP business school and holder of a DEA in Management Control and a Postgraduate Diploma in Finance and Accounting, Pascale d'Arbonneau is also a lecturer at Paris Diderot University.

She began her career in 1989 as an auditor at Coopers & Lybrand (now PWC) before entering the pharmaceutical industry as Head of Finance & IT France at Johnson & Johnson – MSD (1995-1999). She spent most of her career (1999-2016) at GlaxoSmithKline (GSK). She joined as Director, Head of Controlling & Finance Partnering, and then held a number of senior positions within the Group (Vice President & Finance Controller, Pharma Europe from 2006 to 2010, Vice President & Area Finance Director, Western Europe from 2010 to 2014) before becoming Vice President Compliance and Control Integration for all business units worldwide. Before joining CARMAT at the end of 2018, Pascale d'Arbonneau was Executive Director of the Econocom International B.V. family office.

MARC GRIMME

Since 1996, Marc Grimmé has been the technical lead on the programme to develop the Carmat bioprosthetic heart.

He began his career in 1991 at MBDA France, where he worked on a range of issues linked to the development of mission-critical electronics, from upstream studies and the design phase to production commissioning.

Marc Grimmé is a graduate of the Institute Supérieur d'Electronique et du Numérique (ISEN).

THIERRY DUPOUX

Thierry Dupoux is a seasoned medical device professional with a strong and large expertise in Quality Assurance / Regulatory Affairs and R&D. Engineering Graduate from Ecole Centrale de Lyon (France), he has worked most of

his career for Life Sciences companies such as General Electric where he became Supply Chain Quality & Compliance Manager for the plant of Buc (France) in his last position. In 2006, he joined Sorin Group, now named LivaNova, a world leader in Cardiac Surgery and Neuromodulation. Over the past 12 years at LivaNova, he held several senior positions in Quality Assurance, Regulatory Affairs and R&D. Prior to joining CARMAT, he was Vice President of Quality Assurance at LivaNova where he led the integration of the Quality Systems following the merger between Sorin Group and Cyberonics. He joined CARMAT in July 2018 as Director of Quality.

ALEXANDRE ELEONORE

Alexandre Eleonore is a confirmed industry expert with a strong background in operational management. He graduated from the Sevenans Polytechnic Institute, now UTBM (Université de Technologie Belfort-Montbéliard), and spent the first part of his career in leading automotive equipment manufacturers such as Faurecia and Plastic Omnium. After 10 years in this sector, he joined the Sorin group in 2009, which became Microport CRM, one of the world's leading players in the treatment of cardiac rhythm disorders. He became Vice President Operations & Customer Service and implemented cost improvement plans, thanks to his knowledge of lean manufacturing and industrial process automation. He joined CARMAT as Industrial Director in November 2019.

FRANCESCO ARECCHI

A marketing professional with strong experience in global leading companies within the healthcare industry, Francesco Arecchi joins Carmat in September 2017. Francesco Arecchi spent most of his career in Life Sciences companies such as Johnson & Johnson and Abbott, where he holds a number of positions from sales to marketing in Cardiology breakthrough technology products such as Cypher and MitraClip.

Prior to joining Carmat, he stood as Product Manager EMEA Structural Heart at Abbott. Francesco Arecchi is a biomedical engineer and graduated from Politecnico di Milano (Italy) with an MBA from Rotterdam School of Management (Netherlands).

RAOUIA BOUYANZER

Raouia has almost 16 years of experience in payroll and human resources management. She began her career in an accounting firm in 1998. In 2001, Raouia joined Morgan Stanley, where she held more than 9 years in several positions in social management control, payroll and human resources. Raouia joined CARMAT at the 'development' stage of the Company in February 2011 as an Administrative and Financial Manager, and implemented a human resources policy in 2012.

Raouia holds a master's degree in HR from ESSEC Business School and holds a degree in accounting and finance (2001).

4.2 CONFLICTS OF INTEREST IN THE GOVERNING, MANAGEMENT AND SUPERVISORY BODIES AND THE EXECUTIVE BOARD

4.2.1 POTENTIAL CONFLICTS OF INTEREST

At the date of this universal registration document and as far as the Company is aware, there are no current or potential conflicts of interest between the private interests of the Company's board of directors and the interests of the Company.

Similarly, as at the same date, the Company has no knowledge of any current or potential conflicts of interest between the private interests of the members of the audit committee, the compensation committee or the scientific committee and the interests of the Company.

As far as the Company is aware, there are no current or potential conflicts of interest between the duties of the members of the board of directors towards the Company and their private interests and/or other duties.

As at the date of this universal registration document, there were no service contracts linking the members of the board of directors and the general management of the Company, nor any business relationship binding the independent directors and the Company. All regulated agreements are disclosed within section 5.6.1.

4.2.2 COMMITMENTS OF THE DIRECTORS AND EXECUTIVE MEMBERS TO PRESERVE SHAREHOLDINGS

No lockup commitment by directors and members of general management was in force on December 31, 2019, with the exception of the obligation for the CEO, Mr. Stéphane Piat, to hold a certain percentage of the shares in registered form, ordinary shares which have resulted or which will result, where applicable, from the conversion of the preferential shares granted free of charge in 2017, 2018 and 2019 (see section 4.5.1 of this document).

4.3 SPECIALIZED COMMITTEES

As at the date of this universal registration document, the Company had set up the following committees:

4.3.1 AUDIT COMMITTEE

By decision of the board of directors of July 8, 2009 the Company set up an audit committee for an unlimited duration.

Under the exclusive and collective responsibility of the members of the Board of Directors of the Company and in order to ensure the quality of internal control and the reliability of the information provided to shareholders and financial markets, the Committee assume the matters relating to the preparation and control of accounting and financial information and, to this end, shall in particular:

- follow-up on the process of developing information and financial communication;
- monitor the effectiveness of the internal control and risk management systems and in particular:

  - evaluate the internal control procedures and any measures taken to remedy any significant internal control dysfunctions;

  - review the annual work programs of the auditors;

  - evaluate the adequacy of the risk monitoring procedure;

- monitor the statutory audit of the annual and consolidated financial statements by the auditors and in particular:

  - reviewing the assumptions used for the preparation of the annual financial statements of the Company and the half-yearly and, where applicable, quarterly accounts before their examination by the Board of Directors, financial position, cash position and commitments of the Company;

  - evaluate, in consultation with the auditors, the appropriateness of the choice of accounting principles and methods;

  - consult the members of the board responsible for the financial aspects as well as the administrative and financial director if he is not a member of the board between the end of any financial year and the date on which the Committee decides on the draft annual accounts, the adequacy of the accounting principles and methods used, the effectiveness of the accounting control procedures and any other appropriate matters;

  - issuing a recommendation on the auditors proposed for appointment by the shareholders' meeting and to review the terms of their remuneration;

- monitor the independence of the auditors and in particular:

  - propose the establishment of rules for recourse to auditors for work other than auditing in order to guarantee the independence of the audit services provided by auditors in accordance with the laws, regulations and recommendations applicable to the Company, and verify its proper application;
  - authorize the use of auditors for work other than auditing;

  - examine the conditions of use of derivatives;

  - execute periodic review of the status of significant

litigation;

- review the Company's procedures for the receipt, retention and treatment of claims relating to accounting matters and accounting internal controls, audit matters and documents transmitted by employees on a anonymous and confidential basis and which would call into question accounting or auditing practices; and
- generally, provide advice and make any appropriate recommendations in the above areas.

During the 2019 financial year, the audit committee met twice, in particular to review the 2018 financial statements, to analyse CARMAT's cash needs and financing options, and to review the financial statements relating to the first half of 2019.

As at the date of this universal registration document, the audit committee comprises Mr. Henri Lachmann, independant director and chairman of the audit committee.

4.3.2 APPOINTMENT AND COMPENSATION COMMITTEE

The Company has also established an appointment and compensation committee which as at the date of this universal registration document is comprised of four members, including two independant members, appointed by the board of directors for an unlimited term:

- Truffle Capital, represented by Dr Philippe Pouletty, director and chairman of the appointment and compensation committee;
- Matra Defense, represented by Mr Karl Hennessee, director and member of the appointment and compensation committee;
- Mr Jean-luc Lemercier, independent director;
- Santé Holdings SRL, represented by Mr Antonino Ligresti, independant director.

The main objectives of the appointment and compensation committee are:

- to recommend to the Board of Directors the persons who should be appointed to the general management, the board of directors and the main functions of the Company, as the case may be;
- review the remuneration policies for managers and high-potential staff within CARMAT, propose the remuneration of the officers and, where applicable, the members of the board of directors and prepare any report that the Company must present on these subjects.

It reports to the board of directors on its activities at regular intervals.

4.3.3 BOARDS OF OBSERVERS

Article 17-VI of the Articles of Association gives the ordinary general meeting the power to appoint, at its discretion, up to three persons or legal entities, who may or may not be shareholders, for a term of office of one year expiring at the general meeting of shareholders called to decide on the accounts for the year just ended and held during the year in which their terms of office expire. This term of office may be renewed an unlimited number of times. The duty of the observers is to ensure the strict application of the Articles of Association and to present their observations at the meetings of the board of directors. The observers perform a general and permanent duty within the Company to advice and monitor. In connection with their role they may make observations to the board of directors.

Observers must be invited to each meeting of the board of directors in the same way as directors. Observers have only consultative powers on an individual or joint basis and have no voting rights on the board.

As at the date of this universal registration document, no observer has been appointed.

4.4 STATEMENT ON CORPORATE GOVERNANCE

4.4.1 CORPORATE GOVERNANCE

The Company is refering to the recommendations of the code of corporate governance for quoted companies issued by the AFEP-MEDEF, to the extent that these principles are compatible with the organization, the size, the resources and the ownership structure of the Company.

To this end, the Company regularly proceeds with a review of its corporate governance in respect of the recommendations of the code of corporate governance for quoted companies issued by the AFEP-MEDEF and updated in June 2018 *. The principal recommendations not applied are as follows:

*: The Company did not yet take into account the modifications made to the AFEP-MEDEF code in January 2020.

Exclusions	Reasons
Assessment of the board of directors	There is no formal system to measure the individual contribution of each director. Reason: All board members gave positive feedback on the board's operation as a collective body, which is only possible if individual contributions are satisfactory.
Term of office of directors	The Company's Articles of Association provide for terms of office of the directors of six years, whereas the AFEP-MEDEF recommends a limit of four years. Reason: When the Company was established, it was deemed that a longer term would ensure the stability of the Company's governance.
Composition of the appointments and compensation committee	The appointments and compensation committee does not include 2/3 of independent directors. Reason: In each of the 2018 and 2019 financial years, an independent director was added to the committee, so that the independent directors now represent 50% of the committee. The Company intends to continue increasing this proportion in the future.
Evaluation of the work of the board of directors and committees	It is not systematically carried out every year, within the board of directors, a debate on its functioning and that of the committees. Reason: Special attention will be given to this point during the next exercises.
Desirable balance in board composition in terms of diversity (representation of women and men, nationalities, etc.)	The Company, which is not bound by the diversity obligations provided for by the French Commercial Code as its shares are not listed on a regulated market, intends in the long term to further diversify the composition of its board, particularly in terms of of feminization.
Conclusion of a non-competition agreement with corporate officers	To the extent that the contracts concluded between the Company and its employees do not include non-competition clauses, the Company wished to align the condition of executive corporate officers with that of its employees. The Company therefore does not benefit from the protection of this type of clause, even if it also intends to maintain and develop a retention policy by allocating securities giving access to capital to its executive corporate officers.

Apart from setting up the board of auditors and the appointment and compensation committee, and in order to meet the standards of corporate governance that the Company has set itself, the elements described below have now been put in place.

4.4.2 INTERNAL RULES OF THE BOARD OF DIRECTORS

In 2011, the board of directors adopted bylaws, the purpose of which is to define the ways in which it is organized and operates over and above the legal and statutory provisions in force. These rules were reviewed during 2016 year. It is available on request from the registered office of the Company.

In addition to respecting the legal, regulatory and statutory provisions applicable to the Board, the Board of Directors:

- determine the orientations of the Company's activity and ensure their implementation. Subject to the capabilities expressly granted by shareholders' meetings and within the scope of the Company's purpose, it shall consider any matter affecting the proper functioning of the Company and shall, by its deliberations, resolve matters affecting it,
- appoint the chairman of the Board, the chief executive officer and the deputy chief executive officers, determine their duties and remuneration,
- authorize the agreements and commitments referred to in Articles L.225-38 and followings of the Commercial Code,
- authorize the decisions and commitments listed in the Annex to the Rules of Procedure. It ensures the quality of information provided to shareholders and the markets.

4.4.3 ACTIVITY OF THE BOARD OF DIRECTORS

During the 2019 financial year, the board of directors met 6 times.

In addition to its traditional governance missions, including the approval of the 2018 annual accounts and those of the first half of 2019, the board focused in particular on:

- orientation and monitoring of the artificial heart development project;
- the Company's strategic plan;
- the financial forecasts and the financing strategy of the Company;
- the commercial launch plan for the artificial heart;
- the 'long-term-incentives' policy towards the management of the Company and its employees.

The board meetings are subject to an annual provisional calendar defined at the latest in January of each year. Each meeting is prepared in advance by the Chairman and the Chief Executive Officer.

The following table summarizes the effective presence of the directors at the various board meetings:

Effective presence at the board meetings (2019 year)	Number of meetings applicable	Effective presence at the meetings
Jean-Pierre Garnier - Chairman of the Board	6	6
Stéphane Piat - Chef executive officer and Director	6	6
Professeur Alain Carpentier - Director	1	1
Truffle Capital - Director	6	6
Airbus Group - Director	6	3
Henri Lachmann - Director	6	6
Pierre Bastid - Director	6	6
Santé Holdings SRL - Director	6	5
Jean Luc Lemercier - Director	6	6
Michael Mack - Director	6	5

4.4.4 SEPARATION OF THE MANDATES OF THE CHAIRMAN OF THE BOARD OF DIRECTORS AND THE CHIEF EXECUTIVE

When the Company converted to a société anonyme, the board of directors opted for a dissociation of the mandates of the chairman of the board of directors and of the chief executive.

The board of directors must approve in advance the following decisions and commitments, it being specified that the thresholds mentioned below in these decisions will be assessed (i) individually for each operation and (ii) annually:

A. Corporate life of the Company:

(a) any amendment to the articles or other documents constituting the Company or its subsidiaries;

(b) liquidation, amicable dissolution or other similar proceedings relating to the Company and / or the companies or entities controlled by the Company (the «Subsidiaries») and withdrawal from the Company;
B. Strategic decisions:

(a) defining the strategic, economic, social, financial and scientific orientations of the Company;

(b) operations outside the strategy announced by the Company;

(c) significant development of related or derivative activities, directly within the Company, or through subsidiaries controlled or not;

(d) the change in the normal business of the Company and its development strategy;

(e) any significant agreement to use patents or production licenses granted to third parties outside the ordinary course of business;

(f) any transfer, acquisition, contribution or exchange of assets of a unit amount exceeding three hundred thousand euros (€ 300,000);

(g) any investment in excess of three hundred thousand euros (€ 300,000);

(h) mergers, spin-offs, contributions, partnerships, joint ventures or similar significant transactions;

(i) transfer and relocation of the Company's registered office outside France, cross-border merger or conversion of the Company into a European company;

(j) additional indebtedness, modification, refinancing of a loan amounting to more than three hundred thousand euros (€ 300,000);

(k) significant change in the accounting rules and principles applied by the Company;

(l) the hiring, firing and alteration of employment contracts (including the remuneration) of any employee who has an executive function (ie medical director, director of operations, sales manager and administrative director and financial director);

(m) selection of advisers and intermediaries in strategic decision-making and remuneration;

C. Regulated agreements and related party agreements (approval and annual review of contracts in progress);

D. Titles:

(a) issue of any securities giving access, immediately or in the future, to 5% or more of the share capital of the Company;

(b) transfer of securities of subsidiaries to third parties or subscription or acquisition of securities issued by an entity other than a subsidiary;

E. Any proposal to the general meeting of shareholders relating to the policy of dividend distribution, redemption of shares or other payments or distribution to shareholders;

F. Adoption and modification of the annual budget, approval and modification of the business plan;

G. Any commitment exceeding three hundred thousand euros (€ 300,000);

H. Remuneration and profit-sharing of officers in respect of their mandate or employment contract (including any stock option plans, bonus shares or other similar arrangements) on the proposal of the appointments and compensation committee;

I. Appointment and dismissal of the officers, the administrative and financial director, the scientific director and the medical director;

J. Decision of commitment or transaction relating to a dispute of more than two hundred and fifty thousand euros (250,000 €);

K. Site closure; adoption of a plan to safeguard employment;

L. Appointment of statutory auditors and substitutes;

M. Subscription of any loan or advance to acquire securities of any subsidiary company except in the event that such subsidiary is wholly or partly owned by the Company; and

N. Granting of guarantees, endorsements or guarantees for the benefit of third parties (including for the benefit of a subsidiary) or granting of security rights to guarantee debts of the Company,

being specified that:

- one of the aforementioned decisions that would have been foreseen within the annual budget in a precise manner will not have to be approved again when it is implemented; and

- decisions A to E shall be adopted by a majority of (i) half of the directors on first notice and (ii) one - half of the directors present or represented on second call.

For a detailed description of the provisions governing the functioning of the board of directors and the general management, please refer to Paragraph 5.4.2 « Provisions of the articles, a charter or a regulation of the Company regarding members of the board of directors and of the general management ».

4.4.5 INDEPENDENT DIRECTORS

The Company has five independent directors: Henri Lachmann, Jean-Luc Lemercier, Michael Mack and Pierre Bastid, and the company Santé Holdings SRL; the Company believes that since their appointment they have met the criteria of the AFEP-MEDEF code of December 2008 (as amended in June 2018), that is:

- not be or have been in the past five years:

  - employee or director of the Company (the chairman of the Board may be considered as independent if the Company justifies it) or of a group company;

  - director of another company in which the Company directly or indirectly holds a mandate or in which an employee or a director of the Company (present or having been less than five years) holds a mandate;

- not be (directly or indirectly) a significant customer, supplier or banker of the Company or its group or for which the Company or its group represents a significant part of the business;

- have no close family ties with a corporate officer;

- have not been an auditor of the Company during the last five years;

- have not been a member of the Board of the Company for more than twelve years;

- not to be a reference shareholder of the Company or of its parent company exercising control or controlling interest in the Company (Beyond a 10% holding, the Board must consider the independence with regard to the composition of the capital and the existence of potential conflicts of interest).

4.4.6 INTERNAL CONTROL

At the date of this registration document, the Company had internal control procedures, in particular in the administrative, accounting, and financial areas, so as to meet its strategic objectives.

Upon Regulation No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (the so-called MAR Regulation), CARMAT must also, like companies listed on a regulated market, establish and maintain the list of persons who have access to privileged information concerning them.

CARMAT has put in place a code of ethics in order to sensitize all the company's managers and employees, third parties having access to privileged information as well as the persons with whom they are in and to prevent any improper use or disclosure of inside information.

The Board of Directors of 12 December 2016 adopted this code of ethics, which was previously revised by the Audit Committee.

4.5 COMPENSATION AND BENEFITS OF DIRECTORS AND MANAGEMENT

4.5.1 COMPENSATION AND BENEFITS IN KIND GRANTED TO MANAGERS AND DIRECTORS

Table 1: Summary table of compensation and options, warrants and bonus shares awarded to each executive officer (in euros):

As a reminder, CARMAT announced on December 3, 2018 the cooptation of Mr. Jean-Pierre Garnier to the Board of Directors of the Company in replacement of Mr. Jean-Claude Cadudal, Chairman of the Board of Directors resigned, for the remainder of the mandate and his appointment as Chairman of the Board. The appointment of Mr. Jean-Pierre Garnier was ratified by the general meeting of March 28, 2019.

Jean-Claude Cadudal - Chairman of the Board of Directors (till December 3, 2018)	FY 2018	FY 2019
Annual compensation (detailed in table 2)	62,551	-
Value of multiannual variable compensation awarded during the FY	-	-
Value of options and warrants awarded during the FY (detailed in table 4)	-	-
Value of bonus shares awarded for the FY (detailed in table 6)	-	-
TOTAL	62,551	-

Jean-Pierre Garnier - Chairman of the Board of Directors (since December 3, 2018)	FY 2018	FY 2019
Annual compensation (detailed in table 2)	8,333	100,000
Value of multiannual variable compensation awarded during the FY	-	-
Value of options and warrants awarded during the FY (detailed in table 4)	144,900 *	0 **
Value of bonus shares awarded for the FY (detailed in table 6)	-	-
TOTAL	153,233	100,000

*: 46,000 stock options granted in December 2018, subject to conditions, with an exercise price of €20.35. Taking into account the price of the CARMAT share at December 31, 2018, ie €23.50, the potential capital gain relating to these stock options was €144,900 at December 31, 2018.
** : 46,000 stock options granted in April 2019, subject to conditions, with an exercise price of €22.70. Taking into account the price of the CARMAT share at December 31, 2019, ie €19.28, the potential capital gain relating to these stock options was zero at December 31, 2019.

Stéphane Piat - Chief executive officer	FY 2018	FY 2019
Annual compensation (detailed in table 2) *	599,298	621,805
Value of multiannual variable compensation awarded during the FY	-	-
Value of options and warrants awarded during the FY (detailed in table 4)	-	-
Value of bonus shares awarded for the FY (detailed in table 6) **	3,598,438	1,083,343
TOTAL	4,197,736	1,705,148

*: benefits in kind included. Mr. Stéphane Piat did not benefit from any increase in his fixed compensation in 2019. He benefits from variable compensation (based on objectives approved by the Board of Directors), the maximum % of which was increased in 2019 from 45 % to 50%. The % achievement of objectives for 2019 has been set at 98% by the compensation committee.

**: the free shares granted in 2018 and 2019 are subject to performance conditions. Their values at December 31, 2018 and December 31, 2019 correspond to the estimate made by the Company of the probability of achievement of the criteria. At least 10% of the number of ordinary shares resulting from the conversion of the preferential shares granted free of charge to Mr. Stéphane Piat must be held in registered form until the termination of his office as CEO of the Company. To the best of the Company's knowledge, no hedging instrument is put in place.

Table 2: Summary table of the compensation of each executive officer (in euros):

Jean-Claude Cadudal - Chairman of the Board of Directors (till December 3,2018)	FY 2018		FY 2019	
	Amounts due *	Amounts paid **	Amounts due *	Amounts paid **
Fixed remuneration	-	-	-	-
Variable remuneration	-	-	-	-
Special remuneration	-	-	-	-
Directors' fees	62,551 ***	62,551 ***	-	-
Benefits in kind	-	-	-	-
TOTAL	62,551	62,551	-	-

* : For the financial year.
** : During the financial year, including the previous year.
*** : At the meeting of December 19, 2013, the Board decided that, to comply with the applicable regulations, the remuneration of its chairman would be treated for tax and social security purposes as wages. This amount was raised to €62,551 in 2018.

Jean-Pierre Garnier - Chairman of the Board of Director (since December 3, 2018)	FY 2018		FY 2019	
	Amounts due *	Amounts paid **	Amounts due *	Amounts paid **
Fixed remuneration ***	8,333	-	100,000	53,653
Variable remuneration ***	-	-	-	-
Special remuneration	-	-	-	-
Directors' fees	-	-	-	-
Benefits in kind	-	-	-	-
TOTAL	8,333	-	100,000	53,653

* : For the financial year. ** : During the financial year, including the previous year.
*** : under a contract of employment as US Business Development Manager. Mr. Jean Pierre Garnier receives fixed compensation but no variable compensation or any other advantage. He did not benefit from any increase in his compensation in 2019.

Stéphane Piat - Chief executive officer	FY 2018		FY 2019	
	Amounts due *	Amounts paid **	Amounts due *	Amounts paid **
Fixed remuneration ***	408,744	408,744	411,743	411,743
Variable remuneration ***	185,284	160,912	202,269	176,946
Special remuneration	-	-	-	-
Directors' fees	-	-	-	-
Benefits in kind	5,270	5,270	7,793	7,793
TOTAL	599,298	574,926	621,805	596,482

* : For the financial year. ** : During the financial year, including the previous year.
***: Mr. Stéphane Piat did not benefit from any increase in his fixed compensation in 2019. He benefits from variable compensation (based on objectives approved by the Board of Directors), the maximum % of which was increased in 2019 from 45% to 50%. The % achievement of objectives for 2019 has been set at 98% by the compensation committee.

Table 3: Directors' fees and other compensation allocated to non-executive officers

	FY 2018	FY 2019
Professor Alain Carpentier - Director til March 28, 2019		
Director's fees	6,000	1,500
Other compensation	-	-
Truffle Capital - Director		
Director's fees	7,500	7,500
Other compensation	-	-
Airbus Group - Director *		
Director's fees	7,500	4,500
Other compensation	-	-
Henri Lachmann - Director		
Director's fees	7,500	7,500
Other compensation	-	-
Pierre Bastid - Director		
Director's fees	6,000	7,500
Other compensation	-	-
Santé Holdings SRL - Director		
Director's fees	7,500	6,000
Other compensation	-	-
Jean-Luc Lemercier - Director		
Director's fees	10,000	12,500
Other compensation	-	-
Michael Mack - Director		
Director's fees	28,390	22,839
Other compensation	-	-

* Karl Hennessee replaced Anne-Pascale Guédon as permanent representative of Airbus Group on the CARMAT Board of Directors on June 6, 2019.

Table 4: Share subscription or share purchase options awarded to each executive officer during the year ended December 31, 2019

Hereafter is a summary of the option plans granted to Jean-Pierre Garnier during the 2019 financial year:

Plan # and plan date	Type of securities	Value of the options	Number of options granted during the year	Exercise price	Exercise period	General conditions of exercise
2019 Stock Option Plan April 1, 2019	Stock options	Note 1	46,000	€22.70	Till March 31, 2029	Note 2

Note 1: 46,000 stock options granted in April 2019, with an exercise price of €22.70. Given the CARMAT share price at December 31, 2019, ie €19.28, the potential capital gain relating to these stock options was zero at December 31, 2019.

Note 2: the options can be exercised in installments of 1/36 each month after January 1, 2019, and in any event no later than 10 years after their date of allocation to the beneficiary.

Table 5: Share subscription or share purchase options exercised by each executive officer during the year ended December 31, 2019

Hereafter is a summary of the options exercised by Jean-Claude Cadudal during the 2019 fiscal year, it being recalled that he was President of the Board and Director of CARMAT until December 3, 2018:

Plan # and plan date	Exercise year of the options	Number of options exercised	Exercise price **
BSA 2009-1 July 8, 2009	2019 fiscal year	904	€8.00

* one BSA warrant gives right to 25 new CARMAT shares.

** price per new share subscribed

Table 6: Free shares awarded to each executive officer during the year ended December 31, 2019

Shares granted free of charge to each corporate officer by the issuer	Plan # and plan date	Category and number of AGAP granted		Maximum number of ordinary shares to which the AGAP granted are entitled	Value of the shares *	Date of grant	Final acquisition date	Convertibility period	Performance conditions
Stéphane Piat Chief Executive Officer	2019 AGAP Plan April 1, 2019	including AGAP 2019-01	2,640	26,400	€254,496	April 1, 2019	April 1, 2020	From April 1, 2022 till June 30, 2027	See section 5.2.5
		including AGAP 2019-02	2,640	26,400	€305,395				
		including AGAP 2019-03	1,320	13,200	€127,248				
Stéphane Piat Chief Executive Officer	2019 AGAP Plan Sep. 23, 2019	including AGAP 2019-01	1,800	18,000	€173,520	Sep. 23, 2019	Sp. 23, 2020	From Sep. 23 2022 till October 31, 2027	See section 5.2.5
		including AGAP 2019-02	1,800	18,000	€208,224				
		including AGAP 2019-03	150	1,500	€14,460				
TOTAL			10,350	103,500	€1,083,343				

* the free shares granted during the financial year are subject to performance conditions. Their values on December 31, 2019 correspond to the CARMAT share price on this date (ie €19.28) and to the estimate made by the Company of the probability of achievement of the criteria. At least 10% of the number of ordinary shares resulting from the conversion of the preferential shares granted free of charge to Mr. Stéphane Piat must be held in registered form until the termination of his office as CEO of the Company. To the best of the Company's knowledge, no hedging instrument is implemented.

Table 7: Free shares awarded to each executive officer which became freely disposable during the year ended December 31, 2019

Executive officer name	Plan # and plan date	Category and number of AGAP that became available *		Maximum number of ordinary shares to which the acquired AGAP are entitled **	Convertibility conditions
Stéphane Piat Chief Executive Officer	2018 AGAP Plan April 16, 2018				
		AGAP 2018-01	500	50,000	See sections 5.2.5 and 5.4.3
		AGAP 2018-02	7,500	150,000	
TOTAL			8,000	200,000	

* these are AGAP definitively acquired during the 2019 financial year. These AGAP will be convertible into ordinary shares during the convertibility period depending on the achievement of performance criteria (see Sections 5.2.5 and 5.4.3).
** assuming 100% achievement of performance criteria.

Table 8: Historic table of share subscription or share purchase options awarded (concerning executive or non-executive directors)

Table 8 - Part 1	BCE-2009-1	BCE-2009-2	BCE-2012-1	BCE-2012-2	BSA-2009-1
Date of the board meeting	September 9, 2009	July 8, 2009	June 27, 2012	November 8, 2012	July 8, 2009
Number of shares that can be subscribed or acquired	77,700	189,150	56,500	6,700	77,400
Many of which can be subscribed to or acquired by corporate officers (managers and non-managers)	77,700	0	4,000	0	64,750
Jean-Luc Lemercier *					
Michael Mack *					
Jean-Pierre Garnier *					
Marcello Conviti **	77,700		4,000		
Jean-Claude Cadudal **					38,850
Michel Finance **					12,950
André Ballester **					12,950
Starting point for exercising options	September 9, 2009	July 8, 2009	June 27, 2012	November 8, 2012	July 8, 2009
Exercise deadline	September 9, 2019	July 8, 2019	June 27, 2022	November 8, 2022	July 8, 2019
Subscription or purchase price	€8.00	€8.00	€108.483	€122.003	€8.00
Exercise conditions (when the plan includes several tranches)	See note 3, on the next page	See section 5.2.5	See section 5.2.5	See section 5.2.5	See section 5.2.5
Number of shares subscribed as at December 31, 2019	77,700	111,875	0	0	63,500
Cumulative number of options canceled or lapsed	0	3,091 ***	45,000	0	556 ****
Number of options remaining at year-end	0	0	11,500	6,700	0

* Director on the date of publication of this document. ** Former Director of the Company.
*** ie 77,275 ordinary shares after adjustment resulting from the capital increase with preferential subscription rights performed in August 2011.
**** ie 13,900 ordinary shares after adjustment resulting from the capital increase with preferential subscription rights performed in August 2011.

Table 8 - Part 2	BSA-2017- Board Members	Stock options - 2018	Stock options - 2019
Date of the board meeting	May 15, 2017	December 3, 2018	April 1, 2019
Number of shares that can be subscribed or acquired	12,000	46,000	46,000
Many of which can be subscribed to or acquired by corporate officers (managers and non-managers)	12,000	46,000	46,000
Jean-Luc Lemercier *	6,000		
Michael Mack *	6,000		
Jean-Pierre Garnier *		46,000	46,000
Marcello Conviti **			
Jean-Claude Cadudal **			
Michel Finance **			
André Ballester **			
Starting point for exercising options	May 15, 2017	January 1, 2019	January 1, 2019
Exercise deadline	May 15, 2027	December 2, 2028	March 31, 2029
Subscription or purchase price	€30.10 (1)	€20.35 (2)	€22.70 (2)
Exercise conditions (when the plan includes several tranches)	See section 5.2.5	See section 5.2.5	See section 5.2.5
Number of shares subscribed as at December 31, 2019	0	0	0
Cumulative number of options canceled or lapsed	0	0	0
Number of options remaining at year-end	12,000	46,000	46,000

* Director on the date of publication of this document. ** Former Director of the Company.

Note 1: Price corresponding to the volume weighted average of the prices quoted at the 20 trading days preceding the date of the Board of Directors decision.

Note 2: share price (closing price) on Euronext Growth on the day preceding the Board of Directors decision.

Note 3: Note relative to BCE-2009-01:

General conditions of exercise reminder	BCE-2009-1
General conditions of exercise	- 25% of the BCE-2009-1 warrants may be exercised on the date of the first anniversary of the beneficiary joining the Company, subject to his/her actual and continued presence within the Company at that date; - 75% of BCE-2009-1 warrants may be exercised on the basis of monthly periods in tranches of 1/36th from the date of the first anniversary of the beneficiary joining the Company over a period of three years, subject to his/her actual and continued presence within the Company at that date. Early exercising in the event of a share transfer agreement being entered into, with or without conditions precedent, resulting in a change in control of the Company to the benefit of the transferee on the basis of a valuation in excess of €100 million. As a result of the success of the initial listing of the Company on the Alternext market of Euronext Paris, according to the assessment of the meeting of the board of directors of September 8, 2010, 20% of BCE-2009-1 warrants that were not exercisable as at the date of the initial listing may be exercised early.

* : after adjustments resulting from the increase in capital with preferential subscription rights performed in August 2011.

Table 9: Options to subscribe or purchase shares granted to the top ten beneficiaries, employees who are not directors, and options exercised by them

Options granted to the top ten beneficiaries, employees who are not directors, and options exercised by them, including BSA, BSAR, BSPCE, ...	Total number of options granted / shares subscribed or purchased	Weighted average price to subscribe 1 new share	including : BCE-2009-02
Options granted during the fiscal year by the issuer to the top ten beneficiaries, employees of the issuer, the number of options thus granted is the highest (global information)	n / a	n / a	n / a
Options held on the issuer exercised during the fiscal year by the top ten beneficiaries, employees of the issuer, whose number of options purchased or subscribed is the highest (global information)	1,245 *	€8.00	1,245 *

* one option gives right to 25 new shares, parity after adjustment consecutive to the capital increase with preferential subscription right performed in August 2011.

Table 10: Historic table of free shares awarded (global information)

2017 AGAP plans

2017 AGAP plans						
Category of AGAP	AGAP 2017-01	AGAP 2017-02	AGAP 2017-03	AGAP 2017-01	AGAP 2017-02	AGAP 2017-03
Date of the board meeting	May 15, 2017			September 25, 2017		
Total number of AGAP awarded free of charge	270	1,800	3,180	50	200	310
Including number of AGAPs allocated to beneficiary directors	180	1,000	1,720	0	0	0
Stéphane Piat - Chief Executive Officer and Director	180	1,000	1,720	0	0	0
Final acquisition date	May 15, 2018			September 25, 2018		
Convertibility period into ordinary shares *	From May 15, 2020 till May 15, 2025			From September 25, 2020 till September 25, 2025		
End date of lock-up period	May 15, 2020			September 25, 2020		
Number of shares (AGAP) acquired definitively as at December 31, 2019	270	1,800	3,180	50	200	310
Cumulative number of shares (AGAP) lapsed or canceled (total)	0	0	0	0	0	0
Cumulative number of shares (AGAP) lapsed or canceled (directors)	0	0	0	0	0	0
Number of shares (AGAP) remaining to be acquired definitively as at December 31, 2019	0	0	0	0	0	0

* see Section 5.2.5 for the conversion ratios into ordinary shares, and associated performance conditions.

2018 AGAP plans Category of AGAP	AGAP 2018-01	AGAP 2018-02	AGAP 2018-03	AGAP 2018-01	AGAP 2018-02	AGAP 2018-03	AGAP 2018-01	AGAP 2018-02	AGAP 2018-03
Date of the board meeting	April 16, 2018			September 27, 2018			February 11, 2019		
Total number of AGAP awarded free of charge	580	11,500	0	0	0	370	0	0	370
Including number of AGAPs allocated to beneficiary directors	580	7,500	0	0	0	0	0	0	0
Stéphane Piat - Chief Executive Officer and Director	500	7,500	0	0	0	0	0	0	0
Final acquisition date	April 16, 2019			September 27, 2019			February 11, 2020		
Convertibility period into ordinary shares *	From April 16, 2021 till April 16, 2026			From September 27, 2021 till September 27, 2026			From February 11, 2022 till May 11, 2027		
End date of lock-up period	April 16, 2021			September 27, 2021			February 11, 2022		
Number of shares (AGAP) acquired definitively as at December 31, 2019	580	10,350	0	0	0	370	0	0	0
Cumulative number of shares (AGAP) lapsed or canceled (total)	0	200	0	0	0	0	0	0	0
Cumulative number of shares (AGAP) lapsed or canceled (directors)	0	0	0	0	0	0	0	0	0
Number of shares (AGAP) remaining to be acquired definitively as at December 31, 2019	0	950	0	0	0	0	0	0	370

* see Section 5.2.5 for the conversion ratios into ordinary shares, and associated performance conditions.

2019 AGAP plans Category of AGAP	AGAP 2019-01	AGAP 2019-02	AGAP 2019-03	AGAP 2019-01	AGAP 2019-02	AGAP 2019-03	AGAP 2019-01	AGAP 2019-02	AGAP 2019-03
Date of the board meeting	April 1, 2019			September 23, 2019			December 2, 2019		
Total number of AGAP awarded free of charge	4,760	4,760	2,380	2,240	2,240	220	1,000	1,000	1,000
Including number of AGAPs allocated to beneficiary directors	2,640	2,640	1,320	1,800	1,800	150	0	0	0
Stéphane Piat - Chief Executive Officer and Director	2,640	2,640	1,320	1,800	1,800	150	0	0	0
Final acquisition date	April 1, 2020			September 23, 2020			December 2, 2020		
Convertibility period into ordinary shares *	From April 1, 2022 till June 30, 2027			From September 23, 2022 till October 31, 2027			From December 2, 2022 till January 1, 2028		
End date of lock-up period	April 1, 2022			September 23, 2022			December 2, 2022		
Number of shares (AGAP) acquired definitively as at December 31, 2019	0	0	0	0	0	0	0	0	0
Cumulative number of shares (AGAP) lapsed or canceled (total)	120	120	60	0	0	0	0	0	0
Cumulative number of shares (AGAP) lapsed or canceled (directors)	0	0	0	0	0	0	0	0	0
Number of shares (AGAP) remaining to be acquired definitively as at December 31, 2019	4,640	4,640	2,320	2,240	2,240	220	1,000	1,000	1,000

* see Section 5.2.5 for the conversion ratios into ordinary shares, and associated performance conditions.

Table 10bis: Free shares granted to the top ten beneficiaries, employees who are not directors, and shares which became freely available to them

Free shares granted to the top ten beneficiaries, employees who are not directors, and shares which became freely available to them	Total number of free shares (AGAP) granted / free shares (AGAP) became available	including: AGAP 2019-01	including: AGAP-2019-02	including: AGAP-2019-03	including: AGAP-2018-01	including: AGAP-2018-02	including: AGAP-2018-03
Free shares (AGAP) * granted during the fiscal year by the issuer to the top ten beneficiaries, employees of the issuer, whose number of shares thus granted is the highest (global information)	9,420	3,480	3,480	2,090			370
Free shares (AGAP) ** on the issuer that became available during the fiscal year, for the top ten beneficiaries, employees of the issuer, whose number of shares that have thus become available is the highest (global information)	3,975				80	3,525	370

* see to sections 5.2.5 and 5.4.3 for the characteristics and performance conditions attached to AGAP.
** these are AGAP acquired definitively during the fiscal year. These AGAP will be convertible into ordinary shares during the convertibility period depending on the achievement of performance criteria (see Sections 5.2.5 and 5.4.3).

Table 11: Clarification regarding the terms of compensation and other benefits granted to executive officers:

The chief executive officer and the directors do not enjoy any particular retirement benefits, severance payments due when they leave office, or non-competition payments.

Executive officers	Employment contract		Supplementary pension scheme		Allowances or benefits due or likely to be due upon severance or change in role		Allowances connected to a non-competition clause	
	Yes	No	Yes	No	Yes	No	Yes	No
Jean-Pierre Garnier, chairman of the Board	X *			X		X		X
Start date of office								December 3, 2018
End date of office								At the end of the annual general meeting approving the financial statements for the year ended December 31, 2021
Stéphane Piat, chief executive officer		X		X		X		X
Start date of office								August 29, 2016
End date of office								Indefinite period

* : under a contract of employment as US Business Development Manager from December 3, 2018. Mr. Jean Pierre Garnier receives fixed compensation but no variable compensation or any other advantage. He did not benefit from any increase in his compensation in 2019.

4.5.2 SUMS SET ASIDE OR DETERMINED BY THE COMPANY FOR THE PAYMENT OF PENSIONS, RETIREMENT OR OTHER BENEFITS FOR THE MANAGEMENT AND DIRECTORS

The Company has not signed a specific agreement on retirement commitments. These are therefore limited to the agreed retirement lump-sum payment.

In application of the reference method (ANC 2018-01), the provision for retirement commitments has been accounted for as at December 31, 2019.

Refer to the annex 3.2.2.6 within the financial statements.

The overall provision for managers stands at €23,531 at the end of the 2019 fiscal year.

4.5.3 SHARE SUBSCRIPTION WARRANTS (BSA), START-UP COMPANY STOCK WARRANTS (BCE) AND STOCK OPTIONS ASSIGNED TO MANAGEMENT AND DIRECTORS

As at December 31, 2019, the following table shows all non-lapsed share subscription warrants (BSA), start-up company stock warrants (BCE) or stock options issued by the Company to its corporate officers and managers and not exercised by the beneficiaries as at the date of this universal registration document:

Holder / number of shares *	BSA-2017-Board members	Stock options 2018	Stock options 2019
Jean-Pierre Garnier Chairman of the Board of Directors from December 3, 2018	-	46,000	46,000
Jean-Luc Lemercier Director	6,000	-	-
Michael Mack Director	6,000	-	-

* see Section 5.2.5 for details of the conditions of these BSA and stock options

4.5.4 STATEMENT ON SERVICE CONTRACTS

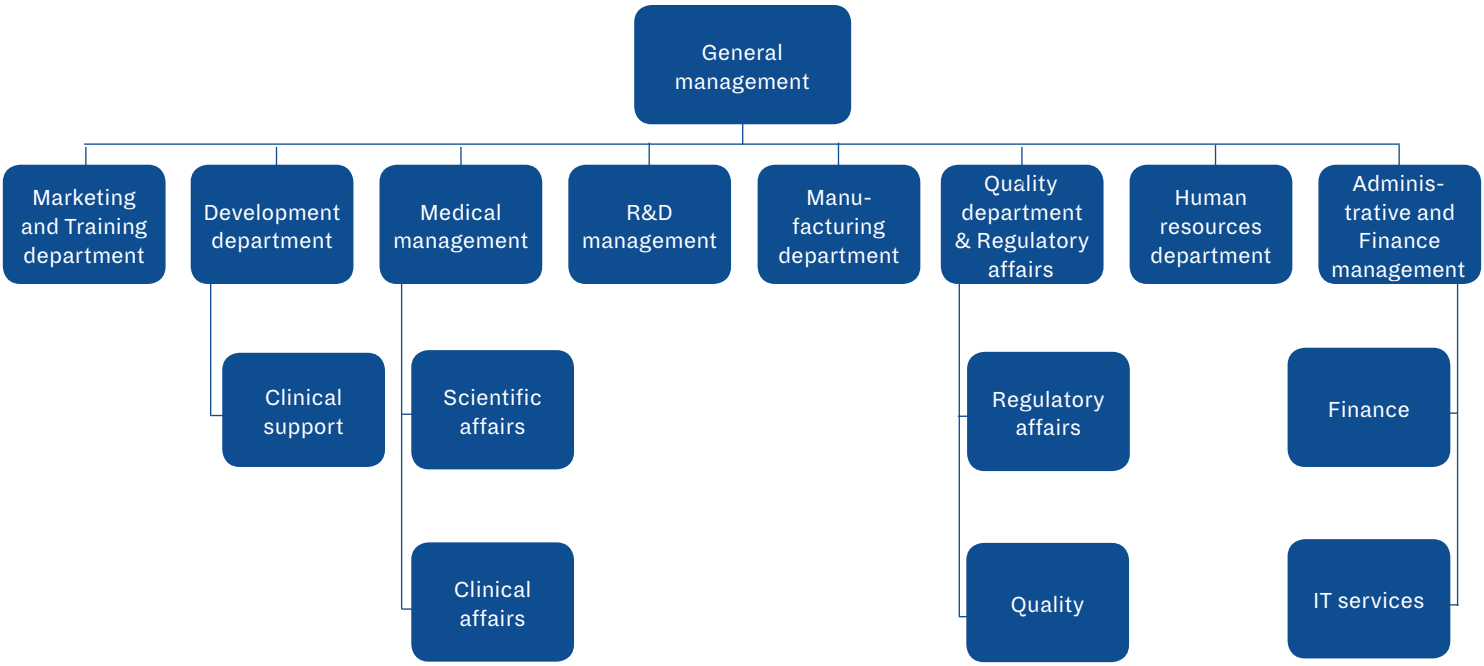
There is no service contract binding the members of the Board of Directors or management of the Company and providing for the granting of benefits under such a contract, with the exception of those mentioned in section 5.6 (« Regulated agreements and commitments »).

4.6 STAFF AND ORGANIZATION

4.6.1 HUMAN RESOURCES

OPERATIONAL STRUCTURE

As at December 31, 2019, the operational structure of the Company was as follows:



NUMBER AND BREAKDOWN OF STAFF

At at December 31, 2019, the Company's workforce numbered 107 people, including 4 temporary workers ; all members of staff are employed under permanent employment contracts.

The Company's workforce increased by 17 employees in 2019, including the hiring of a new Industrial Director (Mr. Alexandre Eléonore).

For specific services within the framework of certain stages of the development of the bioprosthetic artificial heart project, the Company uses different external suppliers.

As at December 31, 2019, there were 60 of them, including approximately twenty in R&D and fifteen in Production.

Changes in workforce at	December 31, 2019	December 31, 2018	December 31, 2017
Managers	80	66	48
Non-management	23	21	15
Trainies	4	3	7
TOTAL	107	90	70

HUMAN RESOURCES POLICY

Staff management is of considerable importance to the company. In fact, the Company must have qualified employees available with strong skill sets since the business of CARMAT relies to a significant extent on the quality and effectiveness of its members of staff. The company believes that it has good staff relations.

The workforce at December 31, 2019 was made up of 39 women and 68 men. The average age of the salaried workforce was 40. During the 2019 fiscal year, the Company financed approximately 1,100 hours of training.

The company applies the National Collective Agreements of the « Metallurgical Industries: workers, employees, technicians, and supervisors » and the « Metallurgical Industries: engineers and managers », as well as the Regional Collective Agreement of the « Metallurgical Industries: workers, employees, technicians, and supervisors of the Paris Region ». There are no company agreements other than the rules of procedure.

Standard contracts of employment contain no clauses relating to breach of the contract of employment or to undertakings relating to non-competition and non-solicitation (staff and/or customers).

All members of staff of the Company benefit, in addition to their basic salary, from a potential annual bonus subject to achieving quantitative and qualitative targets set in advance by the board of directors of the Company and individual targets agreed in advance with the line manager. The amount of this bonus is limited to a percentage of the gross annual salary.

The working week at the company is 35 hours for non-managers and with a fixed number of days (218) per year for managers.

4.6.2 INTERESTS AND SHARE OPTIONS HELD BY MEMBERS OF THE MANAGEMENT AND SUPERVISORY BODIES AND BY EMPLOYEES

The history of the allocation of stock options and stock warrants to the various corporate officers of the Company, as well as the options and warrants they exercised during the 2019 fiscal year, are detailed in section 4.5.1.

The history of the allocation of free shares (preferential shares subject to performance conditions) to the various corporate officers, as well as the free shares that became available during the 2019 fiscal year, are detailed in section 4.5.1.

As of December 31, 2019, to the knowledge of the Company, Stéphane Piat (Chief Executive Officer and Director) held 10,900 shares of the Company (i.e. 0.09% of the share capital). The other current directors of CARMAT do not hold any shares in the Company.

Certain employees of the Company are beneficiaries of the stock options, share subscription warrants (BSA and BSPCE) and free shares (preferential shares subject to performance conditions), detailed in section 5.5.1.

Table 9 in section 4.5.1 specifies the number of stock options granted to the first ten beneficiaries, employees who are not corporate officers, and the options exercised by them during the 2019 fiscal year.

Table 10bis in section 4.5.1 specifies the number of free shares (subject to performance conditions) allocated to the first ten beneficiaries, employees who are not corporate officers, and that of the free shares that became available to them during the 2019 fiscal year.

4.6.3 EMPLOYEE OWNERSHIP AND PROFIT SHARING SCHEMES

As at the date of this universal registration document, the Company had not set up any employee ownership or profit sharing schemes.

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5

INFORMATION ON THE COMPANY AND ITS CAPITAL

5.1 LEGAL STRUCTURE

5.1.1 REGISTERED NAME

The Company's registered name is: "CARMAT".

5.1.2 PLACE AND NUMBER OF THE COMPANY'S REGISTRATION

The Company is registered in the Versailles Trade and Companies Register under number 504 937 905.

Its LEI (Legal Entity Identifier) number is as follows: 96 95 0 0 ARXAC M0P0 KH333.

5.1.3 DATE OF INCORPORATION AND TERM

The Company was incorporated on June 25, 2008 and registered on June 30, 2008 for a term of 99 years, subject to any extension or early dissolution.

5.1.4 REGISTERED ADDRESS, LEGAL FORM AND APPLICABLE LAW

The Company's registered office is located at 36, avenue de l'Europe – Immeuble l'Etendard-Energy III – 78140 Vélizy-Villacoublay (phone number: +33 1 39 45 64 50). The Company is a corporation (société anonyme) under French law with a single board of directors, and is governed especially by the provisions of Book II of the French Commercial Code.

5.1.5 ORGANIZATION OF THE GROUP

The Company is not part of a group.

5.1.6 SUBSIDIARIES AND SHAREHOLDINGS

The Company has no subsidiaries or shareholdings.

5.2 SHARE CAPITAL

5.2.1 VALUE OF THE SHARE CAPITAL

As at December 31, 2019, the fully paid-up share capital amounted to €504,385.96, divided into 12,609,649 shares with a par value of €0.04 each, including:

- 12,592,539 ordinary shares,
- 320 preferential shares of category 2017-01,
- 2,000 preferential shares of category 2017-02,
- 3,490 preferential shares of category 2017-03,
- 580 preferential shares of category 2018-01,
- 10,350 preferential shares of category 2018-02,
- 370 preferential shares of category 2018-03.

The general meeting of 27 April 2017 decided to introduce within article 12.2 of the Company's Articles of Association three categories of preferential shares convertible into ordinary shares governed by articles L. 228-11 et seq. Code of Commerce respectively named

« AGAP 2017-01 », « AGAP 2017-02 » and « AGAP 2017-03 » (hereinafter together referred to as the « Preferential Shares - 2017 »).

Preferential Shares - 2017 are subject to vesting and holding periods and performance criteria to enable their conversion into Ordinary Shares, as described in section 5.2.6 of the universal registration document.

In the same way, the general meeting of 5 April 2018 decided to introduce within article 12.2 of the Company's Articles of Association three new categories of preferential shares convertible into ordinary shares respectively named « AGAP 2018-01 », « AGAP 2018-02 » and « AGAP 2018-03 » (hereinafter together referred to as the « Preferential Shares - 2018 »).

Preferential Shares - 2018 are also subject to vesting and holding periods and performance criteria to enable their conversion into Ordinary Shares, as described in section 5.2.6 of the universal registration document.

Finally, the general meeting of 28 March 2019 decided to introduce within article 12.2 of the Company's Articles of Association three new categories of preferential shares respectively called « AGAP 2019-01 », « AGAP 2019-02 » and « AGAP 2019-03 » (hereinafter together referred to as the « Preferential Shares - 2019 »).

Preferential Shares - 2019 are also subject to vesting and holding periods and performance criteria to enable their conversion into Ordinary Shares, as described in section 5.2.6 of this document.

The allocations of Preferential Shares 2017, 2018 and 2019 are detailed in section 4.5 of this document. As of December 31, 2019, taking into account the required acquisition periods, the following were definitively issued:

- 320 preferential shares of category 2017-01,
- 2,000 preferential shares of category 2017-02,
- 3,490 preferential shares of category 2017-03,
- 580 preferential shares of category 2018-01,
- 10,350 preferential shares of category 2018-02,
- 370 preferential shares of category 2018-03.

5.2.2 SECURITIES NOT REPRESENTING CAPITAL

As at the date of this registration document, there were no securities not representing capital.

5.2.3 PLEDGES, GUARANTEES AND COLLATERAL

As at the date of this registration document, and to the best of the Company's knowledge, there exist no pledges, guarantees or collateral taken on the Company's equity.

5.2.4 ACQUISITION BY THE COMPANY OF ITS OWN SHARES

As at December 31, 2019, the Company held 4,170 treasury shares, representing 0.03% of its share capital.

The combined general meeting of March 28, 2019, authorized the implementation by the board of directors of an 18-month program to buy back company shares, starting from the meeting, pursuant to the provisions of Article L.225-209 of the French Commercial Code and in compliance with the General Regulation of the French Financial Markets Authority (AMF). The main terms of this authorization are the following:

Number of shares that can be purchased: 10% of the share capital on the date of the buyback. When shares are acquired in order to promote the trading and liquidity of shares, the number of shares taken into account to determine the 10% limit referred to above corresponds to the number of shares purchased, less the number of shares sold during the period of authorization.

Objectives of the share buyback program:

- to ensure the liquidity of the shares of the Company as part of a liquidity contract to be signed with an investment services provider, in accordance with a code of ethics recognized by the French Financial Markets Authority;
- to honor the obligations linked to stock option purchase programs, bonus share allocations, employee savings or other allocations of shares to employees and managers of the Company or affiliated companies;
- to deliver shares when the rights attached to securities giving access to capital are exercised;
- to purchase shares for keeping and later delivery or exchange or payment as part of possible acquisitions;
- to cancel all or a portion of the shares bought back

accordingly;

- or more generally, to operate for any objective that would be authorized by law or any market practice that would be authorized by market authorities, with the understanding that in such an event, the Company would inform its shareholders in a press release.

Maximum purchase price: €240, excluding any fees and commissions and adjustments in order to account for capital transactions.

It is specified that the number of shares acquired by the Company to keep and later deliver as payment or in exchange as part of a merger, demerger or contribution transaction cannot exceed 5% of its capital.

Maximum amount of funds that can be used to buy back shares: €5,000,000

The shares bought back can be canceled up to a limit of 10% of the share capital every 24 month period.

5.2.5 OTHER SECURITIES GIVING ACCESS TO CAPITAL

As at December 31, 2019, the exercise or the conversion of all securities giving access to capital would allow the subscription of 1,314,700 new ordinary shares representing 10.44% of the current issued share capital and 9.45% of share capital after issue of these new ordinary shares.

Thus, the size of the holding of a shareholder holding 1% of the current share capital would reduce to 0.91% if the rights to all these securities were exercised.

Refer to the table below:

Type of security	Number of new ordinary shares that may be created (as at December 31, 2019)
Incentive instruments for the management, consultants and board members	
- BCE-2009-2	0
- BCE-2012-1	11,500
- BCE-2012-2	6,700
- BSA-2009-1	0
- BSA-2017-Board members	12,000
- BSA-2018-Consultant	10,000
- BSA-2019-Consultant	6,000
- Stock options-2018	46,000
- Stock options-2019	46,000
- Preferential shares - 2017	421,000
- Preferential shares - 2018	301,500
- Preferential shares - 2018	193,000
Total incentive instruments	1,053,700
Financing tool	
- BSA Kepler Cheuvreux Tranche 1 & 2	261,000
Total financing instruments	261,000

The tables below detail all the securities giving access to the issued capital of the Company, granted and in effect as at December 31, 2019, allowing the subscription of 1,314,700 new Ordinary Shares.

START-UP COMPANY STOCK WARRANTS (BCE)

Type of security	BCE-2009-2
Number of BCE warrants issued and allocated	7,566 *
Number of BCE warrants lapsed	3,091 *
Number of BCE warrants exercised	4,475 *
Balance of BCE warrants to be exercised	0
Date of the general meeting	July 8, 2009
Date of the meeting of the board of directors	July 8, 2009
Exercise price per new share subscribed	€8
BCE warrant exercise deadline	Ten years from the date of the allocation of the BCE warrants
Ratio	1 BCE-2009-2 warrant for 25 new CARMAT shares
General conditions of exercise	- 20% of the BCE-2009-2 warrants may be exercised on the date of the first anniversary of the beneficiary joining the Company, subject to his/her actual and continued presence within the Company at that date; - 40% of the BCE-2009-2 warrants may be exercised per completed monthly period in tranches of 1/48th from the date of the first anniversary of the beneficiary joining the Company; - 10% of the BCE-2009-2 warrants may be exercised from the completion and successful outcome of the initial clinical trials of the CARMAT total artificial heart before the end of the second quarter of 2012 (medical report on completion of the trial covering the safety and end point aspects), subject to his/her actual and continued presence within the Company at that date; - 10% of the BCE-2009-2 warrants may be exercised after the successful outcome of the first clinical implantation of the CARMAT total artificial heart before the end of November 2012 (report from a third party), subject to the actual and continued presence of the beneficiary within the Company at that date; - 6.5% of the BCE-2009-2 warrants may be exercised after the successful outcome of the pivotal clinical trials of the CARMAT total artificial heart (report from the scientific advisory committee), subject to his/her actual and continued presence within the Company at that date; - 6.5% of the BCE-2009-2 warrants may be exercised from the date on which the CE marking is obtained for the CARMAT total artificial heart, subject to actual and continued presence of the beneficiary within the Company at that date; - 7% of the BCE-2009-2 warrants may be exercised after completion at December 31 of the first year of marketing of the CARMAT total artificial heart, confirmed by the board of directors, in accordance with the expectations in terms of revenue and gross profit margin set out in the business plan drawn up by the general management and approved by the board of directors, subject to the actual and continued presence of the beneficiary within the Company at that date.
Number of new shares that may be subscribed	0

* : after adjustments resulting from the increase in capital with preferential subscription rights performed in August 2011.

Type of security	BCE-2012-1
Number of BCE warrants issued and allocated	56,500
Number of BCE warrants lapsed	45,500
Number of BCE warrants exercised	0
Balance of BCE warrants to be exercised	11,500
Date of the general meeting	April 26, 2012
Date of the meeting of the board of directors	June 27, 2012
Exercise price per new share subscribed	€108,483
BCE warrant exercise deadline	Ten years from the date of allocation of the BCE warrants
Ratio	One BCE-2012-1 warrant for 1 new CARMAT share
General conditions of exercise	- 50% of BCE-2012-1 warrants may be exercised on the basis of monthly periods in tranches of 1/48th from the date on which the BCE-2012-1 options are awarded to the beneficiary, subject to his/her actual and continued presence within the Company at that date; - 16.25% of BCE-2012-1 warrants may be exercised after the successful outcome of the pivotal clinical trials of the CARMAT total artificial heart (report from the scientific advisory committee), subject to his/her actual and continued presence within the Company at that date; - 16.25% of the BCE-2012-1 warrants may be exercised from the date on which the CE marking is obtained for the CARMAT total artificial heart, subject to actual and continued presence of the beneficiary within the Company at that date; - 17.5% of the BCE-2012-1 warrants may be exercised after completion at December 31 of the first year of marketing of the CARMAT total artificial heart, confirmed by the board of directors, in accordance with the expectations in terms of revenue and gross profit margin set out in the business plan drawn up by the general management and approved by the board of directors, subject to the actual and continued presence of the beneficiary within the Company at that date.
Number of new shares that may be subscribed	11,500

Type of security	BCE-2012-2
Number of BCE warrants issued and allocated	6,700
Number of BCE warrants lapsed	0
Number of BCE warrants exercised	0
Balance of BCE warrants to be exercised	6,700
Date of the general meeting	April 26, 2012
Date of the meeting of the board of directors	November 8, 2012
Exercise price per new share subscribed	€122.003
BCE warrant exercise deadline	Ten years from the date of allocation of the BCE warrants
Ratio	One BCE-2012-2 warrant for 1 new CARMAT share
General conditions of exercise	- 50% of BCE-2012-2 warrants may be exercised on the basis of monthly periods in tranches of 1/48th from the date on which the BCE-2012-2 options are awarded to the beneficiary, subject to his/her actual and continued presence within the Company at that date; - 16.25% of BCE-2012-2 warrants may be exercised after the successful outcome of the pivotal clinical trials of the CARMAT total artificial heart (report from the scientific advisory committee), subject to his/her actual and continued presence within the Company at that date; - 16.25% of the BCE-2012-2 warrants may be exercised from the date on which the CE marking is obtained for the CARMAT total artificial heart, subject to actual and continued presence of the beneficiary within the Company at that date; - 17.5% of the BCE-2012-2 warrants may be exercised after completion at December 31 of the first year of marketing of the CARMAT total artificial heart, confirmed by the board of directors, in accordance with the expectations in terms of revenue and gross profit margin set out in the business plan drawn up by the general management and approved by the board of directors, subject to the actual and continued presence of the beneficiary within the Company at that date.
Number of new shares that may be subscribed	6,700

SHARE SUBSCRIPTION WARRANTS (BSA)

Type of security	BSA-2009-1
Number of BSA warrants issued and allocated	3,096 *
Number of BSA warrants lapsed	556 *
Number of BSA warrants exercised	2,540 *
Balance of BSA warrants to be exercised	0
Date of the general meeting	July 8, 2009
Date of the meeting of the board of directors	July 8, 2009
Exercise price per new share	€8
BSA warrant exercise deadline	Ten years from the date of allocation of the BSA warrants
Ratio	One BSA-2009-1 warrant for 25 new CARMAT shares
General conditions of exercise	- 25% of the BSA-2009-1 warrants may be exercised on the date of the first anniversary of the beneficiary joining the Company, subject to his/her actual and continued presence within the Company at that date; - 75% of BSA-2009-1 warrants may be exercised on the basis of monthly periods in tranches of 1/36th from the date of the first anniversary of the beneficiary joining the Company, subject to his/her actual and continued presence within the Company at that date. Early exercise at the end of a period expiring 18 months after the establishment of the Company if the beneficiary has occupied the position of chairman of the Company for a period expiring 18 months after the establishment of the Company. As a result of the success of the initial listing of the Company on the Euronext Paris Alternext market, according to the assessment of the meeting of the Company's board of directors of September 8, 2010, 20% of the BSA-2009-1 warrants that were not exercisable as at the date of the initial listing may be exercised early.
Number of new shares that may be subscribed	0

* : after adjustments resulting from the increase in capital with preferential subscription rights performed in August 2011.

The board of directors of December 3, 2018, acting on the departure of Mr. Jean Claude Cadudal, did modify the conditions of exercise of the BSA-2009-1, BSA which remained exercisable until July 8, 2019, even after the departure of his holder.

Type of security	BSA Kepler Cheuvreux - Tranches 1 & 2 (all exercisable by Kepler Cheuvreux)
Number of BSA warrants issued and allocated	400,000
Number of BSA warrants lapsed	0
Number of BSA warrants exercised	139,000
Balance of BSA warrants to be exercised	261,000
Date of the general meeting	April 5, 2018
Date of CEO's decision	September 27, 2018
Exercise price per new share	94% of the average volume-weighted trading price
BSA warrant exercise deadline	September 26, 2020, at the latest date
Ratio	One Kepler BSA warrant for one new CARMAT share
Number of new shares that may be subscribed	261,000

The Company has put in place a new flexible equity financing arrangement with Kepler Cheuvreux, as the previous one ended in July 2018. Signed in September 2018, this new framework agreement comprises up to two consecutive 12-month tranches, namely a first €12 million tranche beginning on the date of signing of the agreement followed by one tranche making the global amount (Tranche 1 + Tranche 2) of a total of €25 million.

Under this mechanism, Kepler Cheuvreux has made a firm and definitive commitment to purchase new shares under Tranches 1 & 2 for €25 million at times and intervals of its own choosing during the 24 months following the signature of said framework agreement, subject to compliance with the terms agreed upon by the two parties. The Company may terminate the agreement at any time. Kepler Cheuvreux does not intend to retain the shares subscribed under these arrangements, and will subsequently sell them to investors or on the open market.

Type of security	BSA-2017-Board members
Number of BSA warrants issued and allocated for free	12,000
Number of BSA warrants lapsed	0
Number of BSA warrants exercised	0
Balance of BSA warrants to be exercised	12,000
Date of the general meeting	April 27, 2017
Date of the meeting of the board of directors	May 15, 2017
Exercise price per new share	€30.10
BSA warrant exercise deadline	May 15, 2027
Ratio	One BSA-2017-Board members warrant for one new CARMAT share
General conditions of exercise	- up to 1,500 warrants will be exercisable from January 2, 2018; - up to 94 additional warrants will be exercisable from each month starting on January 2, 2018, ie from February 2, 2018 for the first tranche, it being specified that the last tranche will be limited to 82 warrants.
Number of new shares that may be subscribed	12,000

Type of security	BSA-2018-Consultant
Number of BSA issued and subscribed at €3.14 / BSA	10,000
Number of BSA warrants lapsed	0
Number of BSA warrants exercised	0
Balance of BSA warrants to be exercised	10,000
Date of the general meeting	April 5, 2018
Date of the meeting of the board of directors	June 11, 2018
Exercise price per new share	€20.93
BSA warrant exercise deadline	June 11, 2028
Ratio	One BSA-2018-Consultant warrant for one new CARMAT share
General conditions of exercise	- up to 2,500 warrants will be exercisable after each 12 months period starting as at June 11, 2018, taking into account that the consulting agreement with the Company would have to be maintained during that 12 months period; - June 11, 2028, at the latest date
Number of new shares that may be subscribed	10,000

Type of security	BSA-2019-Consultant
Number of BSA issued and subscribed at €3.03 / BSA	6,000
Number of BSA warrants lapsed	0
Number of BSA warrants exercised	0
Balance of BSA warrants to be exercised	6,000
Date of the general meeting	March 28, 2019
Date of the meeting of the board of directors	June 24, 2019
Exercise price per new share	€20.21
BSA warrant exercise deadline	June 24, 2029
Ratio	One BSA-2019-Consultant warrant for one new CARMAT share
General conditions of exercise	- up to 166 warrants per full calendar month that has elapsed from the first day of the calendar month following the decision of the board of directors; - June 24, 2029, at the latest date
Number of new shares that may be subscribed	6,000

STOCK OPTIONS

Type of security	Stock options - 2018
Number of options issued and allocated	46,000
Number of options lapsed	-
Number of options exercised	-
Balance of options to be exercised	46,000
Date of the general meeting	April 5, 2018
Date of the meeting of the board of directors	December 3, 2018
Exercise price per new share	€20.35
Options exercise deadline	Ten years from the date of allocation of the options
Ratio	One option - 2018 for 1 new CARMAT share
General conditions of exercise	- 50% of the options may be exercised in increments of 1/36 each month elapsed from 1 January 2019, and in any event no later than 10 years after their date of allocation to the beneficiary; - 50% of the options are exercisable when the Company succeeds in successfully raising additional financing (excluding Equity Line financing and EIB type loans) for an amount of at least €100 million between the date of grant and December 31, 2020, and in any event no later than 10 years after their date of allocation to the beneficiary.
Number of new shares that may be subscribed	46,000

Type of security	Stock options - 2019
Number of options issued and allocated	46,000
Number of options lapsed	-
Number of options exercised	-
Balance of options to be exercised	46,000
Date of the general meeting	March 28, 2019
Date of the meeting of the board of directors	April 1st, 2019
Exercise price per new share	€22.70
Options exercise deadline	Ten years from the date of allocation of the options
Ratio	One option - 2019 for 1 new CARMAT share
General conditions of exercise	- the options can be exercised in increments of 1/36 each month elapsed from 1 January 2019, and in any event no later than 10 years after their date of allocation to the beneficiary; - March 31, 2029, at the latest date
Number of new shares that may be subscribed	46,000

PREFERENTIAL SHARES (FREE PREFERENTIAL SHARES SUBJECT TO PERFORMANCE CRITERIA OVER A 3 YEARS PERIOD)

(see section 5.4.3 « Rights, privileges and restrictions attaching to shares (Articles 9 to 14 of the Articles of Association) » of the universal registration document, specifying the characteristics of Preferential Shares and conversion ratios into Ordinary Shares).

AGAP 2017 Preferential shares classes	Performance criteria	Number of preferential shares issued (as at December 31, 2019)	Maximum conversion ratio applicable for each performance criteria	Number of common shares issuable
Class 1	Definition of the Company's industrial development plan	320	100	32,000
Class 2	Successful implantation of the bioprosthesis evaluated on 10 patients in total in the world	2,000	20	40,000
Class 3	Filing of the clinical module of the CE marking of the bioprosthesis	3,490	15	52,350
	CE marking of the bioprosthesis		20	69,800
	Obtaining additional financing for the Company for an aggregate amount, between the grant date and the convertibility date, of €100 million		25	87,250
	Implementation of a production process meeting certain criteria		15	52,350
	Effective commercialization of bioprostheses at 15 European implantation centers		10	34,900
	Successful implantation of the bioprosthesis evaluated on 10 patients in the United States		10	34,900
	Successful implantation of the bioprosthesis evaluated on 100 patients in total in the world		10	34,900
	Positive development of the ordinary share price according to specific criteria		10	34,900
	Maximum number of ordinary shares that may be created, regardless of the number of performance achieved for Class 3		100	349,000
	TOTAL	5,810		421,000

AGAP 2018 Preferential shares classes	Performance criteria	Number of preferential shares issued (as at December 31, 2019)	Maximum conversion ratio applicable for each performance criteria	Number of common shares issuable
Class 1	Successful execution of « prosthesis» test benches for CE marking	580	100	58,000
Class 2	Recruitment of 10 patients in the pivotal study for CE marking		10	113,000
	Recruitment of the 20th patient in the pivotal study to obtain the CE marking or finalization of the pivotal study for submission of the dossier to DEKRA	11,300 *	5	56,500
	Obtaining authorization to conduct an Early Feasability Study in the United States by December 31, 2018		5	0 *
	Maximum number of ordinary shares that may be created, regardless of the number of performance achieved for Class 2		20	169,500
Class 3	Filing of the clinical module of the CE marking of the bioprosthesis		15	11,000
	CE marking of the bioprosthesis		20	14,800
	Obtaining additional financing for the Company for an aggregate amount, between the grant date and the convertibility date, of €38.5 million		25	18,500
	Implementation of a production process meeting certain criteria	740	15	11,000
	Effective commercialization of bioprostheses at 15 European implantation centers		10	7,400
	Successful implantation of the bioprosthesis evaluated on 10 patients in the United States		10	7,400
	Successful implantation of the bioprosthesis evaluated on 100 patients in total in the world		10	7,400
	Positive development of the ordinary share price according to specific criteria		10	7,400
	Maximum number of ordinary shares that may be created, regardless of the number of performance achieved for Class 3		100	74,000
	TOTAL	12,820		301,500

*: 11,500 AGAP-2018-02 had been awarded by the Board of Directors, number reduced to 11,300 because of the departure of a beneficiary.
**: The corresponding performance criterion has not been achived.

AGAP 2019 Preferential shares classes	Performance criteria	Number of preferential shares issued (as at December 31, 2019)	Maximum conversion ratio applicable for each performance criteria	Number of common shares issuable
Class 1	Successful completion of the first patient treated in the United States of the US pivotal study following the positive conclusion of the Early Feasability Study	7,880 *	10	78,800
Class 2	Obtaining CE marking with sufficient inventory to support the commercial launch	7,880 **	10	78,800
Class 3	Billing and implantation of 5 prostheses within 4 months of CE marking	3,540 ***	10	35,400
	TOTAL	19,600		193,000

*: 8,000 AGAP-2019-01 had been awarded by the Board of Directors, number reduced to 7,880 because of the departure of a beneficiary.
**: 8,000 AGAP-2019-02 had been awarded by the Board of Directors, number reduced to 7,880 because of the departure of a beneficiary.
***: 3,600 AGAP-2019-03 had been awarded by the Board of Directors, number reduced to 3,540 because of the departure of a beneficiary.

5.2.6 SHARE CAPITAL AUTHORIZED BUT NOT ISSUED

Table of delegations applicable following the general meeting of March 28, 2019:

Shareholders' meeting of March 28, 2019

Resolution	Subject matter of the resolution	Maximum nominal amount in euros	Maximum nominal amount in euros	Period of authorization and expiry
11th resolution	Delegation of authority allowing the board of directors to increase capital immediately or in the future by issuing ordinary shares or any other securities giving access to the capital or giving right to the allocation of debt securites, with retention of preferential subscription rights	Nominal value of increases in capital: €200,000 (1) Face value of bonds and other debt instruments giving access to capital: €120,000,000 (1)	N / A	May 28, 2021 (26 months)
12th resolution	Delegation of authority allowing the board of directors to decide on the issue of shares and/or transferable securities giving immediate or future access to capital or giving right to the allocation of debt securities, with removal of the preferential subscription right by way of a public offer (Article L.225-136)	Nominal value of increases in capital: €200,000 (1) Nominal amount of bonds and other debt instruments giving access to capital: €120,000,000 (1)	At least equal to the average volume-weighted price of the last five stock market sessions prior to the defining of the issue price less any discount (maximum 30%)	May 28, 2021 (26 months)

(1) These amounts are not cumulative. The overall maximum nominal amount of capital increases that can be carried out under the delegations granted under resolutions 11 to 18 is set at €200,000. The maximum nominal amount of debt securities which can be issued under the above delegations is set at €120,000,000.

Resolution	Subject matter of the resolution	Maximum nominal amount in euros	Maximum nominal amount in euros	Period of authorization and expiry
13th resolution	Delegation of authority allowing the board of directors to decide on the issue of shares and/or transferable securities giving immediate or future access to capital or giving right to the allocation of debt securites, with removal of the preferential subscription rights, by offering to qualified investors or to a limited circle of investors in the meaning of Paragraph II of Article L.411-2 of the French Monetary and Financial Code (Article L.225-136 3)	Nominal value of increases in capital: €200,000 (1) Nominal amount of bonds and other debt instruments giving access to capital: €120,000,000 (1)	At least equal to the average volume-weighted price of the last five stock market sessions prior to the defining of the issue price less any discount (maximum 30%)	May 28, 2021 (26 months)
14th resolution	Subject to the listing of the Company's shares on a regulated market, the authorization allowing the board of directors, in the event of the issue of shares or of any security giving access to capital with removal of the preferential subscription right, to set the issue price at a maximum of 10% of the share capital and within the limits determined by general meeting	Limited to 10% of the Company's capital (as existing on the date of the transaction) per 12 month period	At least equal to the average volume-weighted price of the last five stock market sessions prior to the defining of the issue price, less any discount (maximum 30%)	May 28, 2021 (26 months)
15th resolution	Delegation of authority allowing the board of directors to increase the amount of each of the issues with or without preferential subscription right which would be decided under resolutions 11 to 13.	Limited to 15% of the initial issue	Price identical to that of the initial issue	May 28, 2021 (26 months)
16th resolution	Delegation of authority allowing the board of directors to increase capital immediately or in the future by issuing ordinary shares or any other securities giving access to the capital, with removal of the preferential subscription right to a category of beneficiaries (Biotech/Medtech investors)	Nominal value of increases in capital: €200,000 (1) Face value of bonds and other debt instruments giving access to capital: €120,000,000 (1)	At least equal to the average volume-weighted price of the last five stock market sessions prior to the defining of the issue price less any discount (maximum 30%)	September 28, 2020 (18 months)
17th resolution	Delegation of authority allowing the board of directors to increase capital immediately or in the future by issuing ordinary shares or any other securities giving access to the capital, with removal of the preferential subscription right to a category of beneficiaries (Strategic partners)	Nominal value of increases in capital: €200,000 (1) Face value of bonds and other debt instruments giving access to capital: €120,000,000 (1)	At least equal to the average volume-weighted price of the last five stock market sessions prior to the defining of the issue price less any discount (maximum 30%)	September 28, 2020 (18 months)
18th resolution	Delegation of authority allowing the board of directors to decide on the issue of shares and/or securities giving immediate or future access to the capital or providing a right to a debt instrument, with removal of the preferential subscription right of shareholders for the benefit of a category of beneficiaries (equity line financing plan)	Nominal value of increases in capital: €200,000 (1) Nominal amount of bonds and other debt instruments giving access to capital: €120,000,000 (1)	At least equal to the average volume-weighted price of the last three stock market sessions prior to the defining of the issue price less any discount (maximum 30%)	September 28, 2020 (18 months)
20rd resolution	Delegation of authority allowing the board of directors to increase capital by incorporation of premiums, reserves, profits or other	Nominal value of increases in capital: €200,000 (2)	N / A	May 28, 2021 (26 months)

(2) Separate limit to the limit for resolutions 11 to 18 above.

Ordinary shares warrants issue:

Resolution	Subject matter of the resolution	Maximum nominal amount in euros	Method of determining the issue price	Method of determining the exercise price	Period of authorization and expiry
21th resolution	Delegation of authority allowing the board of directors to issue warrants dedicated to board members (not having the quality of employees or managers), persons bound by a contract of services or members of Committees set up by the board of directors	€4,000 (corresponding to 100,000 shares) (1)	To be fixed by the board of directors Issue price could be free	At least equal to the average of the prices weighted by the volumes of the last 20 trading sessions preceding the fixing of the issue price of the warrants	September 28, 2020 (18 months)

(1) These amounts are not cumulative. The overall maximum nominal amount of capital increases that can be carried out under the delegations granted under resolutions 21 and 22 is set at €4,000.

Subscription or purchasing of shares options issue:

Resolution	Subject matter of the resolution	Maximum nominal amount in euros	Method of determining the exercise price	Period of authorization and expiry
22th resolution	Authorization granted to the board of directors to award options for the subscription or purchasing of shares.	€4,000 (corresponding to 100,000 shares) (1)	(2)	May 28, 2022 (38 months)

(1) These amounts are not cumulative. The overall maximum nominal amount of capital increases that can be carried out under the delegations granted under resolutions 21 and 22 is set at €4,000.

(2) The purchase or subscription price per share will be set by the board on the day the option is granted, based on the following:
- for as long as the shares are admitted for trading on the Euronext Growth market, the purchase or subscription price shall be determined in accordance with the provisions of Article L. 225-177 of the French Commercial Code and must be at least equal to the sales price of one share at the close of the Euronext Growth market on the day prior to the decision of the board of directors to allocate the options;
- in the event that the Company's shares are admitted for trading on a regulated market, the board may determine the purchase or subscription price per share with reference to the sales price of one share at the close of that regulated market on the day prior to the decision of the board to allocate the options. However, the purchase or subscription price per share may under no circumstances be less than ninety-five percent (95%) of the average sales price of one share at the close of the said market during the twenty trading days prior to the decision of the board of directors to allocate the options rounded dow to the nearest euro, nor, for the bonds, to 80% of the average salesprice of the bonus shares of the Company, rounded down to the nearest euro.

Free allocation of preferential shares:

Resolution	Subject matter of the resolution	Maximum nominal amount in euros	Acquisition period for the preferred shares	Lockup period applicable to the preferred shares	Exercise period of the conversion option into ordinary shares	Period of authorization and expiry
25th resolution	Delegation of authority allowing the board of directors to allocate free preferential shares convertible into ordinary shares «AGAP 2019-01» dedicated to employees and / or corporate officers	€3,200 (corresponding to 80,000 ordinary shares)	1 year	2 years minimum	5 years and 3 months from the end of the lock-up period	May 28, 2022 (38 months)
26th resolution	Delegation of authority allowing the board of directors to allocate free preferential shares convertible into ordinary shares «AGAP 2019-02» dedicated to employees and / or corporate officers	€3,200 (corresponding to 80,000 ordinary shares)	1 year	2 years minimum	5 years and 3 months from the end of the lock-up period	May 28, 2022 (38 months)
27th resolution	Delegation of authority allowing the board of directors to allocate free preferential shares convertible into ordinary shares «AGAP 2019-03» dedicated to employees and / or corporate officers	€1,600 (corresponding to 40,000 ordinary shares)	1 year	2 years minimum	5 years and 3 months from the end of the lock-up period	May 28, 2022 (38 months)

Performance criteria to be met in order to make the preferential shares AGAP 2019-01, AGAP 2019-02 and AGAP 2018-03 convertible into ordinary shares:

- For AGAP 2019-01:

- successful completion of the first patient treated in the United States of the US pivotal study following the positive conclusion of the Early Feasability Study

- For AGAP 2019-02:

- obtaining the CE marking with sufficient inventory to support the commercial launch.

- For AGAP 2019-03:

- billing and implantation of 5 prostheses in 4 months after CE marking.

On the date of filing of this universal registration document, the board of directors made use of the delegations of authority voted at the general meeting of shareholders of the Company of April 5, 2018, proceeded on February 11, 2019 to the free allocation of:

- 370 AGAP 2018-03.

In addition, the board of directors made use of the delegations of authority voted at the general meeting of shareholders of the Company on March 28, 2019, in the following manner:

- the board of directors, made use of the delegations of authority voted at the general meeting of March 28, 2019, decided the free allocation on April 1, 2019, September 23, 2019 and December 2, 2019 a total of:

- 8,000 AGAP 2019-01.
- 8,000 AGAP 2019-02.
- 3,600 AGAP 2019-03.

Following the departure of one of the beneficiaries, 7,880 AGAP 2019-01, 7,880 AGAP 2019-02 and 3,540 AGAP 2019-03 are respectively in circulation today.

- the board of directors, making use of the delegations of authority voted at the general meeting of March 28, 2019, decided to issue on June 24, 2019 of 6,000 BSA - 2019 for the benefit of a consultant of the Company.

- the board of directors, making use of the delegations of authority voted at the general meeting of March 28, 2019, decided on April 1, 2019 to grant Jean-Pierre Garnier a share subscription option program for up to 46,000 stock options.

- the board of directors, making use of the delegations of authority voted at the general meeting of March 28, 2019, approved on September 18, 2019, the principle of two capital increases by the issue of ordinary shares with removal of shareholders' preferential subscription rights for a maximum total nominal amount of € 200,000:

- one reserved (16th resolution) for the benefit of a first category of beneficiaries,
- and the other (17th resolution) for the benefit of a second category of beneficiaries.

These capital increases resulted in the issuance of 3,157,895 new ordinary shares.

5.2.7 DETAILS OF THE COMPANY'S SHARE CAPITAL SUBJECT TO AN OPTION OR A CONDITIONAL OR UNCONDITIONAL AGREEMENT MAKING THEM SUBJECT TO AN OPTION

None.

5.2.8 TABLE OF CHANGES IN THE COMPANY'S SHARE CAPITAL

The Company was registered in the Versailles Trade and Companies Register on June 30, 2008 with an initial share capital of €40,000. The table below shows a summary of the changes in share capital during the last 3 years.

Date of realization of the operation	Type of operation	Increase in capital (in euros)	Issue premium or contribution (in euros)	Number of shares created	Nominal value of shares (in euros)	Cumulative number of shares	Share capital following the operation (in euros)
February 10, 2017	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrants	380.00	245,975.00	9,500	0.04	6,035,444	241,417.76
May 15, 2017	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	1,520.00	971,430.00	38,000	0.04	6,073,444	242,937.76
June 12, 2017	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	2,644.00	1,760,686.00	66,100	0.04	6,139,544	245,581.76
September 25, 2017	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	3,080.00	1,871,760.00	77,000	0.04	6,216,544	248,661.76

Note that Kepler Cheuvreux does not intend to retain the shares subscribed under the share issue agreements made in January 2015 and in September 2018, and will subsequently sell them to investors or on the open market.

Date of realization of the operation	Type of operation	Increase in capital (in euros)	Issue premium or contribution (in euros)	Number of shares created	Nominal value of shares (in euros)	Cumulative number of shares	Share capital following the operation (in euros)
December 1, 2017	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	6,200.00	3,402,140.00	155,000	0.04	6,371,544	254,861.76
December 12, 2017	Increase in capital by cash contribution	105,800.00	52,794,200.00	2,645,000	0.04	9,016,544	360,661.76
February 12, 2018	Increase in capital by cash contribution through the exercise of Kepler BSA warrants	1,840.00	957,800.00	46,000	0.04	9,062,544	362,501.76
April 16, 2018	Increase in capital by cash contribution through the exercise of Kepler BSA warrants	3,640.00	1,837,500.00	91,000	0.04	9,153,544	366,141.76
December 3,2018	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	3,445.00	1,785,240.00	86,125	0.04	9,239,669	369,586.76
Février 11,2019	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant / AGAP effective acquisition	3,522.40	1,625,360.00	82,250 OS 5,810 PS	0.04	9,321,919 OS 5,810 PS	373,109.16
April 1st, 2019	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	630.00	329,370.00	15,750 OS	0.04	9,337,669 OS 5,810 PS	373,739.16
June 24, 2019	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant / AGAP effective acquisition	3,366.20	972,401.00	73,225 OS 10,930 PS	0.04	9 410 894 OS 16,740 PS	377,105.36
September 18, 2019	Increase in capital by cash contribution	126,315.80	59,873,689.20	3,157,895 OS	0.04	12,568,789 OS 16,740 PS	503,421.16
September 23, 2019	Increase in capital by cash contribution through the exercise of both Kepler BSA warrants and BCE warrant	950.00	329,050.00	23,750 OS	0.04	12,592,539 OS 16,740 PS	504,371.16
December 2nd, 2019	AGAP effective acquisition	14.80	-	370 PS	0.04	12,592,539 OS 17,110 PS	504,385.96

OS: Ordinary Shares PS: Preferential Shares

Note that Kepler Cheuvreux does not intend to retain the shares subscribed under the share issue agreements made in January 2015 and in September 2018, and will subsequently sell them to investors or on the open market.

5.3 MAJOR SHAREHOLDERS

5.3.1 DISTRIBUTION OF CAPITAL AND VOTING RIGHTS

CURRENT DISTRIBUTION OF CAPITAL AND VOTING RIGHTS

The table hereafter shows the distribution of the ca
and voting rights (please refer to Paragraph 5.3.2 « V
rights » of this universal registration document, w
indicates the conditions under which double voting ri
may be obtained) of the Company at December 31, 2
to the best of the Company's knowledge:

Shareholders (December 31, 2019)	Number of shares	Number of voting rights	% of capital	% of voting rights
Matra Défense (Airbus Group)	1,670,640	2,652,040	13.2%	18.4%
Professor Alain Carpentier	548,583	1,097,166	4.4%	7.6%
Research Association of the Alain Carpentier Foundation	115,000	230,000	0.9%	1.6%
Funds managed by Truffle Capital	356,024	470,103	2.8%	3.3%
Air Liquide	76,982	76,982	0.6%	0.5%
Cornovum	458,715	458,715	3.6%	3.2%
Lohas	1,449,603	1,449,603	11.5%	10.0%
Santé Holdings SRL	925,091	925,091	7.3%	6.4%
Thérabel Pharma	309,210	309,210	2.5%	2.1%
Corely Belgium	800,000	800,000	6.3%	5.5%
Bratya SPRL	250,000	250,000	2.0%	1.7%
Bad 21	652,632	652,632	5.2%	4.5%
Treasury stock	4,170	-	0.0%	-
Secondary offering	4,992,999	5,055,326	39.6%	35.0%
Total	12,609,649	14,426,868	100.0%	100.0%

To the best of the Company's knowledge, there is no other shareholder owning more than 5% of the capital or the voting rights.

Funds managed by Truffle Capital

Founded in 2001 in Paris, Truffle Capital is an acknowledged European player in the area of investment capital, investing in and developing innovative SMEs and building technological leaders in the areas of Life Sciences, Information Technology and Energy.

Airbus Group

Airbus Group (formerly EADS), born out of a merger in July 2000 between DaimlerChrysler Aerospace AG, Aérospatiale-Matra and Construcciones Aeronáuticas SA, is a world leader in the aeronautic, space and defense and associated services sectors. Airbus Group holds shares in CARMAT through its wholly-owned subsidiary, Matra Défense.

Professor Carpentier

Professor emeritus at the Pierre and Marie Curie University (University of Paris VI) and Professor at the Mount Sinai School of Medicine in New York, he is the founder and director of the Biosurgical Research Laboratory at the Scientific Research Association of the Alain Carpentier Foundation.

Winner of the 1998 Foundation for Medical Research Grand Prize, and vice-chairman of the Academy of Sciences, he also received the prestigious Albert Lasker Award for Clinical Medical Research in 2007 in recognition of his two main contributions to the field - invention of valve bioprostheses (Carpentier-Edwards valves) and the development of techniques for plastic and reconstructive surgery of heart valves, which benefit several hundred thousand patients worldwide each year.

Scientific Research Association of the Alain Carpentier Foundation (ARSFAC)

Set up in December 2007 by Professor Alain Carpentier, the purpose of the Scientific Research Association of the Alain Carpentier Foundation is to finance medical research projects, in particular in the surgical, cardiovascular and neurological areas.

Lohas

This entity is a family office of Mr. Pierre Bastid, having acquired the Existing Shares originally subscribed by ZAKA (another family office of Mr. Pierre Bastid) as part of the Company's private placement executed in 2016, from Babalia (another family office of Mr. Pierre Bastid) in July 2018.

Santé Holdings SRL

This entity is the family office of Dr. Antonino Ligresti, who was notably President of Générale de Santé.

CorNovum

This entity is an investment vehicle equally owned by the French State and by BPI France.

Thérabel Group

The Thérabel group is a pharmaceutical group operating both in the field of prescription drugs and that of over-the-counter (OTC) drugs.

Corely Belgium SPRL and Bratya SPRL

These two entities are investment holding companies of the Gaspard family, owner of the Lyreco group.

Bad 21 BVBA

This entity is the investment holding company of Pierre-Edouard Stérin, founder of Smartbox.

CHANGE IN THE DISTRIBUTION OF CAPITAL AND VOTING RIGHTS

The table below shows the distribution of capital and voting rights in the Company as at December 31, 2018, December 31, 2017 and as at December 31, 2016, insofar as known to the Company.

It should be noted that on February 26, 2016 the Company announced a significant fund-raising initiative, for €50 million, via a reserved capital increase operation after the effective extraordinary general meeting held on April 12, 2016, and subscribed by a pool of strategic investors, composed of Air Liquide via its investment holding company ALIAD, of the joint investment vehicle of Bpifrance and the State (Programme des Investissements d'Avenir (future investments program - CorNovum), the family offices of Mr. Pierre Bastid (ZAKA) and of Dr. Ligresti (Santé Holdings SRL) and by the reference shareholders, Matra Défense (Airbus Group) and Truffle Capital.

In addition, in December 2017, the Company launched a capital increase operation through a public offering that benefited from the support of the historic shareholders, in particular the family offices of Mr. Pierre Bastid (Babalia) and Dr. Ligresti (Santé Holdings SRL).

Finally, the Company announced on September 19, 2019 the success of a private placement of € 60 million to investors specializing in the life sciences and medical technologies sectors, and to strategic partners. In particular, some historic shareholders (Matra Defense of the Airbus group, Lohas, Santé Holdings SRL and Thérabel group) participated in this financing round, but also new family shareholders and entrepreneurs including Corely Belgium SPRL and Bratya SPRL (family investment holdings Gaspard, owner of the Lyreco group), and Bad 21 SPRL (investment holding company of Pierre-Edouard Stérin, founder of Smartbox).

These operations explains the observable changes in the CARMAT composition of the shareholders these last years.

Shareholders	As at December 31, 2018		As at December 31, 2017		As at December 31, 2016	
	% of capital	% of voting rights	% of capital	% of voting rights	% of capital	% of voting rights
Matra Défense (Airbus Group)	14.4%	20.9%	14.8%	20.7%	22.1%	27.5%
Professor Alain Carpentier	5.9%	9.9%	6.1%	9.8%	9.1%	13.0%
ARSFAC	1.2%	2.1%	1.3%	2.1%	1.9%	2.7%
Funds managed by Truffle Capital	3.8%	4.2%	8.5%	11.5%	15.4%	19.6%
Air Liquide	0.8%	0.7%	0.9%	0.7%	0.5%	0.3%
Cornovum	5.0%	4.1%	5.1%	4.1%	7.6%	5.4%
Lohas	13.9%	11.6%	14.3%	11.5%	4.8%	3.5%
Santé Holdings SRL	7.4%	6.2%	7.6%	6.1%	3.1%	2.2%
Thérabel Pharma	1.4%	1.1%	-	-	-	-
Treasury stock	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Secondary offering	46.1%	39.1%	41.4%	33.6%	35.4%	25.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

5.3.2 VOTING RIGHTS

The voting right attaching to shares is proportional to the percentage of capital that they represent and each share gives an entitlement to at least one vote.

However, in accordance with Article 14 of the Articles of Association and in accordance with the provisions of the French Commercial Code, all fully paid up shares which can be shown to have been registered to the same shareholder for at least two years will benefit, with effect from the first listing of the shares of the Company on the Euronext Growth market, from double voting rights compared with those given to other shares having regard to the percentage of share capital that they represent.

5.3.3 STATEMENT CONCERNING CONTROL OF THE COMPANY

As at the date of this universal registration document, to the best of the Company's knowledge, no single shareholder was in control of the Company, directly or indirectly or with others, within the meaning of Article L.233-3 et seq. of the French Commercial Code.

5.3.4 AGREEMENTS THAT MAY BRING ABOUT A CHANGE IN THE CONTROL

As at the date of this universal registration document, and to the best of the Company's knowledge, there are no agreements that may bring about a change in control of the Company.

5.4 MEMORANDUM AND ARTICLES OF ASSOCIATION

5.4.1 CORPORATE PURPOSE (ARTICLE 2 OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION)

The purpose of the Company is, either directly or indirectly, both in France and abroad:

- research and development in the field of medical devices and equipment, specifically in the cardiovascular field, and in all scientific fields directly or indirectly related thereto;
- production and marketing of (i) medical devices and equipment in the cardiovascular field and (ii) all associated technologies;
- acquisition or creation of technology products and licenses connected with the cardiovascular field;
- investment in French or foreign enterprises having activities that are similar to, or which complement those mentioned above;
- and, more generally, all operations of any kind - economic, legal, financial, civil or commercial, industrial, movables or real estate – that may be directly or indirectly connected with the above-mentioned object or likely to contribute to the development thereof.

5.4.2 PROVISIONS OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION, A CHARTER OR BYLAWS OF THE COMPANY CONCERNING THE MEMBERS OF THE BOARD OF DIRECTORS AND THE GENERAL MANAGEMENT (ARTICLES 15 - 21 OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION)

ARTICLE 15 - BOARD OF DIRECTORS

The Company is administered by a board of directors consisting of a minimum of five (5) and a maximum of eighteen (18) members subject to the derogation provided for by law in the case of a merger.

ARTICLE 16 – APPOINTMENT AND REMOVAL OF DIRECTORS

I. Appointment/removal of directors

Over the life of the Company, the directors are appointed by the ordinary general meeting. However, in the event of a merger or demerger, appointments may be made by an extraordinary general meeting. Their term of office is six (6) years. It concludes at the end of the ordinary general meeting of shareholders that approves the financial statements for the period just closed, and which is held in the year in which the term of office of the said director expires.

Any outgoing director may be re-elected subject to fulfilling the conditions of this Article.

Directors may be removed from office and replaced at any time by the ordinary general meeting.

Natural persons aged more than eighty-five (85) years may not be directors; where a director passes this age during a term of office they are deemed to have officially resigned at the next general meeting. Any appointment made in breach of the above provisions is null and void, with the exception of those which may be made on an interim basis.

Any director who is a natural person must, at the time of their appointment and throughout their term of office, meet the legal requirements in terms of the total number of directorships that a single person may hold in sociétés anonymes (corporations) based in Metropolitan France, save as otherwise provided for by law.

A Company staff member may only be appointed as a director if their contract of employment relates to an actual position within the Company. The number of directors having a contract of employment with the Company may not exceed one third of the directors in post.

II. Director in the form of a legal entity

Directors may be natural persons or legal entities. In the latter case, at the time of appointment, the legal entity is required to designate a permanent representative who will be subject to the same conditions and obligations and with the same civil and criminal liabilities as if they were a director in their own right, without prejudice to the joint and several liability of the legal entity that they represent. The permanent representative of a director in the form of a legal entity is subject to the age conditions that relate to directors who are natural persons.

The term of office of the permanent representative designated by the legal entity appointed as director is the same as the term of office of the latter.

If the legal entity revokes the mandate of its permanent representative, it is required to notify the Company, without delay, by registered letter, of this revocation and of the identity of its new representative. The same applies in the case of death or resignation of the permanent representative.

The designation of the permanent representative and the termination of their mandate are subject to the same publication formalities as if they were a director in their own right.

III. Vacancies, death, resignation

In the event of a vacancy due to death or resignation of one or more directors, the board of directors may proceed with interim appointments between two general meetings.

When the number of directors falls below the legal minimum, the remaining directors must immediately call an ordinary general meeting in order to bring the board up to strength.

Interim appointments made by the board are subject to ratification by the next ordinary general meeting. In the absence of ratification, resolutions passed and acts performed previously by the board will remain valid.

ARTICLE 17 - ORGANIZATION AND DELIBERATIONS OF THE BOARD

I. Chairman

The board of directors elects a chairman from among its members, who must be a natural person, failing which the appointment will be null and void. The board of directors determines the remuneration of the chairman.

The chairman of the board of directors organizes and directs the work of the latter, and reports thereon to the general meeting. He ensures that the Company bodies are operating properly, and in particular that the directors are capable of performing their duties.

In order to perform his duties, the chairman of the board of directors must be less than eighty-five (85) years of age. If the chairman of the board of directors passes this age during his term of office, he will be deemed to have officially resigned and the appointment of a new chairman will take place subject to the conditions provided for in this Article.

The chairman is appointed for a term that may not exceed that of his term of office as a director. The Chairman is eligible for re-election.

The board of directors may revoke the appointment at any time.

In the event of the chairman being temporarily unavailable, or of his death, the board of directors may delegate the duties of chairman to a director.

In the event of a temporary impediment, this delegation is made for a limited period; it is renewable. In the event of death it remains valid until the election of a new chairman.

II. Board meetings

The board of directors meets as often as the interests of the Company dictate, at the invitation of the chairman and at least every two (2) months.

When it has not met for more than two (2) months, a minimum of one third of the members of the board of directors may ask the chairman to call a meeting with a specific agenda.

The chief executive may also ask the chairman to call a meeting of the board of directors with a specific agenda. The chairman is bound to act on requests made to him by virtue of the above two paragraphs.

Notices may be given by any means and even verbally.

The board meets at the head office or at any other location (in France or abroad) indicated in the notice, under the chairmanship of the chairman or, if he is unavailable, the member designated by the board to chair it.

The chairman of the board of directors chairs the meetings. In the event of the chairman being unavailable, the board appoints a chairman for each meeting from among the members present.

At each meeting, the board may appoint a secretary, who does not necessarily have to be a member.

A register is kept which is signed by the directors attending the board meeting.

The directors and any person called upon to attend the meetings of the board of directors are bound by secrecy in respect of information of a confidential nature indicated as such by the chairman.

III. Quorum, majority

Deliberations of the board will only be valid if at least half of the directors are present or deemed present under the arrangements laid down in the Bylaws where videoconferencing and other means of telecommunication are used.

Unless otherwise stipulated by these Articles of Association and subject to the arrangements laid down in the Bylaws, where videoconferencing or other means of telecommunication are used, decisions are taken by a majority of votes of the members present or represented or deemed present.

Directors are deemed present for the purposes of calculating a quorum or majority where they take part via video-conference or telecommunication under the conditions defined by the Bylaws of the board of directors. However, physical presence or representation will be necessary for all deliberations of the board relating to adoption of the annual financial statements and the consolidated financial statements, and also for drawing up the management report and the consolidated management report, as well as for decisions concerning the removal of the chairman of the board of directors, the chief executive and the deputy chief executive.

Furthermore, half of the directors in post may oppose a meeting of the board being held via video-conference or telecommunication. Such opposition must be notified in the forms and by the deadline required by the Bylaws and/or in those that may be laid down in the legal or regulatory provisions.

IV. Representation

Any director may give another director written authority to represent him at a meeting of the board.

Each director may hold only one proxy for the same meeting given by application of the above paragraph.

These provisions are applicable to the permanent representative of a director who is a legal entity.

V. Minutes of deliberations

The deliberations of the board of directors are recorded in minutes drawn up in a special register, numbered and initialed, and kept at the head office in accordance with the regulatory provisions.

VI. Observers

Throughout the lifetime of the Company, the ordinary general meeting may proceed with the appointment of observers who may or may not be shareholders.

The number of observers may not exceed three (3).

Observers are appointed for a term of one (1) year. Their terms of office conclude at the end of the ordinary general meeting of shareholders called to approve the financial statements for the period just closed, and held in the year during which their terms of office cease.

Any outgoing observer may be re-elected subject to meeting the conditions of this Article.

Observers may be removed and replaced at any time by the ordinary general meeting without any compensation being

due to them. The functions of the observers also cease upon the death or incapacity of an observer who is a natural person, or in the event of winding up or receivership in the case of an observer who is a legal entity.

Observers may be natural persons or legal entities. In the latter case, at the time of appointment, the legal entity is required to designate a permanent representative who will be subject to the same conditions and obligations and with the same civil and criminal liabilities as if they were an observer in their own right, without prejudice to the joint and several liability of the legal entity that they represent.

The duty of the observers is to ensure the strict application of the Articles of Association and to present their observations at the meetings of the board of directors.

The observers perform a general and permanent duty within the Company through advice and monitoring. In the context of their duties they may make observations to the board of directors and request access to information at the head office of the Company.

Observers must be invited to each meeting of the board of directors in the same way as directors.

Observers have only consultative powers on an individual or joint basis and have no voting rights on the board.

Failure to invite an observer or to send documents to an observer or observers prior to the meeting of the board of directors may in no case constitute grounds for nullity of the deliberations of the board of directors.

ARTICLE 18 - POWERS OF THE BOARD OF DIRECTORS

The board of directors sets the business policy of the Company and ensures that this is implemented.

Save for the powers expressly reserved to the meetings of shareholders and within the scope of the corporate purpose, the board of directors considers any matter relating to the proper operation of the Company and through its deliberations, deals with matters affecting it.

In its relations with third parties, the Company assumes an obligation, even for acts of the board of directors that do not fall within the scope of the corporate purpose, unless it can prove that the third party was aware that the act exceeded that scope, or, under the circumstances, must have been aware, although the simple publication of the Articles of Association will not suffice as proof.

The board of directors will proceed with the controls and verification that it deems appropriate.

Each director must receive the information necessary to perform his duties and may obtain from the general management all documents he considers useful.

The board of directors may decide to set up working groups to look into matters that the board or its chairman may refer to them.

ARTICLE 19 - GENERAL MANAGEMENT – DELEGATION OF POWERS

I. Organizational principles

In accordance with the legal provisions, the general management of the Company is undertaken, on behalf of the Company, either by the chairman of the board of directors or by another natural person appointed by the board of directors and bearing the title of chief executive.

The choice between the two methods of exercising general management is made by the board of directors, which must inform the shareholders and third parties subject to the regulatory requirements.

The decision of the board concerning the choice of the method of exercising general management is taken by a majority vote of the directors present or represented, subject to the specific provisions of Article 17-III where directors attend the meeting by video-conference or other means of telecommunication.

A change in the method for undertaking general management does not result in a change to the Articles of Association.

Where general management of the Company is undertaken by the chairman of the board of directors, the following provisions relating to the chief executive are applicable to him.

II. General management

Chief executive

Depending on the choice made by the board of directors in accordance with the provisions of the above paragraph, the general management of the Company is exercised by the chairman of the board of directors, or by a natural person, who may or may not be a director, who is appointed by the board of directors and bears the title of chief executive. Where the board of directors chooses to separate the functions of chairman and chief executive, it will proceed to appoint the chief executive, define his term of office, determine his remuneration and, as necessary, the limits to his powers.

A person over the age of eighty-five (85) years may not be appointed as chief executive. If a chief executive in post passes this age he is deemed to have officially resigned.

The chief executive may be removed from office at any time by the board of directors. Where the chief executive does not perform the role of chairman of the board of directors, his removal may be subject to payment of compensation if this takes place without good cause.

The chief executive is invested with the widest powers to act in all circumstances on behalf of the Company. He exercises these powers within the scope of the corporate purpose, save for those which the law expressly reserves to the meetings of shareholders and to the board of directors.

He represents the Company in its relations with third parties. The Company assumes an obligation, even for acts of the chief executive that do not fall within the scope of the corporate purpose, unless it can prove that the third party was aware that the act exceeded that scope, or, under the circumstances, must have been aware, although the simple publication of the Articles of Association will not suffice as proof.

In respect of the shareholders and without this restriction being binding upon third parties, the chief executive may not take any decision on behalf of the Company in the following areas without the prior authorization of the board of directors:

- the securing of loans or advances in order to acquire shares or securities of any subsidiary company except where such subsidiary is wholly-owned;
- the furnishing of guarantees on behalf of a subsidiary or to guarantee bank accounts;
- all investments in excess of €250,000;
- all commitments in excess of €100,000 and not provided for in the annual budget;
- hiring, laying off and amending the contracts of employment of employees at management level;
- a change in the normal business of the Company and in its development strategy;
- the disposal, transfer, licensing or pledging of any industrial or intellectual property or of any substantial asset;
- approval of the budget and the strategic plan.

The chief executive may not, without a prior decision of the board of directors by a qualified majority of three quarters of the directors making up the board as at the date that the decision is taken:

- take any decision to proceed with the transfer of any substantial asset or any intellectual/industrial property belonging to the Company;
- take any decision to acquire a holding in a listed or unlisted company.

Deputy chief executives

At the proposal of the chief executive that this function be assumed by the chairman of the board of directors or by another person, the board of directors may appoint one or more actual persons, known as deputy chief executives, who may or may not be chosen from among the directors and shareholders, who are charged with assisting the chief executive. The number of deputy chief executives may not exceed five. If the deputy chief executive is a director, his term of office may not exceed that of his term of office as a director.

A person over the age of eighty-five (85) years may not be appointed as deputy chief executive. If a deputy chief executive in post passes this age he is deemed to have officially resigned.

Deputy chief executives may be removed at any time by the board of directors at the proposal of the chief executive. Removal without just cause may give rise to damages. By agreement with the chief executive, the board of directors decides on the scope and the duration of the powers granted to the deputy chief executives. The deputy chief executives have the same powers in respect of third parties as the chief executive.

Where the chief executive ceases or is prevented from performing his duties, the deputy chief executives will retain their functions and powers until the new chief executive is appointed, unless otherwise decided by the board.

The board of directors decides on the remuneration of the deputy chief executives.

III. Delegation of powers

The board of directors may entrust to its agents, who may or may not be directors, the permanent or temporary duties it decides upon, delegate powers to them and set the remuneration it considers appropriate.

ARTICLE 20 - DIRECTORS' REMUNERATION

The general meeting may allocate to the directors, to compensate them for their work, by way of directors' fees, a fixed annual sum defined by the meeting, without being bound by previous decisions. The amount is posted to the operating expenses.

The board of directors freely distributes among its members the total amounts allocated to the directors as directors' fees; it may in particular allocate a higher share to those directors who are members of working groups than that allocated to the other directors.

The board of directors may award exceptional remuneration for the duties or mandates entrusted to directors.

The board of directors may authorize the reimbursement of travel and subsistence costs and expenses incurred by the directors in the interests of the Company.

ARTICLE 21 - AGREEMENTS BETWEEN THE COMPANY AND A DIRECTOR, THE CHIEF EXECUTIVE OR A DEPUTY CHIEF EXECUTIVE

I.Agreements subject to authorization.

Except for those relating to day to day operations and entered into under normal conditions, any agreement that is made, directly or through a nominee, between the Company and one of its directors, chief executives or deputy chief executives, or a shareholder holding more than 10% of the voting rights in the Company, or in the case of a shareholding company, the Company controlling it pursuant to Article L.233-3 of the French Commercial Code, must be referred for prior authorization by the board of directors.

The same applies to agreements in which one of the persons referred to in the above paragraph has an indirect interest.

Agreements entered into by the Company and an enterprise are also subject to prior authorization if they are with an enterprise where the chief executive, one of the deputy chief executives or one of the directors of the Company, is the owner, partner with unlimited liability, manager, director, member of the supervisory committee or, generally speaking, an executive of the enterprise.

Such agreements must be authorized and approved in accordance with the statutory provisions.

II. Prohibited agreements

It is prohibited, on pain of nullity of the contract, for directors other than those who are legal entities, to contract for loans of whatever kind with the Company, to have an overdraft granted by it, on a current or other account, or to have it act as guarantor or stand surety for undertakings by them to third parties.

The same prohibition applies to the chief executive, deputy chief executives and permanent representatives of directors in the form of legal entities. It also applies to the spouses, ascendants and descendants of the persons mentioned in this article and to any nominee.

III. Current agreements

Agreements relating to current and ordinary transactions and agreements concluded between two companies, one of which holds, directly or indirectly, the whole capital of the other, if any, less the minimum number of shares required to satisfy the requirements of Article 1832 of the Civil Code or Articles L. 225-1 and L. 226-1 of the Commercial Code are not subject to the legal authorization and approval procedure. However, these agreements, unless as a result of their subject-matter or their financial implications they are not significant for any of the parties, must be notified by the interested party to the chairman of the board of directors. A list and subject-matter of such agreements are notified by the chairman to the members of the board of directors and to the auditors at the latest on the day of the meeting of the board to approve the financial statements for the year ended.

Shareholders may also be sent the list and subject-matter of these agreements.

5.4.3 RIGHTS, PRIVILEGES AND RESTRICTIONS ATTACHING TO SHARES (ARTICLES 9 - 14 OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION)

ARTICLE 9 - DEPRECIATION OF THE SHARE CAPITAL

The share capital may be depreciated in accordance with the provisions of Articles L.225-198 et seq. of the French Commercial Code.

ARTICLE 10 - SETTLEMENT OF SHARES

At the time of any increase in capital, cash shares are settled, upon subscription, for at least a quarter of their face value and, as appropriate, the full issue premium.

Settlement of the balance must take place on one or more occasions at the call of the board of directors and within five years of the date when the transaction becomes definitive in the case of an increase in capital.

Calls for funds are notified to the subscribers and shareholders at least fifteen days prior to the date set for payment by individual recorded delivery letter with acknowledgment of receipt.

A shareholder who does not make the required payments for shares on the due dates will be liable to pay the Company, automatically and without prior warning, delay interest calculated on a daily basis from the due date at the legal rate for commercial court matters plus three points. In order to obtain payment of these sums the Company is entitled to take the enforcement action and apply the sanctions provided for by Articles L.228-27 et seq. of the French Commercial Code.

ARTICLE 11 - FORM OF SHARES

The ordinary shares are in registered or bearer form at the option of the holders. They can take the bearer form only after their complete release. Preferred fully paid-up shares are nominative.

The Company is authorized to identify holders of bearer shares by simple request, to the body in charge of the clearing of securities, of the name or company name, nationality, year of birth or establishment, shareholders' addresses or number of shares held by each of them.

ARTICLE 12 - TRANSFER OF SHARES - RIGHTS AND OBLIGATIONS ASSOCIATED WITH SHARES - EXCEEDING OF LIMITS

12.1 - Transfer of shares

The ordinary shares may be freely traded once issued in accordance with the procedures set out by law.

They remain negotiable following the winding up of the Company and until liquidation is complete. Preferred shares are transferable in accordance with paragraph 12.2.

The ordinary shares and the preferred shares give rise to a book entry and are transferred by a movement between accounts under the conditions and according to the procedures set out in the law and the rules in force.

The provisions of this Article are generally applicable to all securities issued by the Company.

12.2. Rights and obligations attached to shares

The capital of the Company is composed of ordinary shares and preferential shares.

Shareholders are only liable for social liabilities up to the amount of their contributions.

I. Rights attached to ordinary shares

Without prejudice to the rights attached to the preferred shares, each ordinary share entitles the holder to a share in the profits and in the share capital in proportion to the portion of the capital it represents. It gives the right to participate, in the conditions set by the law and the present articles of association, at general meetings and vote on resolutions.

The ownership of an ordinary share automatically entails unreserved compliance with the articles of association and decisions of the general meeting of the Company.

The rights and obligations attached to the ordinary shares follow the title regardless of the holder.

Whenever it is necessary to own more than one share to exercise any right, in case of exchange, consolidation, allocation of shares, capital increase or reduction, merger or any other owners of individual securities or less than the required number can exercise these rights only if they do their personal business of grouping and possibly purchasing or saling the necessary number of securities.

II. Rights attached to preferential shares

Preferential shares and the rights of their holders are governed by the applicable provisions of the French Commercial Code, in particular Articles L. 228-11 et seq.

The maximum number of preferential shares that can be issued is:

- 7,600 for the 2017 preferential shares,
- 13,980 for the 2018 preferential shares, and
- 20,000 for the 2019 preferential shares.

The preferential shares are classified into nine distinct categories according to the performance criteria attached to them:

- «AGAP 2017-01» for a maximum of 320,
- «AGAP 2017-02» for a maximum of 2,000,
- «AGAP 2017-03» for a maximum of 5.280,
- «AGAP 2018-01» for a maximum of 580,
- «AGAP 2018-02» for a maximum of 11,500,
- «AGAP 2018-03» for a maximum of 1,900,
- «AGAP 2019-01» for a maximum of 8,000,
- «AGAP 2019-02» for a maximum of 8,000, and
- «AGAP 2019-03» for a maximum of 4,000.

From the time of their definitive grant and until they become convertible, the preferential shares have the right to vote at the ordinary and extraordinary meetings of ordinary shareholders, with one voting right per preferential share. From the date on which they become convertible, the number of voting rights to which each preferential share entitles becomes equal to the number of ordinary shares to which the conversion of each preferential share gives entitlement.

From the time of their definitive grant, preferential shares shall have the right to vote at a special meeting of the holders of each class of preferential shares. The holders of each class of preferential shares shall meet in a special meeting for any proposed amendment to the rights attached to such class of preferential shares. In addition, in accordance with the provisions of Article L. 228-17 of the French Commercial Code, any proposed merger or demerger of the Company will be subject to the approval of any special meeting concerned, could not be exchanged for shares with specific equivalent rights.

Special meetings shall only validly deliberate if the shareholders present or represented possess at least, on

the first convocation, one third of the preferential shares and, on the second convocation, one fifth of the preferential shares with the right to vote. In the event of a change or amortization of the share capital, the rights of the holders of preferential shares are adjusted in such a way as to preserve their rights pursuant to Article L. 228-99 of the French Commercial Code. Other rights attached to preferential shares are set out in the following paragraph.

From the time of their definitive allocation and until they become convertible, the preferential shares benefit from a dividend and give right to the reserves. The amount of the dividend (and, where applicable, the reserves) to which each preferential share entitles is equal to the amount due in respect of one ordinary share multiplied by the number of ordinary shares to which the conversion of each preferential share gives right. For this purpose, the preferential shares shall bear dividends from the first day of the financial year preceding the year in which they are finally allocated. From the date on which they become convertible, the amount of the dividend (and, where applicable, the reserves) to which each preferential share entitles becomes equal to the amount due in respect of one ordinary share multiplied by the number of ordinary shares to which the conversion of each preferential share is entitled.

From the time of their definitive grant, in the event of the liquidation of the Company, preferential shares enjoy the same right to the liquidation bonus as the ordinary shares, ie a right proportional to the share that their nominal amount represents in the share capital.

From the time of their definitive grant, preferential shares are entitled to preferential subscription rights for any capital increase or any transaction with rights to the ordinary shares.

In the case of capital depreciation or reduction, changes in the distribution of profits, the allocation of free shares, capitalization of reserves, profits or issue premiums, distribution of reserves or any issue equity securities or securities giving the right to the allocation of capital securities with a subscription right reserved for shareholders before the preferential shares are convertible under the conditions set out in paragraph III. the maximum number of ordinary shares to which the preferential shares may be entitled by conversion shall be adjusted to take account of such transaction in accordance with the provisions of Article L. 228-99 paragraph 2, 3 ° and paragraph 5 of the Commercial Code.

For the purposes of this adjustment, the board of directors will calculate, at the time of fixing the final number of ordinary shares to which each preferential share entitles, the conversion ratio applicable according to the degree to which the performance criteria are met, such as this is provided for in paragraph III. below, and adjust this ratio for all transactions previously completed, in accordance with the above provisions.

Each beneficiary will be informed of the practical details of this adjustment and of its consequences on the allocation of ordinary shares on conversion of the preferential shares he / she has benefited from.

After the preferential shares have become convertible and the board of directors has calculated the conversion ratio as provided for in paragraph III. 5. below (as adjusted in accordance with this Article, if any), no adjustment shall be made to this conversion ratio, as the holders of preferential shares may thereafter convert them freely.

The preferential shares will be fully paid up when they are issued by capitalizing the Company's reserves, premiums or profits.

III. Conversion of preferential shares into ordinary shares

The issue of preferential shares may only be decided in the context of a free allocation of shares to employees and corporate officers of the Company in accordance with the provisions of Articles L. 225-197-1 et seq. Of the French Commercial Code.

The preferential shares will be definitively vested (the « Final Award ») by the beneficiaries at the end of a vesting period of one (1) year from their allocation by the board of directors (the « Provisional Allocation »).

However, if the beneficiary is invalid for classification in the second or third of the categories provided for in Article L. 341-4 of the Social Security Code (or their equivalent in applicable foreign law), the preferential shares will be allocated definitively before the end of the remaining vesting period. In the event of the beneficiary's death, in accordance with the provisions of Article L. 225-197-3 of the Commercial Code, the beneficiary's heirs or beneficiaries may, if they wish, apply for the definitive allocation of the preferential shares within six months of the date of death. In the event of retirement, the beneficiaries will retain their right to the definitive allocation of preferential shares even though they are no longer bound by a contract of employment.

Holders of preferential shares may request conversion of their preferential shares into new or existing ordinary shares (at the Company's option) of the Company as follows:

1. Preferrential shares become convertible by their holder into new or existing ordinary shares (at the option of the Company) at the end of a two year retention period beginning on the date of the Final Assignment (the « Lock-Up Period ») under the conditions set out in paragraphs 2 to 9 below. From the date they become convertible (the « Convertibility Date »), preferential shares may be converted for five (5) years and three (3) months (the « Conversion Period »).

2. In accordance with the provisions of Article L. 225-197-1 I, paragraph 7 of the Commercial Code, preferential shares will be freely transferable during the Lock-Up Period if the beneficiary becomes disabled in accordance with his classification in the second or third of the categories provided for in Article L. 341-4 of the Social Security Code (or their equivalent in applicable foreign law), regardless of whether the disability occurs before or after the Final Award Date.

In the event of the beneficiary's death, whether the beneficiary dies during the vesting period or the Lock-Up Period, his / her heirs will no longer be required to comply with this non-assignment commitment, so that the preferential shares they have applied for the definitive allocation shall become freely transferable.

3. 2017 preferential shares are classified into three distinct classes according to the performance criteria attached to them: « AGAP 2017-01 », « AGAP 2017-02 » and « AGAP 2017-03 ». The number of ordinary shares to which the conversion of a 2017 preferential share will give entitlement will depend on whether one or more (or all) of the 2017 Performance Criteria have been met on the Convertibility Date (the « Performance »).

For the « AGAP 2017-01 » 2017 preferential shares, the 2017 Performance Criterion will be the definition of the Company's industrial development plan, which will give the right to convert each preferential share into 100 ordinary shares.

For the « AGAP 2017-02 » 2017 preferential shares, the 2017 Performance Criterion will be the successful implementation of the bioprosthesis evaluated on a total of 10 patients worldwide, which will give the right to convert each preferential share into 20 ordinary shares.

For the « AGAP 2017-03 » 2017 preferential shares, the 2017 Performance Criteria will be as follows:

- the filing of the clinical module of the CE marking of the bioprosthesis, which will give the right to convert each preferential share into 15 ordinary shares;
- the CE marking of the bioprosthesis, which will give the right to convert each preferential share into 20 ordinary shares;
- obtaining additional financing for the Company for a cumulative amount of € 100 million between the Provisional Allocation Date and the Convertibility Date which will give the right to convert each preferential share into 25 ordinary shares being that such financing may take the form of, in particular, capital increases, debt instruments, conditional advances, operating subsidies or revenues received from collaborative arrangements or licence ;
- the establishment of a production process that (i) meets the applicable regulatory and quality standards, and (ii) enables the bioprosthesis to be produced in sufficient number and time to carry out the necessary clinical trials and to respond to commercial orders in the contractual deadlines, without any major interruption of production or quality problems leading to a recall of products sold, which will give the right to convert each preferential share into 15 ordinary shares;
- the effective commercialization of the bioprosthesis at 15 European centers, which will give the right to convert each preferential share into 10 ordinary shares;
- the successful implementation of the bioprosthesis evaluated on 10 patients in the United States, which will give the right to convert each preferential share into 10 ordinary shares;
- the successful implementation of the bioprosthesis evaluated on 100 patients worldwide, which will give the right to convert each preferential share into 10 ordinary shares;
- the change in the price of the common share according to the following criteria, which will give the right to convert each preferential share into a maximum of 10 ordinary shares.

(a) If the Final Price is strictly lower than the Initial Price, the number of ordinary shares in which each preferential share will be converted will be equal to 0;

(b) If the Final Price is comprised between (i) a value equal to or greater than the Initial Price and (ii) a value below the Ceiling Price, the number of ordinary shares in which each preferential share will be converted will be equal to:

[(Final Price / Initial Price) - 1] x 10

(c) If the Final Price is equal to or greater than the Ceiling Price, the number of ordinary shares in which each preferential share will be converted will be equal to 10.

The « Final Price » is the highest average of the closing prices of the ordinary shares of the stock exchange sessions taken over a period of sixty consecutive days, calculated at any time during the three (3) years preceding the Convertibility Date.

The « Ceiling Price » is equal to the Initial Price multiplied by three, with a maximum of €114.

The « Initial Price » is equal to the closing price of the ordinary share on the date of the Provisional Allocation, with a minimum of €30 and a maximum of €38 per ordinary share.

It is specified that the conversion ratio thus determined for each category of 2017 preferential shares will be adjusted to take account of the shares to be issued in order to preserve the rights of holders of securities giving access to the capital of the Company and holders of 2017 preferential shares in accordance with the applicable legal and regulatory provisions and paragraph II above.

4. 2018 preferential shares are classified into three distinct classes according to the performance criteria attached to them: « AGAP 2018-01 », « AGAP 2018-02 » and « AGAP 2018-03 ». The number of ordinary shares to which the conversion of a 2018 preferential share will give entitlement will depend on whether one or more (or all) of the 2018 Performance Criteria have been met on the Convertibility Date (the « Performance »).

For the « AGAP 2018-01 » 2018 preferential shares, the 2018 Performance Criterion will be will be the successful completion of the «prosthesis» test benches used to obtain CE marking, which will give the right to convert each AGAP 2018-01 into 100 ordinary shares.

For the « AGAP 2018-02 » 2018 preferential shares, the 2018 Performance Criterion will be as follows:

- i. the recruitment of 10 patients in the pivotal study to obtain the CE mark, which will give the right to convert each AGAP 2018-2 into 10 ordinary shares;
- ii. the recruitment of the 20th patient in the pivotal study to obtain CE marking or the finalization of the pivotal study for submission of the dossier to DEKRA, which will give the right to convert each AGAP 2018-2 into 5 ordinary shares ;
- iii. obtaining authorization to complete the Early Feasibility Study in the US by December 31, 2018, which will entitle the holder to convert each AGAP 2018-2 into 5 ordinary shares.

For the « AGAP 2018-03 » 2018 preferential shares, the 2018 Performance Criteria will be as follows:

- the filing of the clinical module of the CE marking of the bioprosthesis, which will give the right to convert each preferential share into 15 ordinary shares;
- the CE marking of the bioprosthesis, which will give the right to convert each preferential share into 20 ordinary shares;
- obtaining additional financing for the Company for a cumulative amount of € 38.5 million between the Provisional Allocation Date and the Convertibility Date which will give the right to convert each preferential share into 25 ordinary shares being that such financing may take the form of, in particular, capital increases, debt instruments, conditional advances, operating subsidies or revenues received from collaborative arrangements or licence ;
- the establishment of a production process that (i) meets the applicable regulatory and quality standards, and (ii) enables the bioprosthesis to be produced in sufficient number and time to carry out the necessary clinical trials and to respond to commercial orders in the contractual deadlines, without any major interruption of production or quality problems leading to a recall of products sold, which will give the right to convert each preferential share into 15 ordinary shares;
- the effective commercialization of the bioprosthesis at 15 European centers, which will give the right to convert each preferential share into 10 ordinary shares;
- the successful implementation of the bioprosthesis evaluated on 10 patients in the United States, which will give the right to convert each preferential share into 10 ordinary shares;
- the successful implementation of the bioprosthesis evaluated on 100 patients worldwide, which will give the right to convert each preferential share into 10 ordinary shares;
- the change in the price of the common share according to the following criteria, which will give the right to convert each preferential share into a maximum of 10 ordinary shares.

(a) If the Final Price is strictly lower than the Initial Price, the number of ordinary shares in which each preferential share will be converted will be equal to 0;

(b) If the Final Price is comprised between (i) a value equal to or greater than the Initial Price and (ii) a value below the Ceiling Price, the number of ordinary shares in which each preferential share will be converted will be equal to:

[(Final Price / Initial Price) - 1] x 10

(c) If the Final Price is equal to or greater than the Ceiling Price, the number of ordinary shares in which each preferential share will be converted will be equal to 10.

The « Final Price » is the highest average of the closing prices of the ordinary shares of the stock exchange sessions taken over a period of sixty consecutive days, calculated at any time during the three (3) years preceding the Convertibility Date.

The « Ceiling Price » is equal to the Initial Price multiplied by three, with a maximum of €114.

The « Initial Price » is equal to the closing price of the ordinary share on the date of the Provisional Allocation, with a minimum of €30 and a maximum of €38 per ordinary share.

It is specified that the conversion ratio thus determined for each category of 2018 preferential shares will be adjusted to take account of the shares to be issued in order to preserve the rights of holders of securities giving access to the capital of the Company and holders of 2018 preferential shares in accordance with the applicable legal and regulatory provisions and paragraph II above.

5. 2019 preferential shares are classified into three distinct categories according to the performance criteria attached to them: the « AGAP 2019-01 » for a maximum number of 8,000, the « AGAP 2019-02 » for a maximum number of 8,000 and the « AGAP 2019-03 » for a maximum number of 4,000. The conversion of a 2019 preferential share will give the right, if the Convertibility Date is achieved, to

the performance criteria corresponding to the category in question (together, the « Performance Criteria ») is 10 ordinary shares.

For the « AGAP 2019-01 » 2019 preferential shares, the Performance Criterion will be the procedure successfully performed for the first patient treated in the United States of the pivotal study following the positive conclusion of the EFS (Early Feasibility Study) feasibility, which will give the right to convert each preferential share into 10 ordinary shares.

For the « AGAP 2019-02 » 2019 preferential shares, the 2019 Performance Criterion will be the obtaining of CE marking with sufficient inventory to support the commercial launch of the CARMAT prosthesis, which will give the right to convert each preferential share into 10 ordinary shares.

For the « AGAP 2019-03 » 2019 preferential shares, the Performance Criterion will be the invoicing and implantation of 5 prostheses within 4 months of the CE marking (excluding implantations as part of the innovation package in France), which will give the right to convert each preferential share into 10 ordinary shares.

It is specified that the conversion ratio thus determined for each category of 2019 preferential shares will be adjusted to take account of the shares to be issued in order to preserve the rights of holders of securities giving access to the capital of the Company and holders of 2019 preferential shares in accordance with the applicable legal and regulatory provisions and paragraph II above.

6. The performance of each Performance Criterion shall be determined at a meeting of the board of directors held as soon as possible after completion of the Performance Criterion, which shall determine the number of ordinary shares to which each preferential share will be entitled to this date. As soon as possible after the Convertibility Date, the board of directors will meet to determine the final number of ordinary shares to which each preferential share will be entitled, with the conversion ratio of AGAP 2017- 03 and of AGAP 2018-03 may under no circumstances exceed 100, regardless of the number of Performance Criteria performed.

However, in the event of a takeover bid or exchange on the ordinary shares:

- happening as of the Provisional Allocation Date,
- whose definitive results are announced no later than the day before the Convertibility Date, and
- made at a price per share between the Initial Price and a ceiling equal to three times the Initial Price,

the board of directors will determine the number of ordinary shares to which the preferential shares will be entitled on the date of announcement of the final results of the offer exclusively under the following conditions:

- For each beneficiary, a number « p » equal to the ratio (i) of the cumulative number of ordinary shares to which all the preferential shares (all categories) which have been allocated entitle the beneficiary to be entitled according to the realization of the Performance Criteria on the date of the announcement of the final results of the Offer, on (ii) the aggregate number of ordinary shares to which all preferential shares (all classes) all Performance Criteria are met.

- If « p » is less than or equal to 0.35, the « N » number of ordinary shares to which each of the preferential shares (whichever class) has been allocated will be calculated using the following formula:

$$N = [0.35 + 0.65 * (R-1) / 2] * n$$

N being capped at 100 for AGAP 2017-01, 20 for AGAP 2017-02, 100 for AGAP 2017-03, 100 for AGAP 2018-01, 20 for AGAP 2018-02, 100 for AGAP 2018-03 and 10 for AGAP 2019-01, 2019-02 and 2019-03 .

n being equal to 100 for AGAP 2017-01, 20 for AGAP 2017-02, 100 for AGAP 2017-03, 100 for AGAP 2018-01, 20 for AGAP 2018-02, 100 for AGAP 2018-03 and 10 for AGAP 2019-01, 2019-02 and 2019-03.

with

R = (Acquisition Price) / (Initial Price)

The « Acquisition Price » is equal to the closing price of the common share on the last day of the offering period, with a maximum of €114 per ordinary share.

The « Initial Price » is equal to the closing price of the ordinary share on the day of the allotment of preferential shares, with a minimum of €30 and a maximum of €38 per ordinary share.

A €30 minimum for the 2017 preferential shares and the 2018 preferential shares and €22 for the 2019 preferential shares and a maximum of €38 per ordinary share for all the preferential shares.

- If « p » is greater than 0.35, N will be calculated according to the following formula:

$$N = [p + (1-p) * (R-1) / 2] * n$$

knowing that, in any case, N can not be less than n * 0.35, that is to say 35 for AGAP 2014-01, 7 for AGAP 2017-02, 35 for AGAP 2017-03, 35 for AGAP 2018-01, 7 for AGAP 2018-02, 35 for AGAP 2018-03 and 10 for AGAP 2019-01, 2019-02 and 2019-03.

The preferential shares concerned will be definitively

allocated to the beneficiaries on the Final Award Date, irrespective of whether or not a new attendance condition is provided for in the terms of the Preferential Share Plan and of the Performance Criteria above. In any case, preferential shares will become convertible only on the Convertibility Date.

7. If on the Convertibility Date none of the Performance Criteria is satisfied or if no takeover bid has been made under the conditions described above, the Company may (but without being an obligation for the Company) to redeem the preferential shares at any time at nominal value.

Similarly, preferential shares which may be converted but which have not been converted at the end of the Convertibility Period, may (without this being in no case an obligation for the Company) be bought at any time by the Company at their nominal value.

8. At the end of the Convertibility Period, the Company may, in accordance with the applicable legal and regulatory provisions, cancel preferential shares not yet converted, including those which it has bought back. The share capital will then be correlatively reduced, creditors having a right of opposition under the conditions provided for in Article L. 225-205 of the Commercial Code.

9. The new ordinary shares resulting from the conversion of the preferential shares shall be assimilated to the ordinary shares in circulation and shall bear dividend from the first day of the financial year preceding that in which the preferential shares are converted and will confer on their holders, upon delivery, all rights attached to the ordinary shares. They will be the subject of a request for admission to trading on the Euronext Growth market on the same trading line as the ordinary shares.

10. The board of directors will recognize the conversion of the preferential shares into ordinary shares for which the conversion is in accordance with the conditions set out above, take note of the number of ordinary shares resulting from the conversions of preferential shares and amendments to the articles of association, in particular as regards the allocation of shares by category. This option may be delegated to the Director General under the conditions laid down by law.

11. Shareholders will be informed of the conversions made by the reports of the board of directors and the statutory auditors provided for in Article R. 228-18 of the French Commercial Code. These additional reports will be made available to the shareholders at the registered office as from the date of the convening of each meeting.

12. Capital increases resulting from the creation of preferential shares and new ordinary shares will be carried out by special incorporation of all or part of available reserve accounts and, in particular, into the share premium account.

12.3 – Exceeding of limits

Any natural person or legal entity acting alone or together with others who comes to possess a number of shares representing a percentage of the capital or the voting rights in excess of the limits set by law, will inform the Company within the statutory period, counting from when the holding limit is reached, of the total number of shares or voting rights held.

This information is also provided within the same time frames when the holding of share capital or voting rights drops below the limits mentioned in this paragraph.

A person required to provide this information will state the number of securities held giving access to capital and the voting rights attaching to these.

If required by the rules of a securities market other than a regulated market on which the securities of the Company are admitted for trading, this person will also inform the Financial Markets Authority within a time frame and according to the arrangements set by the General Regulations of the latter, with effect from when the limit to the holding is passed. If necessary, this information is made public under the conditions laid down by the General Regulations of the Financial Markets Authority.

Failure to make a due declaration under the above conditions will result in the shares exceeding the fraction that should have been declared by law having their voting right removed for any meeting of shareholders held within a period expiring two years after the date that the notification is dealt with.

Similarly, voting rights attaching to these shares and which are not duly declared may not be exercised or delegated by the defaulting shareholder.

The commercial court having jurisdiction for the registered office, at the request of the chairman of the Company, a shareholder or the Financial Markets Authority, holds sole jurisdiction to pronounce a total or partial suspension, for a period not to exceed five years, of the voting rights of any shareholder who has not made the required declarations.

ARTICLE 13 - INDIVISIBILITY OF SHARES - BARE OWNERSHIP - USUFRUCT

1 - Shares are indivisible with respect to the Company.

Co-owners of undivided shares are represented at general meetings by one of these or by a single proxy. In the event of disagreement, the proxy is appointed by a court at the application of the most diligent co-owner.

2 - The voting right belongs to the usufructuary at Ordinary General Meetings and to the bare owner at Extraordinary General Meetings. However, shareholders may agree any other distribution of the voting right at General Meetings. The agreement is notified by registered letter to the Company, which will be required to apply this agreement at any meeting that takes place following expiry of a period of one month after such letter is sent.

The voting right is exercised by the owner where securities are pledged.

ARTICLE 14 - DOUBLE VOTING RIGHT

The voting right attaching to capital or dividend shares is proportional to the percentage of the capital that they represent. Each share gives an entitlement to one vote.

However, a voting right that is double that conferred on other shares, having regard to the percentage of the capital that they represent, is attributed to all shares that are fully paid up, and which can be shown to have been registered to the same shareholder for at least two (2) years. This right is exercised subject to the provisions of No. 12.3 (5) of the Articles of Association.

This double voting right is also conferred from the time they are issued, in the event of an increase in capital through capitalization of reserves, profits or issue premiums, upon registered shares in a scrip issue to a shareholder based on previous shares providing such an entitlement.

The transfer of a share as a result of succession, liquidation of community of property between spouses or donation between living persons to a spouse or a parent entitled to inherit, does not result in loss of the right acquired and does not interrupt the periods provided for above.

5.4.4 CONDITIONS FOR CHANGING SHAREHOLDERS' RIGHTS

The Articles of Association of the Company do not make any special provision that derogates from general company law.

5.4.5 GENERAL MEETINGS OF SHAREHOLDERS (ARTICLES 24 - 31 OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION)

ARTICLE 24 - QUORUM AND MAJORITY

General meetings deliberate under the conditions set by law.

The ordinary general meeting takes all decisions other than those reserved to the extraordinary general meeting by law and by these Articles of Association. It may not validly deliberate at the first calling unless the shareholders present or represented hold at least one fifth of shares with voting rights. At the second calling no quorum is required. It acts by a majority of the votes cast by the shareholders present or represented.

The extraordinary general meeting alone has the power to modify any of the provisions of the Articles of Association. It may not validly deliberate unless the shareholders present or represented hold at least one quarter of shares with voting rights at the first calling and one fifth of the shares at the second calling. In the absence of the latter quorum, the second meeting may be postponed to a later date not more than two months after that when it was originally called. It acts by a two-thirds majority of the votes cast by the shareholders who are present or represented.

Where videoconferencing or other means of telecommunication permitted by law is used under the conditions set out in Article 25 below, shareholders are deemed present for the purposes of calculating a quorum or majority where they take part by such videoconferencing or other means of telecommunications.

ARTICLE 25 - CALLING OF GENERAL MEETINGS

General meetings are called either by the board of directors, or by the auditors, or by a proxy appointed by a court under the conditions and arrangements laid down by law.

They take place at the head office or at any other location specified in the notice of the meeting.

Where shares in the Company are not traded on a regulated market or if all its shares are not registered shares, the Company is required to publish in the Bulletin des Annonces Légales Obligatoires (BALO - French Mandatory Legal Announcements Bulletin), at least thirty-five (35) days before the meeting, a notice of such meeting containing the information required by the current regulations in force.

General meetings are called by publication in a journal authorized to carry legal notices in the department where the head office is based and also in the Bulletin des Annonces Légales et Obligatoires (BALO).

However, the publications referred to in the above paragraph may be replaced by a call made, at the cost of the Company, by normal or registered letter sent to each shareholder. Such a call may also be sent by electronic means of telecommunication employed under the regulatory conditions.

If this is decided by the board at the time the meeting is called, any shareholder may also take part and vote in meetings by video-conference or by any other means of telecommunication allowing them to be identified, under the following conditions and according to the arrangements provided for by law and decree.

Any meeting not duly called may be canceled. However, cancelation may not take place if all shareholders are present or represented.

ARTICLE 26 - MEETING AGENDA

The agenda is set by whoever issues the notice of the meeting.

However, one or more shareholders representing at least 5% of the capital (or an association of shareholders meeting the legal conditions) are empowered to request, under the conditions laid down by law, the inclusion in the agenda of draft resolutions. Such a request must be accompanied by the text of the draft resolutions which may be accompanied by a brief outline of the reasoning.

These draft resolutions, which must be brought to the attention of the shareholders, are included in the agenda and put to a vote of the meeting.

The meeting may not deliberate on a matter that is not included in the agenda.

However, it may under any circumstances remove one or more directors and proceed with their replacement.

The agenda may not be changed if the meeting has to be called a second time.

When the meeting is called upon to deliberate on changes to the economic or legal organization of the Company, in respect of which the works council has been consulted in accordance with Article L.2323-6 of the French Labor Code, the opinion of the council is made known to the meeting.

ARTICLE 27 - ADMISSION TO MEETINGS

Any shareholder may participate personally, by proxy, or by correspondence in general meetings, of whatever kind.

A legal right of participation in General Meetings exists:

- for registered shares, as a result of the entry of these in the books of registered shares kept by the Company at midnight at the start of the second working day prior to the meeting, Paris time;
- for bearer shares, as a result of the entry of these in the books of bearer shares kept by the authorized intermediary, at midnight at the start of the second working day prior to the meeting, Paris time.

The entry or registration of securities in the books of bearer shares kept by the authorized intermediary is acknowledged by a shareholding certificate issued by the latter.

However, the board of directors may reduce or remove these timings, provided that it is in the interests of shareholders.

Shareholders who have not settled their shares by making the payments due are not admitted to meetings.

ARTICLE 28 - REPRESENTATION OF SHAREHOLDERS AND POSTAL VOTING

I. Representation of shareholders

A shareholder may be represented by another shareholder or by their spouse.

Any shareholder may be empowered by other shareholders to represent them at a meeting, without any restriction other than those resulting from the legal provisions setting the maximum number of votes that the same person may hold in their own name and as a proxy.

II. Postal voting

Once the meeting has been called, a postal voting form and attachments will be sent, at the cost of the Company, to any shareholder who makes a written request for this.

The Company must comply with any request filed or received at the head office at the latest six days prior to the date of the meeting.

ARTICLE 29 - OFFICERS FOR THE MEETING

Shareholder meetings are chaired by the chairman of the board of directors or, in his absence, by a director delegated for this purpose by the board. Failing this, the meeting elects a chairman itself.

Where a meeting is called by the auditors, a court-appointed proxy or by the liquidators, the meeting is chaired by whichever of these has called it.

The two attendees at such meeting holding the largest number of shares and accepting this function will act as vote tellers.

The officers for the meeting will appoint a secretary, who need not be a shareholder.

ARTICLE 30 - MINUTES OF DELIBERATIONS

The deliberations of shareholder meetings are recorded in minutes drawn up by the meeting officers and signed by them.

These will state the date and place of the meeting, how it was called, the agenda, the composition of the group of meeting officials, the number of shares participating in the voting and the quorum achieved, the documents and reports submitted to the meeting, a summary of the proceedings, the text of the resolutions voted upon and the outcome of these votes.

The minutes are recorded in a special register kept at the head office under the conditions laid down in the regulations.

If, in the absence of a quorum, a meeting is unable to deliberate properly, minutes to that effect are drawn up by the officers of said meeting.

ARTICLE 31 – SHAREHOLDERS' RIGHT OF INFORMATION AND CONTROL

Before each meeting, the board of directors must make available to shareholders the documents necessary to allow them to speak in full knowledge of the facts and to come to an informed judgment on the functioning of the Company.

Upon receipt of the communication referred to above, any shareholder will be entitled to submit written questions, to which the board of directors will be required to respond during the meeting.

At any time, any shareholder has an entitlement to receive the documents that the board of directors is required, as the case may be, to keep available at the head office, or to send them, in accordance with the legislative and regulatory provisions in force.

5.4.6 PROVISIONS OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION, A CHARTER OR BYLAWS OF THE COMPANY THAT MAY HAVE THE EFFECT OF DELAYING, DEFERING OR PREVENTING A CHANGE IN ITS CONTROL

The Articles of Association of the Company do not make any special provision that derogates from general company law.

5.4.7 CHANGES TO THE SHARE CAPITAL (ARTICLE 8 OF THE MEMORANDUM AND ARTICLES OF ASSOCIATION)

1 - The capital stock may be increased by any process and under any arrangements provided for by law.

Only an extraordinary general meeting is competent to decide on an increase in capital based on a report from the board of directors.

Shareholders have a preferential right, in proportion to the number of shares they hold, to subscribe to cash shares issued in order to increase the capital, and may waive this on an individual basis. The extraordinary meeting may decide to withdraw this preferential right of subscription in accordance with the statutory provisions.

2 - A reduction in capital is authorized or decided upon by the Extraordinary General Meeting and may in no case adversely affect the equality of shareholders.

A reduction in capital to below the legal minimum may only be decided subject to the condition precedent of an increase in capital intended to bring this up to at least the legal minimum, unless the Company converts into another form of company that does not require capital in excess of the share capital after it has been reduced.

Failing this, any interested party may seek a legal order to wind up the Company. This may not be issued if, on the day on which the court rules on the merits of the case, the situation has been regularized.

5.5 PARTICULARS OF THE LEGAL AFFAIRS OF THE COMPANY IN THE FINANCIAL PERIOD

5.5.1 PARTICULARS OF COMPANY REPRESENTATIVES AND AUDITORS

BONUS SHARES AND STOCK OPTIONS

The historical allocation of stock options and stock warrants to the various corporate officers of the Company, as well as the options and warrants they exercised during the 2019 financial year, are detailed in section 4.5.1.

The historical allocation of free shares (preferential shares subject to performance conditions) to the various corporate officers, as well as the free shares that became available during the 2019 financial year, are detailed in section 4.5.1.

As at December 31, 2019, to the knowledge of the Company:

- Stéphane Piat (chief executive officer and director) holds 10,900 shares in the Company (ie 0.09% of the capital).
- The other current directors of CARMAT do not hold any shares in the Company.

SHARE TRANSACTIONS BY THE EXECUTIVES

We indicate below the transactions made by the directors and their relatives on the shares of the Company during the 2019 financial year, as declared by these officers and their relatives pursuant to the provisions of Articles 223-22 A and 223- 26 of the AMF General Regulation.

We also indicate the transactions carried out by these same people of which we are aware.

Persons concerned	Type of operation	Date of transaction	Number of shares	Value of transaction
Lohas (Pierre Bastid)	Pledge	June 12, 2019	1,291,709	€26,222 k
Matra Défense (Airbus Group)	Subscription	September 18, 2019	336,842	€6,400 k
Lohas (Pierre Bastid)	Subscription	September 18, 2019	157,894	€3,000 k
Santé Holdings SRL (Antonino Ligresti)	Subscription	September 18, 2019	236,210	€4,488 k

5.5.2 INFORMATION ON THE COMPANY'S SECURITIES

EMPLOYEE SHAREHOLDING

In accordance with the provisions of Article L.225-102 of the French Commercial Code, we hereby indicate that the Company has not set up any company savings plan for the benefit of employees and that no agreement provides for employee participation in the capital of the Company.

On the other hand, certain employees of the Company are beneficiaries of stock options, stock warrants (BSA and BSPCE) and free shares (preferential shares subject to performance conditions), detailed in section 4.5.1 .

Table 9 in the section 4.5.1 specifies the number of stock subscription and purchase options granted to the first ten employees who are not corporate officers, and the options exercised by them during the 2019 financial year.

Table 10bis in section 4.5.1 specifies the number of free shares (subject to performance conditions) allocated to the first ten employees who are not corporate officers, and that of the free shares that became available to them during the 2019 financial year.

DEALINGS BY THE COMPANY IN ITS OWN SHARES

We are also obliged to report to you on purchases and sales by the Company of its own shares for the purposes of regulating the price, in accordance with the provisions of Article L.225-209-1 of the French Commercial Code.

During the period ended December 31, 2019, the Company made the following dealings in its own shares under the liquidity agreement entered into for a period of one year with an independent financial services provider, as authorized by the general meetings of April 5, 2018 (Resolution 9) and of March 28, 2019 (Resolution 9):

- purchase of 112,881 shares at an average price of €20.39;
- sale of 110,972 shares at an average price of €20.34.

As at December 31, 2019, the Company held 4,170 treasury shares, i.e. 0.03% of the share capital.

SECURITIES GIVING ACCESS TO CAPITAL

In total, these securities confer subscription rights to 1,314,700 new shares (10.44% of the existing capital as at December 31, 2019).

For details on the securities giving access to the Company's capital and in force, see Paragraph 5.2.5 « Other securities giving access to capital ».

PARTICIPATING AND CONTROLLING INTERESTS

In accordance with the provisions of Articles L.233-6 and L.247-1 of the French Commercial Code, we can report that the Company has not acquired any participating or controlling interests during the reporting period.

5.6 REGULATED AGREEMENTS

5.6.1 REGULATED AGREEMENTS DESCRIPTION

ROYALTIES AGREEMENT

Under a royalties agreement signed on June 24, 2008 and amended by an addendum of February 5, 2010 between CARMAT, Professor Alain Carpentier and Matra Défense (a subsidiary of the Airbus Group) as a result of contributions made when the Company was established, it was agreed that CARMAT will pay Professor Alain Carpentier and Matra Défense a total sum equal to 2% of the direct net sales generated by the Total Artificial Heart in the countries covered by at least one of the patents initially contributed by them to the Company after obtaining CE marking and FDA authorization. These payments will be made on a half-yearly basis within thirty days of the end of each sixth-month period, according to a distribution between Professor Alain Carpentier and Matra Défense established in proportion to their holdings in the capital of the Company on the date it was established.

However, CARMAT may repurchase this right to royalties by paying Professor Alain Carpentier and Matra Défense, in proportion to their holdings in the capital of the Company on the date it was established, a total sum of €30 million less the amount of royalties already paid at the time this right to royalties is repurchased. This sum of €30 million is indexed-linked to the –Indice du Prix à la Production de l'Industrie et des Services aux Entreprises – Matériel médicochirurgical et d'orthopédie-exportation zone Euro – Code PVIC 3310921007M (Production prices index for industry and services to companies – Medico-surgical and orthopedic material for export in the Eurozone PVIC Code 3310921007M) with a base level of 100.3 in April 2008 as calculated and published by the French National Institute for Statistics and Economic Studies (INSEE).

RELATIONS BETWEEN CARMAT AND THE SCIENTIFIC RESEARCH ASSOCIATION OF THE ALAIN CARPENTIER FOUNDATION

Owing to the specific competencies sought and historical relations, the Company maintains commercial relations with the Scientific Research Association of the Alain Carpentier Foundation (ARSFAC) in the normal conduct of its business and ordinary financial conditions for the type of services performed.

It thus signed a collaboration agreement for medical research with ARSFAC on April 30, 2013 which was since renewed and last renewed on July 24, 2019 for the period from January 1 to December 31, 2019. Under the terms of this agreement, the Company committed to repay to ARSFAC all the costs mentioned in the appendices to said agreement. For 2019 fiscal year, expenses of €20,460 excluding tax were recorded under this agreement.

RELATIONS BETWEEN CARMAT AND THE MARIE LANNELONGUE SURGICAL CENTER (CCML)

Owing to the specific competencies sought, the Company maintains commercial relations with the Marie Lannelongue Surgical Center (CCML) in the normal conduct of its business and under ordinary financial conditions for the type of services performed.

It thus signed a collaboration agreement for medical research with CCML on June 12, 2014. Under the terms of this agreement, the Company undertook in particular to reimburse CCML for all the costs mentioned in the appendices to said agreement. For 2019, no expenses were recorded under this agreement.

As a reminder, Mr. Henri Lachmann, director of CARMAT, is chairman of the board of directors of CCML.

5.6.2 SPECIAL REPORT OF THE STATUTORY AUDITORS ON THE REGULATED AGREEMENTS

CARMAT SA
36, Avenue de l'Europe
78941 Vélizy-Villacoublay cedex

To the general meeting,

As auditors of your company, we present to you our report on regulated agreements.

It is our responsibility to communicate to you, on the basis of the information given to us, the characteristics and the essential terms and the reasons justifying the interest for the company of the agreements of which we have been informed or which we would have discovered at the time. opportunity of our mission, without having to pronounce on their usefulness and their merits nor to seek the existence of other conventions. It is your responsibility, under the terms of Article R. 225-31 of the French Commercial Code, to assess the interest involved in concluding these agreements with a view to their approval.

In addition, it is our responsibility, if applicable, to provide you with the information provided for in Article R. 225-31 of the French Commercial Code relating to the execution, during the past financial year, of agreements already approved by the general meeting.

We have performed the due diligence that we have deemed necessary in light of the professional standards of the National Company of Auditors relating to this engagement. These procedures consisted in verifying the concordance of the information given to us with the basic documents from which it came.

AGREEMENTS SUBMITTED FOR THE APPROVAL OF THE GENERAL MEETING

We inform you that we have not been given notice of any agreement or commiments authorized during the past financial year to be submitted for the approval of the general meeting in application of the provisions of Article L. 225-38 of the Code. of business.

AGREEMENTS AND COMMITMENTS ALREADY APPROVED BY THE GENERAL MEETING

Agreements approved in previous years

a) with execution during the past financial year

Pursuant to Article R.225-30 of the French Commercial Code, we have been informed of the continuation of the following agreements, which have already been approved by the General Meeting in previous financial years, and which have been enforced during the past financial year.

RESEARCH COLLABORATION AGREEMENT WITH THE SCIENTIFIC RESEARCH ASSOCIATION OF THE ALAIN CARPENTIER FOUNDATION (ARSFAC)

A medical collaboration contract had been concluded with ARSFAC as of January 1, 2014. This contract, renewed on July 24, 2019, covers animal training trials. Under the terms of this agreement, your company undertakes to reimburse the costs incurred by ARSFAC as described in the appendix to the said contract.

During the 2019 financial year, and under this contract, your Company reimbursed ARSFAC an amount of € 20,460 (Taxes excluded).

Mr. Alain Carpentier, director of your Company until March 28, 2019, is a founding member and chairman of the board of directors of ARSFAC.

b) without execution during the past financial year

Pursuant to Article R.225-30 of the French Commercial Code, we have been informed of the continuation of the following agreements, which have already been approved by the General Meeting in previous financial years, and which have not been enforced during the past financial year.

RESEARCH COLLABORATION AGREEMENT WITH THE MARIE-LANNELONGUE SURGERY CENTER (CCML)

A collaboration contract for the training of clinical teams had been concluded with the CCML as of January 1, 2014. Under the terms of this agreement, your company undertakes to reimburse the costs incurred by the CCML as described in the appendix to the said contract.

No expenses were recorded under this agreement for the past fiscal year.

Mr. Henri Lachmann, director of your company, is Chairman of the CCML Board of Directors.

ROYALTIES AGREEMMENT BETWEEN CARMAT («COMPANY»), PROFESSOR ALAIN CARPENTIER AND MATRA DEFENSE

On June 24, 2008, the Company signed a royalty agreement (hereinafter «the Agreement») with Professor Alain Carpentier and Matra Défense, the founding shareholders of the Company. Under this Contract, the Company undertakes to pay to Professor Alain Carpentier and Matra Défense 2% of the net sales proceeds of the CARMAT artificial heart manufactured and distributed by CARMAT SAS, this amount to be divided between the two beneficiaries in proportion to their respective share in the capital of the Company on the date of its creation. These royalties will be payable every 6 months within thirty days after the end of each six-month period, from the first marketing of the CARMAT Artificial Heart and until the expiry of the patents presented in Appendix 1 of the Contract.

The Company is also authorized to redeem at any time the right to benefit from these royalties for an amount of € 30,000,000 reduced by the royalties already paid under this contract, this total amount being divided between the two beneficiaries in proportion to their respective share in the capital of the Company on the date of its creation. This amount of 30,000,000 euros is indexed to the Producer Price Index of the Business Services Industry - Euro-area orthopedic and orthopedic equipment.

The rights thus allocated to Professor Alain Carpentier and Matra Défense are not transferable.

As at December 31, 2019, since your Company has not yet obtained the CE marking and the marketing authorization from the FDA, no royalty has been paid under the Contract.

Signed in Neuilly-Sur-Seine and Paris,
Thursday March 12, 2020,

The statutory auditors

PRICEWATERHOUSCOOPERS AUDIT	LISON CHOURAKI AUDIT
THIERRY CHARRON	LISON CHOURAKI

6

ADDITIONAL INFORMATION

6.1 AUTHOR OF THE UNIVERSAL REGISTRATION DOCUMENT

6.1.1 NAME OF THE AUTHOR OF THE UNIVERSAL REGISTRATION DOCUMENT

Stéphane Piat, CARMAT's chief executive officer, is the author of the universal registration document.

6.1.2 DECLARATION OF THE AUTHOR OF THE UNIVERSAL REGISTRATION DOCUMENT

"Having taken all reasonable steps to verify the contents of this 2019 universal registration document, I affirm that the information contained therein is accurate to the best of my knowledge, and that no material information has been omitted.

I confirm, to the best of my knowledge, that the financial statements have been prepared in accordance with the applicable accounting standards and give a true and fair view of the Company's financial situation and results, and that the management report, for which a cross-reference table appears at paragraph 6.7.2 of this document, gives a true and fair picture of changes to the business, results and financial situation of the Company and and that it describes the main risks and uncertainties it faces."

Vélizy-Villacoublay, Thursday, March 12, 2020,

Stéphane Piat
Chief executive officer, CARMAT

6.2 STATUTORY AUDITORS

6.2.1 STATUTORY AUDITORS IN OFFICE

PricewaterhouseCoopers Audit, member of the Regional Auditors' Association of Versailles.

Represented by Mr Thierry Charron

63, rue de Villiers – 92200 Neuilly-sur-Seine

Date of commencement of duties: appointed upon the incorporation of the Company on June 25, 2008.
Duration of current term: 6 financial years, following renewal of the mandate at the general meeting of June 24, 2015.

Expiry of current term: at the end of the general shareholders' meeting to approve the accounts for the year ending December 31, 2020.

Lison Chouraki Audit, member of the Auditors' Association of Paris

Represented by Ms Lison CHOURAKI

3, rue Anatole de la Forge – 75017 Paris

Date of commencement of duties: Wednesday, June 24, 2015.

Duration of current term: 6 financial years.

Expiry of current term: at the end of the general shareholders' meeting to approve the accounts for the year ending December 31, 2020.

6.2.2 ALTERNATE AUDITORS

Mr Jean-Christophe GEORGHIOU, member of the Regional Auditors' Association of Versailles

63, rue de Villiers – 92200 Neuilly-sur-Seine

Date of commencement of duties: Wednesday, June 24, 2015.

Duration of current term: 6 financial years.

Expiry of current term: at the end of the general shareholders' meeting to approve the accounts for the year ending December 31, 2020.

Ms. Soulika BENZAQUEN, member of the Auditors' Association of Paris

5, rue de Prony – 75017 Paris

Date of commencement of duties: October 16, 2008.

Duration of current term: 6 financial years, following renewal of the mandate at the general meeting of June 24, 2015.

Expiry of current term: at the end of the general shareholders' meeting to approve the accounts for the year ending December 31, 2020.

6.2.3 STATUTORY AUDITORS WHO RESIGNED, WERE DISMISSED OR WERE NOT REINSTATED

Since their appointment, the statutory auditors and their substitutes have not been dismissed from their positions, nor have they resigned.

6.3 INFORMATION FROM THIRD PARTIES, DECLARATIONS BY EXPERTS AND DECLARATIONS OF INTEREST

None.

6.4 PUBLICLY ACCESSIBLE DOCUMENTS AND 2017-2018 HISTORICAL INFORMATION

Copies of this universal registration document are available free of charge from the Company and from the Company's website (www.carmatsa.com) and from the website of the French Financial Markets Authority (www.amf-france.org).

All documents which must be made available to shareholders (such as the articles of association, minutes of general meetings, historical financial information and the valuations and declarations made by an expert at the Company's request included or referred to in this universal registration document) may be consulted at the Company's registered office at 36, avenue de l'Europe – 78140 Vélizy-Villacoublay.

All regulatory information, as defined in Article 221-1 of the General Regulations of the AMF, is available on the Company's website.

The historical financial information as at December 31, 2017 and December 31, 2018 that is incorporated by reference into the present universal registration document was previously presented in the 2017 registration document and the 2018 registration document, which were filed with the Financial Markets Authority respectively on March 22, 2018 under number D.18-0169 and on March 12, 2019 under number D.19-0135, and was the subject of reports by the statutory auditors which contained no observations.

6.5 INFORMATION ON HOLDINGS

As at the date of this universal registration document, the Company did not have any holdings in the share capital of other companies.

6.6 RECENT EVENTS

Since the end of the 2019 financial year, the Company has published the following press releases:

- On February 5, 2020, a press release entitled: CARMAT announces FDA full approval to initiate US clinical feasibility study of its total artificial heart.
- On February 12, 2020, a press release entitled: CARMAT reports its 2019 annual results and confirms its 2020 development prospects.
- On February 17, 2020, a press release entitled: CARMAT confirms the submission of a « Forfait Innovation » dossier in France and its eligibility with observations received from the French National Authority for Health (HAS).
- On March 10, 2020, a press release entitled: CARMAT announces that it has achieved record individual support of 2 years with its bioprosthesis.

The full text of these press releases may be viewed on the Company's website, http://www.carmatsa.com/fr/investisseurs/documentation/communiques-de-presse.

CARMAT plans to communicate on the overall progress of the CE marking or on the completion of significant milestones in its clinical trials. In accordance with good clinical practice and subject to regulatory requirements or special circumstances, CARMAT will not communicate individually on patient implantations and their health status.

6.7 CROSS-REFERENCE TABLES

6.7.1 CROSS-REFERENCE TABLE OF THE UNIVERSAL REGISTRATION DOCUMENT

CHAPTER 1
PERSONS RESPONSABLE

• 1.1. Name of the author of the registration document	Paragraph 6.1.1
• 1.2. Declaration of the author of the registration document	Paragraph 6.1.2
• 1.3. Experts reports	Not applicable
• 1.4. Information sourced from a third party	Not applicable
• 1.5. Statement from the designated authority with no prior aprroval	Page 2

CHAPTER 2
STATUTORY AUDITORS

• 2.1. Statutory auditors in office and alternate auditors	Paragraphs 6.2.1 and 6.2.2
• 2.2. Statutory auditors who resigned, were dismissed or were not reinstated	Paragraph 6.2.3

CHAPTER 3
RISK FACTORS

• 3.1. Risks relating to the Company's activity	Chapter 2

CHAPTER 4
INFORMATION CONCERNING THE ISUER

• 4.1. Legal and commercial name of the issuer	Paragraph 5.1.1
• 4.2. Place, number of registration and LEI	Paragraph 5.1.2
• 4.3. Date of incorporation and lengh of life of the issuer	Paragraph 5.1.3
• 4.4. Headquarter and legal form of the issuer, applicable legislation	Paragraph 5.1.4

CHAPTER 5.
BUSINESS OVERVIEW

• 5.1. Main activities	Paragraph 1.3
• 5.2. Main markets	Paragraphs 1.1 and 1.2
• 5.3. Important events in the development of the Company	Paragraphs 3.1.1, 3.1.3 and 3.1.4
• 5.4. Issuer strategy and objectives	Paragraph 1.5
• 5.5. Degree of dependency on patents, licenses, manufacturing, sales or financial contracts or new manufacturing processes	Paragraph 1.5.4
• 5.6. Assessment of the Company's competitive position	Paragraph 1.2.2
• 5.7. Main investments	Paragraph 3.1.2

CHAPTER 6.
ORGANIZATIONAL STRUCTURE

• 6.1. Summary description of the group	Paragraph 5.1.5
• 6.2. List of major subsidiaries	Not applicable

CHAPTER 7.
OPERATING AND FINANCIAL REVIEW

• 7.1. Financial condition	Paragraph 3.1.1
• 7.2. Operating result	Paragraph 3.1.1

CHAPTER 8.
CAPITAL RESOURCES

• 8.1. Information on the capital	Paragraph 3.2.1
• 8.2. Cash flow	Paragraph 3.2.1
• 8.3. Borrowing conditions and financing structure	Paragraphs 3.1.1 and 3.1.10
• 8.4. Restrictions on the use of capital	Paragraph 3.1.10
• 8.5. Anticipated sources of finance	Paragraph 3.1.1

CHAPTER 9.
REGULATORY ENVIRONMENT

• 9.1. Regulatory environment	Paragraph 1.4

CHAPTER 10.
TREND INFORMATION

• 10.1. Main trends since the end of the previous fiscal year	Paragraph 3.1.4
• 10.2. Known trend or event likely to influence the outlook of the issuer	Paragraph 3.1.4

CHAPTER 11.
PROFIT FORECASTS OR ESTIMATES

• 11.1 Profit forecasts or estimates	Not applicable
• 11.2. Main assumptions relating to forecasts	Not applicable
• 11.3. Compliance and comparability of forecasts with respect to the issuer's accounting methods	Not applicable

CHAPTER 12.
ADMINISTRATIVE, MANAGEMENT AND SUPERVISORY BODIES AND SENIOR MANAGEMENT

• 12.1. Administrative bodies	Paragraph 4.1
• 12.2. Conflicts of interest	Paragraph 4.2

CHAPTER 13.
REMUNERATION AND BENEFITS

• 13.1. Remuneration and benefits in kind	Paragraph 4.5.1
• 13.2. Total amount of sums provisioned or otherwise booked for payment of pensions, retirement or other benefits	Paragraph 4.5.2

CHAPTER 14.
BOARD PRACTICES

• 14.1. Management and governance of the Company	Paragraphs 4.4.2 to 4.4.6
• 14.2. Service contracts with the members of the administrative, management and supervisory bodies	Not applicable
• 14.3. Information on committees	Paragraph 4.3
• 14.4. Compliance with the corporate governance recommendations	Paragraph 4.4.1
• 14.5. Potential significant impacts on corporate governance	Not applicable

CHAPTER 15.
EMPLOYEES

• 15.1. Number of employees	Paragraph 4.6.1
• 15.2. Investment and stock options	Paragraph 4.6.2
• 15.3. Employee involvement in issuer's capital	Paragraph 4.6.3

CHAPTER 16.
MAJOR SHAREHOLDERS

• 16.1. Shareholders holding as at December 31, 2016	Paragraph 5.3.1
• 16.2. Existence of different voting rights	Paragraphs 5.3.1 and 5.3.2
• 16.3. Control of the issuer	Paragraph 5.3.3
• 16.4. Agreements that could bring about a change in control	Paragraphs 5.3.3 and 5.3.4

CHAPTER 17.
RELATED PARTY TRANSACTIONS

• 17.1. Related agreements description	Paragraph 5.6.1

CHAPTER 18.
FINANCIAL INFORMATION CONCERNING THE ISSUER'S ASSETS AND LIABILITIES, FINANCIAL POSITION AND PROFITS AND LOSSES

• 18.1. Historical financial information	Paragraph 3.2
• 18.2. Interim and other financial information	Not applicable
• 18.3. Auditing of the annual historical financial information	Paragraph 3.3
• 18.4. Pro-forma financial information	Not applicable
• 18.5. Dividend policy	Paragraph 3.1.7
• 18.6. Legal and arbitration proceedings	Not applicable *
• 18.7. Significant changes in the financial or trading position	Not applicable

CHAPTER 19.
SUPPLEMENTARY INFORMATION

• 19.1. Share capital	Paragraph 5.2.1
• 19.2. Memorandum and Articles of Association	Paragraph 5.4

CHAPTER 20.
IMPORTANTS CONTRACTS

• 20. Importants constracts	Paragraph 3.1.10

CHAPTER 21.
DOCUMENTS ON DISPLAY

• 21.1. Publicly accessible documents	Paragraph 6.4

*: To the best of the Company's knowledge, there is no litigation, arbitration, governmental or judicial procedure, or exceptional event, likely to have or having had in the last 12 months significant effects on the financial situation or the profitability of the Company.

6.7.2 CROSS REFERENCE TABLE OF THE ANNUAL FINANCIAL REPORT

DECLARATION OF THE PERSON RESPONSIBLE FOR THE ANNUAL FINANCIAL REPORT

• Declaration of the person responsible for the annual financial report	Paragraph 6.1.2

MANAGEMENT REPORT

• Analysis of the financial situation	Paragraphe 3.1
• Risks factors	Chapter 2
• Information related to share capital and elements likely to have an influence in the case of a public offering	Paragraph 5.2
• Acquisition by the Company of its own shares	Paragraph 5.5.2
• Summary table of currently valid delegations made by the shareholders' general meeting to the board of directors concerning capital increases	Paragraph 5.2.6
• Participation of employees in the capital	Paragraph 5.5.2
• Remuneration of corporate board members and management and list of mandates	Paragraphs 4.5.1 and 4.1.1
• Internal control and risk management procedures relating to the preparation and processing of accounting and financial information	Paragraph 3.4

FINANCIAL STATEMENTS AND REPORTS

• Corporate financial statements	Paragraph 3.2
• Auditors'report on the corporate financial statements	Paragraph 3.3
• Consolidated financial statements	Not applicable
• Auditors'report on the consolidated financial statements	Not applicable
• Auditors'fees	Paragraph 3.2.2.5

6.7.3 CROSS REFERENCE TABLE OF THE CORPORATE GOVERNANCE REPORT

• List of mandates and functions fulfilled by each corporate officer during the financial year	Paragraph 4.1
• Regulated agreements	Paragraph 5.6
• Share capital authorized by the general meeting	Paragraph 5.2.6
• Choice in terms of the methods of exercise of the general management (Chairman vs CEO)	Paragraph 4.4.4

6.8 GLOSSARY

Accident vasculaire cérébral (AVC)
Sudden neurological deficit of vascular origin caused by an infarctus or a hemorrhage in the brain.

Actuator
A device that controls the movement of a fluid or a solid.

Clinical Trial Authorization (CTA)
Authorization issued by the ANSM. One of two authorizations required to carry out biomedical research on humans in France, the other being that of the Ethics Committee (Comité de Protection des Personnes – CPP: see corresponding entry).

AFSSAPS
French Health Products Safety Agency (Agence Française de Sécurité Sanitaire des Aliments et Produits de Santé). This agency judges and monitors the safe use of health products, examines their quality in the laboratory and inspects their production, distribution and testing sites. It

also produces information campaigns to ensure the correct use of health products. It was replaced by the ANSM (see corresponding entry) through law n° 2011-2012 of December 29, 2011.

Annuloplasty
Intervention with the aim of correcting a mitral insufficiency linked to an expansion of the mitral annulus.

ANSM
French National Agency for Medicines and Health Products Safety (Agence nationale de sécurité du médicament et des produits de santé – ANSM). This is a French public institution whose objective is to evaluate the health risks of health products for humans. It has authority over the regulation of biomedical research.

Platelet antiaggregant
Drug preventing the blood platelets, which are partly responsible for the coagulation phenomenon (see corresponding entry) of blood, from sticking together and forming the beginning of a clot. The most well known is aspirin.

Anticoagulant
Drug limiting blood-clotting to avoid the formation of clots by acting on coagulation factors other than platelets (see previous entry). Their dosing is complicated: too much risks hemorrhages, not enough risks thromboembolic accidents. Their use at high doses is required for all implantable metallic or plastic devices which are not hemocompatible and are the source of many complications.

Aorta
The aorta is the largest artery of the body and allows oxygenated blood to be supplied from the left ventricle to all parts of the body.

Pulmonary artery
Arteries that carry blood from the heart to the lungs.

Betablockers
Drugs which reduce the cardiac rhythm and output to decrease blood pressure.

Bioprosthetic (valve) or bioprosthesis
Artificial valve manufactured from animal tissues in order to replace a failing heart valve. By extension, it refers to a medical device containing biological components.

Bpifrance
French public investment bank – Banque Publique d'Investissement française (which has incorporated the activities of Oseo Innovation, e.g. ANVAR, aiming to promote innovation through financial guarantees and partnerships).

Cardiogenic shock
Inability of the myocardial pump to generate a blood flow rate sufficient for the peripheral organs.

Coagulation (blood)
Phenomenon of blood clot formation. It is the body's normal reaction to stop a hemorrhage. Nevertheless, when clots form in the heart, a blood vessel or in a device, they may obstruct a blood vessel and can cause a pulmonary embolism or cerebrovascular accident

Total orthotopic artificial heart
Artificial cardiac prosthesis (or total artificial heart – TAH) intended to completely replace the natural heart. It is different from ventricular assistance which functions in parallel to the diseased heart.

Critical Event Committee (CEC)
Committee consisting of members who are totally independent of the sponsor and study investigators, established as part of the ISO 13485 standard and the Good Clinical Practice (GCP) guidelines: its role is to review all adverse events, serious or otherwise, and to determine their causal link with the device under investigation.

Ethics Committee (Comité de Protection des Personnes – CPP)
Ethics committee whose role is to ensure that all biomedical research projects on humans carried out in France complies with the various considerations (medical, ethical and legal) aimed at ensuring the protection of the persons participating in the research.

Safety Committee (DSMB)
DSMB: Data Safety and Monitoring Board.
Committee consisting of members who are totally independent of the sponsor and study investigators, established as part of the ISO 13485 standard and the Good Clinical Practice (GCP) guidelines: its role is to review all study data and to issue an opinion to the sponsor on whether to continue with inclusions in the clinical study.

Compliance
In medical terms, the ability of an organic cavity to change volume under the influence of a variation in pressure.

Research Tax Credit (RTC)
Financial aid created to encourage research and development efforts in companies.

Diastole
Relaxation phase of the muscle of a cardiac cavity that allows it to be filled.

Diuretic
Drug to remove excess fluids and, in this way, lighten the load on the heart and prevent pulmonary edema.

Pulmonary embolism
Situation where a blood clot blocks a pulmonary artery.

Ex vivo
Refers to tests which are performed on cadavers (see In

vivo).

Etiology
Medical field which studies and analyses the causes of diseases.

FDA – Food & Drug Administration.
American regulatory agency that authorizes the marketing of drugs and medical devices in the United States.

Altered ejection fraction:
Is termed terminal chronic heart failure affecting a patient whose ejection capacities are reduced to less than 40%.

HDE – Humanitarian Device Exemption
FDA approval process allowing a device to be marketed without evidence of effectiveness (only data relating to the safety of the device are required). The FDA calls a device approved in this way an HUD (Humanitarian Use Device : Device for compassionate use). This approval limits the number of devices that can be released on the US market to 4,000 per year.

Red blood corpuscles
Red blood cells.

Hemocompatibility
The biological compatibility quality of non-living materials used in a medical device in contact with blood and other biological organs.

Hemolysis
Destruction of red corpuscles with the release of hemoglobin into the blood plasma, thus reducing the capacity to transport oxygen.

HUD
See HDE.

Hyperlipidemia
Pathology referring to the dysfunctions caused by an increased level of fat in the blood.

High blood pressure
Cardiovascular disease characterized by an arterial pressure greater than the norm and causing an increase in the left ventricular volume.

Hypertrophy
Excessive growth of an organ or an element of the body.

IDE – Investigational Device Exemption
Approval process allowing a device to be used during a clinical study with the aim of generating the safety and efficacy data required to obtain a PMA.

Immunosuppressant
An agent that limits the immune reactions of the organism in order to reduce the rejection risks following the transplantation of a graft. The most well known is cyclosporin.

Incidence
The number of new cases of a disease observed during a given period and in a determined population. It differs from the prevalence, which is a status measurement which counts all the cases (new or not) at a given time.

Myocardial infarction
Necrosis (death) of part of the cardiac muscle. In plain language, heart attack. It occurs when one or more coronary arteries become blocked so that the cells of the myocardium (the muscle that makes up the heart), irrigated by this artery (or these arteries), are no longer oxygenated, thereby causing them to suffer (pain felt) and possibly resulting in their death.

Angiotensin-converting enzyme (ACE) inhibitors
Drugs reducing vascular resistance.

Inotrope
Drug increasing the contractility of the cardiac muscle. Dependence on inotropes marks the terminal phase of heart failure.

In silico
Refers to tests which are performed on computers and/or by digital simulation.

Acute cardiac insufficiency
Sudden incapacity of the heart to provide a sufficient blood flow to deal with the oxygen needs of the various organs. The symptoms are severe. It occurs either following a heart attack (see myocardial infarction) that caused lesions to an area of the heart, or following a sudden incapacity of the body to compensate for chronic cardiac insufficiency (see decompensation).

Chronic cardiac insufficiency
The incapacity of the heart to provide sufficient blood flow to deal with the oxygen needs of the various organs. The main causes of chronic cardiac insufficiency are angina and myocardial infarction, high blood pressure, valvular disease and degenerative diseases of the myocardium. In each of these cases, the result is the progressive destruction of the cardiac muscle with loss of its contractile power.

In vitro
Refers to tests which take place outside of the organism, in the laboratory or on a test bench. Originally, these tests were carried out in glass tubes.

In vivo
Refers to tests which are performed in living organisms. (also see ex vivo)

Ischemia
Decrease of the arterial blood flow to an organ.

Coronary disease
Decrease in the power of one or more arteries of the heart (or coronary arteries) and brings about angina and myocardial infarction (or heart attack).

CE marking
A declaration from the manufacturer certifying that the product complies with the applicable legal requirements and with the European directives (meeting a number of safety, efficacy and traceability of manufacture, etc. conditions).

Mitral (valve)
Cardiac valve which separates the left auricle from the left ventricle.

New York Heart Association (NYHA)
A scale based on symptoms that aims to quantify and monitor the functional impact (on activity) of cardiac insufficiency for an individual.

ISO standard
Standard created by the International Organization for Standardization (ISO) in order to guarantee reliable and good quality products and services.

Pulmonary edema
Invasion of the pulmonary alveoli by blood plasma that has passed through the wall of the capillaries (small vessels). Acute pulmonary edema (APE) is an absolute emergency and the common consequence of cardiac decompression.

Medical Board
Professional, administrative and legal body for the defense and regulation of the medical profession in France.

Auricle (atrium)
One of two small upper cavities in the heart which receives blood before passing it into the corresponding ventricle. Each auricle communicates with the corresponding ventricle through an atrioventricular valve, the tricuspid valve on the right and the mitral valve on the left.

Orthotopic
Refers to the transplantation of an organ to its normal anatomical location.

Chemically treated animal pericardium
A double-walled sack that contains the heart and the roots of the large blood vessels of animal origin (bovine, porcine or equine) treated with a sterilizing fixative, glutaraldehyde. It is known to be the least thrombogenic biomaterial and does not bring about the rejection phenomenon.

Fuel cell
Cell in which electricity is produced through the oxidation on an electrode of a reduction fuel (for example hydrogen) coupled with the reduction on the other electrode of an oxidant, such as oxygen from the air.

PMA – Pre-Market Approval
FDA approval process before the marketing of a device. It requires exhaustive safety and effectiveness data, notably by means of a clinical study (IDE).

Prevalence
Measurement of the state of health of a population at a given time which can be expressed as a percentage. For a given pathology, the prevalence is obtained by dividing the number of people affected at a given time by the size of the total population.

Product Lifecycle Management (PLM)
The software used to create and maintain the definition of products throughout their life cycle, from the issuing of the quotation until the end of its life. PLM covers the management of the definition of products, including configuration management, development management and project management.

Polyetheretherketone (PEEK)
A high performance plastic with a unique combination of properties, used for its strength in the medical, aeronautical, automobile, electronics, food and industrial sectors.

Polyurethane
A plastic material used in varnishes, paints and synthetic rubbers obtained by polymerization.

Proteinic Concerning proteins.
PulsatileAnimated by rhythmic pulsations of the heart beat.

Clean room
Room or suite of rooms where the concentration of particles is controlled in order to minimize the introduction, generation and retention of particles inside, generally with a specific industrial or research aim. Parameters such as temperature, humidity and relative pressure are also maintained at a precise level.

Whole human blood
This is blood with all its constituents, in particular plasma, red corpuscles, white corpuscles and platelets.

Septicemia
Serious generalized infection of an organism due to the discharges of pathogenic bacteria in the blood.

HIL simulator
A real time simulator that makes the computers believe they are navigating the actual system (Hardware in the Loop test principle).

Stasis
In medical terms, this refers to the abnormal stagnation of blood in an organ.

Systole
Phase of contraction of the muscle of a cardiac cavity

allowing ejection of the blood it contains.

Telemetry
Means of monitoring certain biological, particularly cardio-respiratory, parameters or technical parameters, at a distance.

Thrombosis
Obturation, through the formation of a clot (thrombus), of an arterial or venous blood vessel or of a cardiac cavity (embolism). The blood no longer flows and the organs are no longer supplied with it.

Thromboembolic
Ailment characterized by the formation of coagulated blood clots in veins (thrombus) which, upon detaching, risk causing embolisms (sudden blockages of blood vessels).

Thrombogenic, thrombogenicity
Refers to causing a thrombus (blood clot).

Destination therapy
Definitive implantation – Destination Therapy, as opposed to the pending transplantation indication (Bridged Therapy) Transplantation Surgical operation consisting of replacing a diseased organ with a healthy one.

Vasodilator
Drug which relaxes the blood vessels to increase the blood and oxygen flow to the heart without increasing its workload.

Design and production:
Genesta Finance - 33 1 45 63 68 60

GENESTA
Corporate Finance