



NOVARES  
*Beyond plastics*



**#PAVINGTHEFUTURE**

NOVA CAR 

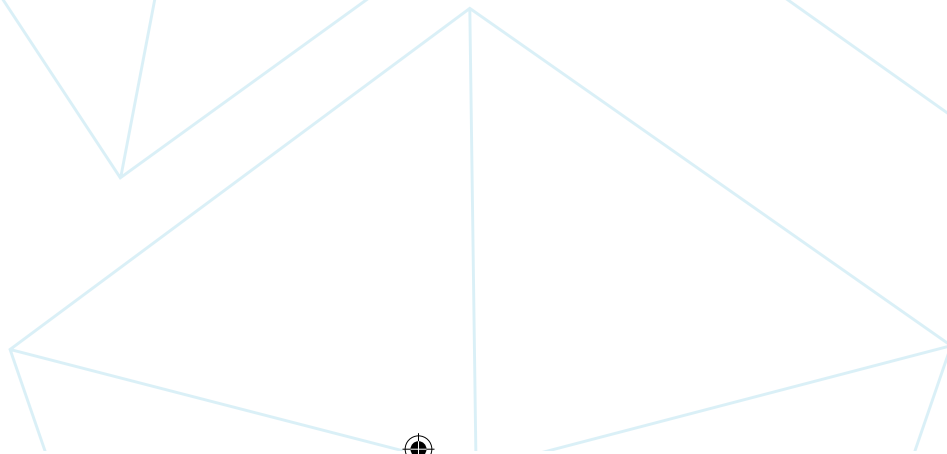
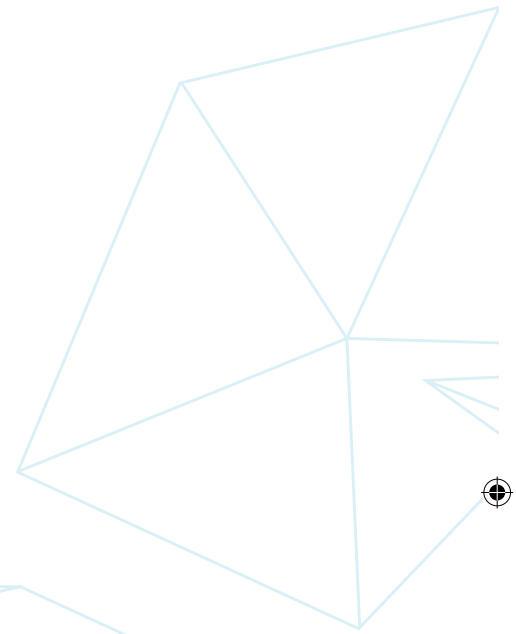
PRESS KIT 2019





**Pierre Boulet**

Novares CEO





# Editorial

« Paving the Future”: Innovation is embedded in Novares’ DNA, it is contained in our group’s name; it is one of the principal vectors of our development alongside our acquisition strategy which today is placing us among the world’s 100 leading automotive suppliers. But for us, the boldest innovation is not merely a dream, but a project. Nova Car showcases our promise to our customers, presenting the most advanced innovations and giving you the opportunity to try, touch and experience them for yourselves.

Greater vehicle autonomy, smart surfaces, advanced communication, electrification etc... the automotive sector is changing rapidly and it is the job of our dedicated innovation teams to listen, anticipate and invent solutions for the vehicles of the future.

In order to develop these solutions, Novares builds on 3 pillars:

- Strong R&D. We make major investments at the human and technological level with a team of 750 engineers throughout the world and 5.4% of our turnover entirely devoted to innovation;
- The incorporation of technologies developed by start-ups and research labs with which we establish co-development partnerships in order to invent unique solutions together, which are tested and implemented within our Nova Car programme, our open innovation laboratory.
- Finally, Novares Venture Capital, an investment vehicle with €50M created in February 2018 through which Novares is invested in start-ups in order to maintain close, lasting relationships and consolidate engineering partnerships.

Nova Car 1 with its 16 innovations embarked on a world tour in 2018, travelling around Europe, the United States, Japan and China, thus enabling us to initiate fruitful collaboration with the world’s leading manufacturers and automotive suppliers.

We are proud to present you Nova Car 2 with 25 innovations that anticipate the advances in the automotive sector: new super-intuitive interfaces, an optimal propulsion system and advanced communication between passengers, the vehicle and their environment for unique user experiences in the vehicles of tomorrow.

**Pierre Boulet**, Novares CEO



# NOVARES, A GLOBAL PRESENCE

1,4 billion euros of turnover

12 000 employees

750 R&D engineers and technicians

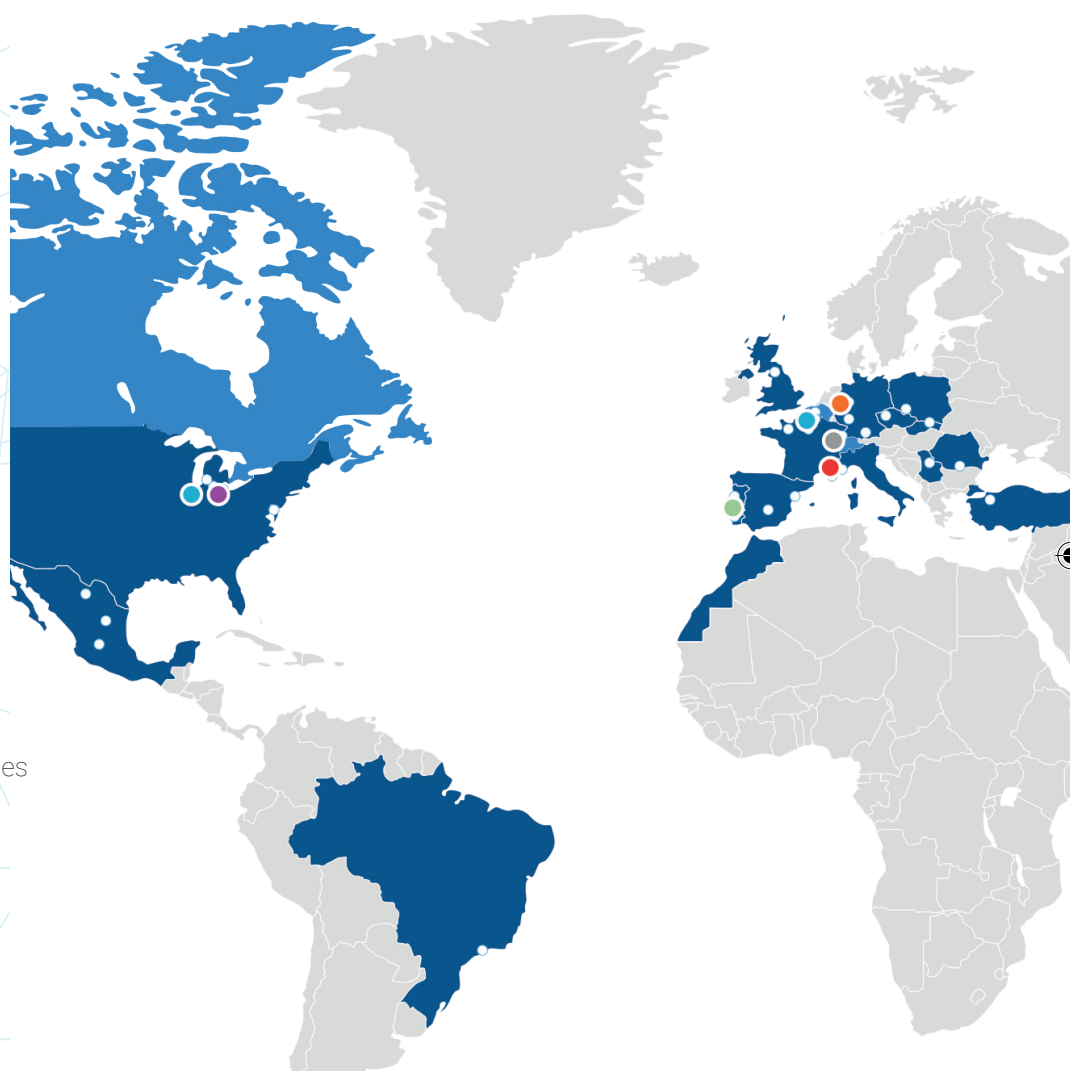
5,4% of annual turnover invested in R&D

200 million parts

47 factories in 22 countries

8 skills centres

8 technical centres



## SKILL CENTERS

-  LENS – FRANCE  
POWERTRAIN EUROPE
-  WALWORTH – USA  
POWERTRAIN AMERICAS
-  LEIRIA – PORTUGAL  
BEZELS & CLUSTERS
-  LOEHNE – GERMANY  
AIR VENTS & DECORATION TRIM
-  MONACO  
INTERIOR & CAR BODY TRIM
-  LIVONIA – USA  
HANDLES
-  IZERNORE – FRANCE  
EXTERIOR PAINT & SURFACES
-  SHANGHAI – CHINA  
POWERTRAIN CHINA

## TECHNICAL CENTERS

- KANGQIAO – CHINA
- WUHAN – CHINA
- MUNICH – GERMANY
- CHENNAI – INDIA
- PUEBLA – MEXICO
- KENITRA – MOROCCO
- MIOVENI – ROMANIA
- GEBZE – TURKEY

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## Novares, a group dedicated to the creation of high-tech solutions for tomorrow's automotive industry

Novares is a global plastic solutions provider founded in 2017 following the merger of the French automotive supplier Mecaplast, created in 1955, and the American Key Plastics. Novares continued its development with the acquisition of MPC in 2019. Using advanced plastic injection techniques, Novares designs high-tech products for incorporation into the vehicles of today and tomorrow, aimed at making them ever more user-friendly and ergonomic. Today, the group offers a comprehensive solutions portfolio covering "engines", interiors and exterior body parts.

Novares' expertise encompasses design, manufacture and assembly of components as well as complex system integration. Intended to bring evermore value-added to car manufacturers, Novares solutions come with complex mechanisms, use kinematics, mechatronics and multi-functionalities.

The group supplies its solutions and services to car manufacturers worldwide, such as Dongfeng Peugeot-Citroën, PSA, Renault-Nissan-Dacia, Ford, Fiat Chrysler, Daimler, Audi, Toyota, General Motors, Jaguar Land Rover, BMW, SAIC and Volkswagen as well as Tier 1 suppliers and assemblers including Yanfeng Johnson Controls, Faurecia, IAC, Continental and Visteon.

### AN EXTENSIVE FOOTPRINT IN 22 COUNTRIES

**HQ France** – Paris – Clamart  
**Brazil** – Sao Paulo  
**China** – Kangqiao  
**China** – Shanghai  
**China** – Shenyang  
**China** – Wuhan  
**China** – Yantai  
**Czech Rep.** – Janovice  
**Czech Rep.** – Zbrak  
**France** – Iznemore  
**France** – Lens  
**France** – Libercourt

**France** – Ste Marguerite  
**France** – Strasbourg  
**France** – Villers-Bretonneux  
**France** – Vire  
**Germany** – Loehne  
**Germany** – Munich  
**Germany** – Stuttgart  
**India** – Chennai  
**Italy** – Beinasco  
**Japan** – Shin Yokohama (Partnership)  
**Mexico** – Chihuahua

**Mexico** – Puebla  
**Mexico** – Silao  
**Monaco**  
**Morocco** – Kenitra  
**Portugal** – Arouca  
**Portugal** – Leiria  
**Portugal** – Vendas Novas  
**Romania** – Mioveni  
**Serbia** – Zrenjanin  
**Slovakia** – Zavar  
**Spain** – Igualada  
**Spain** – Sesena

**Turkey** – Gebze  
**UK** – Peterlee  
**USA** – Felton  
**USA** – Grand Rapids  
**USA** – Howell  
**USA** – Janesville  
**USA** – Livonia  
**USA** – Morrison  
**USA** – Prairie du Chien  
**USA** – Richland Center  
**USA** – Southfield  
**USA** – Walworth

### THE NOVARES VENTURE CAPITAL PARTICIPATIONS

**Belgium** – Sint-Niklaas (QUAD)  
**Canada** – Windsor (APAG CoSyst)  
**Czech Republic** – Pardubice (APAG CoSyst)

**France** – Paris (Actronika)  
**Switzerland** – Zurich (APAG CoSyst)  
**UK** – Cambridge (FlexEnable)

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# INNOVATION IS IN THE NOVARES GROUP'S DNA

CLEANER AND HIGHLY CONNECTED, TOMORROW'S CAR PROVIDES INTUITIVE DRIVING ASSISTANCE AND OFFERS PASSENGERS UNIQUE SMART INTERFACES. THE VEHICLE OF TOMORROW WILL BE CONNECTED, SHARED, AUTONOMOUS AND CLEAN. TO INVENT THE VEHICLE OF THE FUTURE, NOVARES RELIES UPON 3 STRATEGIC PILLARS: ITS R&D, ITS NOVA CAR OPEN INNOVATION LAB AND AN INVESTMENT FUND, NOVARES VENTURE CAPITAL, FOR INVESTING IN THE FUTURE.

## WE NEVER STOP INVENTING WITH 3 STRATEGIC PILLARS:

1

### Novares Innovation Strike force: strong R&D

Novares devotes 5.4% of its annual turnover to R&D and employs 750 engineers and technicians worldwide working on innovative projects.

The Novares skills centres engineers present at an international level design and manufacture systems in line with the major trends in the sector, such as lightweight components, the development of clean hybrid and electric vehicles, as well as connected and autonomous vehicles.

2

### An Open Innovation Laboratory: Nova Car

Scouting talents in the Deep Tech innovation ecosystem, Novares invents, develops and co-develops solutions with start-ups, innovative companies and research centres. These solutions are tested and presented in the Novares open innovation laboratory: Nova Car.

NOVA CAR



3

### Novares Venture Capital: Investing in the Future

In February 2018, Novares created Novares Venture Capital, an investment vehicle of 50 million euros to invest in start-ups possessing technical expertise in high value-added fields for Novares products, and to establish long-term partnerships.



NOVARES  
VENTURE CAPITAL

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# THE NOVARES INNOVATION ECOSYSTEM

## NOVARES VENTURE CAPITAL

OUT OF THE 50 MILLION IN INVESTMENTS PLANNED BY 2022, 12 MILLION HAS ALREADY BEEN INVESTED IN 4 START-UPS.



### Integration of glass-free flexible displays

FlexEnable is a world leader in the development and industrialization of low-cost, scalable plastics electronics for flexible displays and sensors.



### Advanced haptic solutions

Actronika is a French start-up working on disruptive HMI Technology (Human Machine Interface), integrating next-generation haptic technologies in smart surfaces for advanced tactile user experience.



### Lighting and electronics systems

APAG-CoSyst is an innovative Swiss company that designs, develops, and produces electronic control units (ECUs) and LED-based lighting modules. The focus functions for APAG-CoSyst's products are actuator control, sensor data processing, multi-function gateways, exterior accent lighting, and small interior peripheral functional and aesthetic lighting.



### Printed electronics, flexible sensor solutions

Quad Industries is a Belgian company specialized in development and production of user interfaces and printed electronics. It provides flexible sensor solutions for both consumer and industrial applications.

## PARTNERS

10 partners contributed to the Nova Car #2



Accelerator of innovation for all industrial companies, CEA Tech creates technologies to improve their competitiveness and performance through products differentiation. CEA Tech manages the technological research department of the CEA and offers a complete service portfolio in the digital domain, low carbon energies and medicine of the future.

07

# THE NOVA CAR AN OPEN INNOVATION LAB

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“ The name Novares is derived from two Latin words: Nova, meaning new, expressing our focus on innovation, and Res, meaning “fact”, reflecting our desire to provide our clients with pragmatic solutions. Nova Car is a true immersive experimental laboratory. This demonstration vehicle illustrates our technical know-how which we are proud to present to our clients and partner audiences. ”

**Pierre Boulet**, Novares CEO









**Interior  
& Car Body Trim**



**Air Vents  
& Decoration Trims**



**Bezels  
& Clusters**



**Handles**

**7**

**MY FLEXVIEW**

Personal touchable  
screen interface with  
haptic feedback

**8**

**MY TRAVEL THERAPY**

Motion sickness  
prevention

**4**

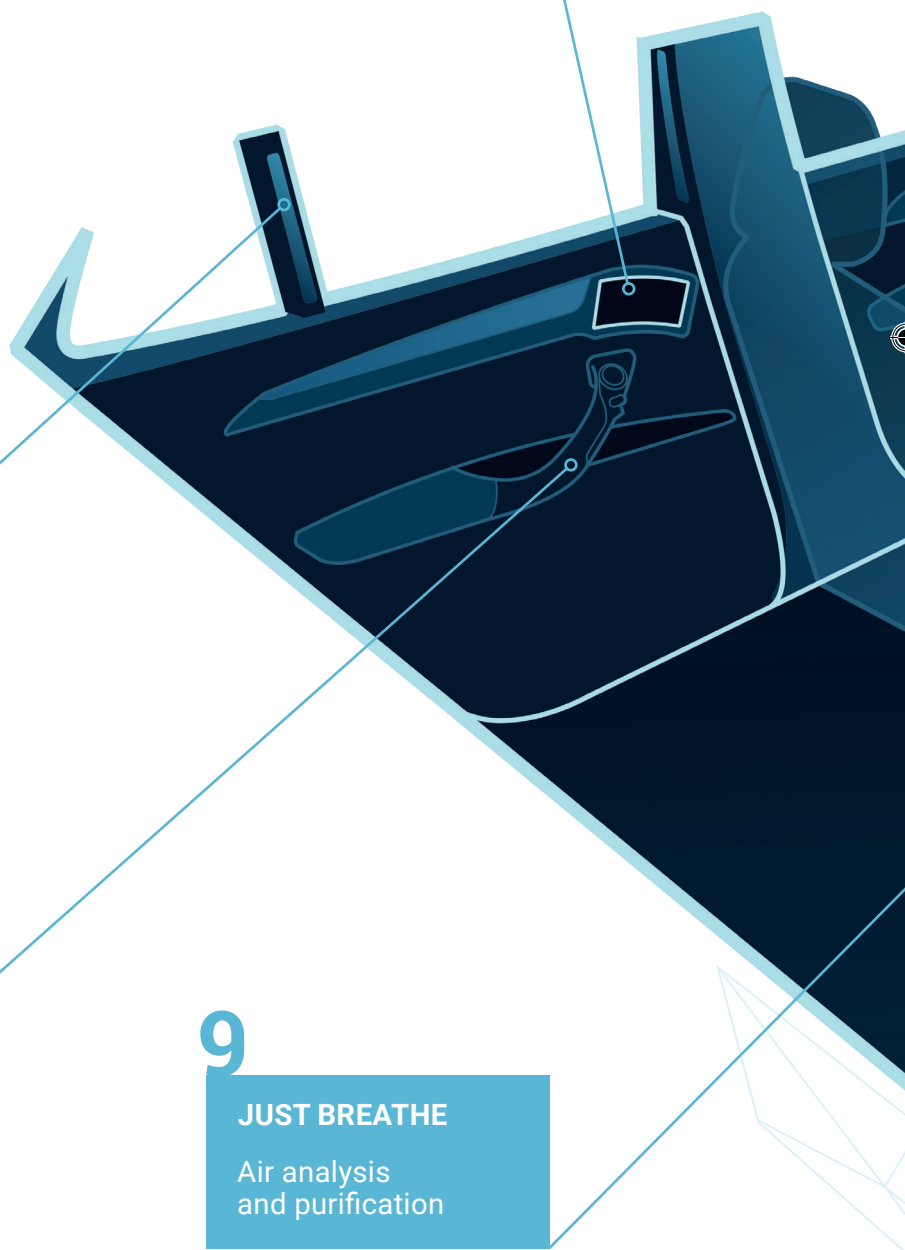
**SQUEEZE COMMAND**

Door command with  
gesture recognition

**9**

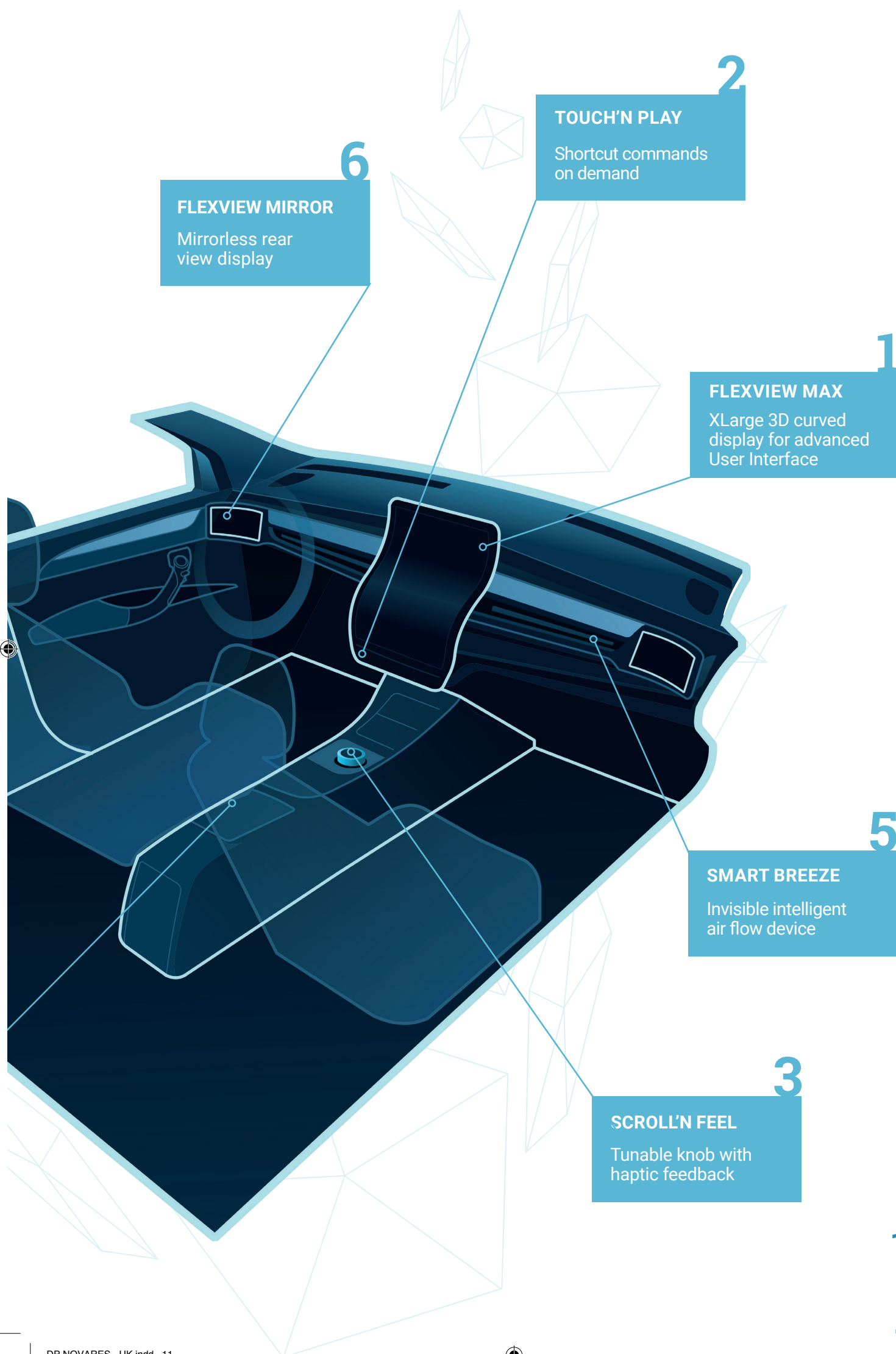
**JUST BREATHE**

Air analysis  
and purification



10







## Handles



## Exterior Paint & Surfaces

10

### WATCH POD ON THE ROOF

Tower control  
to communicate  
with passengers  
and the environment

12

### BRIGHT & SHADOW

Lighting car signature



11

### DROP IN CAR

Secured in car delivery

12





14

**STEALTHY HANDLE**

Invisible tactile  
door handle

13

**NOVAHANDLE SWIPE**

Swipe locking /  
opening handle

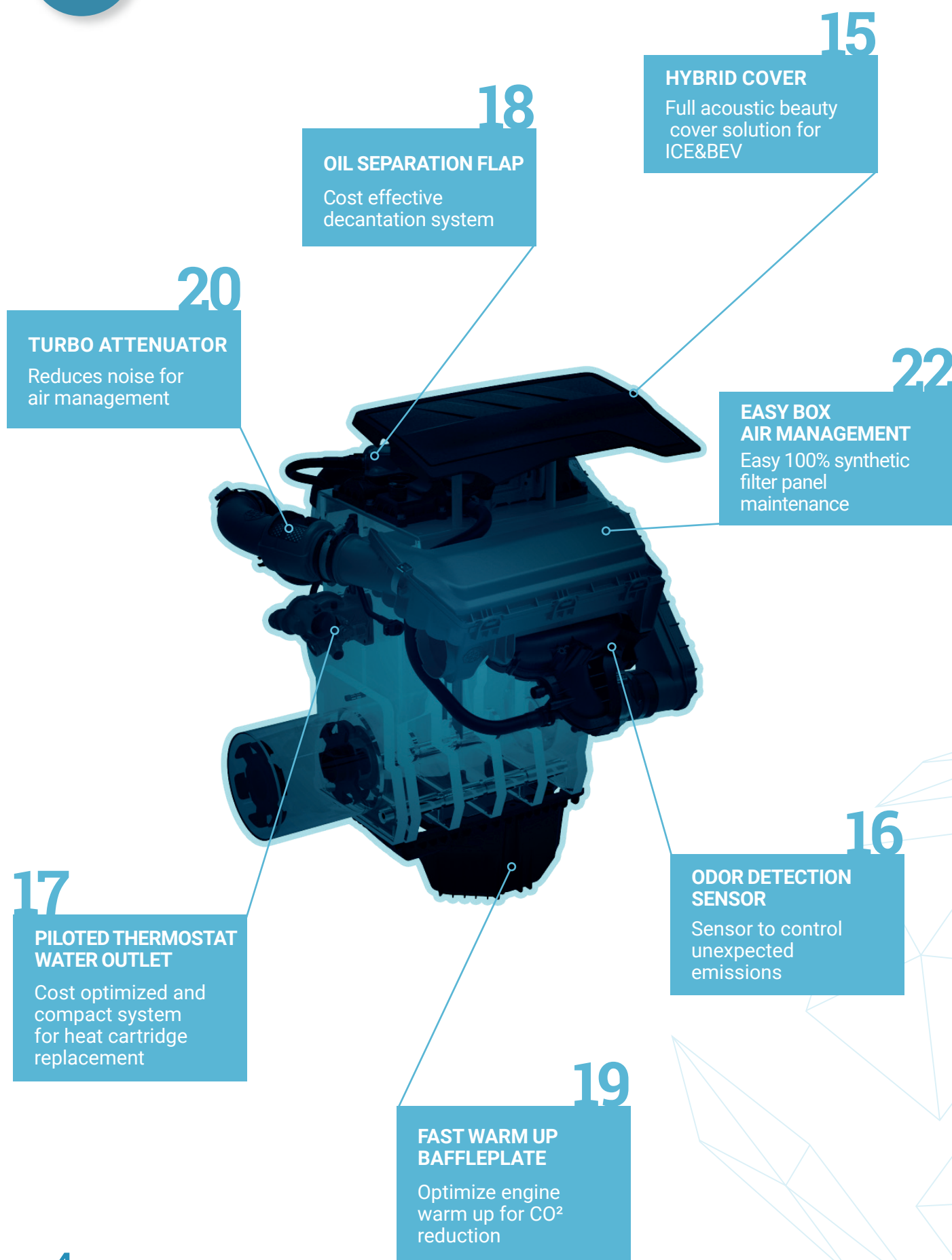
13







## Engine Components



15

### HYBRID COVER

Full acoustic beauty cover solution for ICE&BEV

18

### OIL SEPARATION FLAP

Cost effective decantation system

20

### TURBO ATTENUATOR

Reduces noise for air management

22

### EASY BOX AIR MANAGEMENT

Easy 100% synthetic filter panel maintenance

16

### ODOR DETECTION SENSOR

Sensor to control unexpected emissions

17

### PILOTED THERMOSTAT WATER OUTLET

Cost optimized and compact system for heat cartridge replacement

19

### FAST WARM UP BAFFLEPLATE

Optimize engine warm up for CO<sup>2</sup> reduction

14

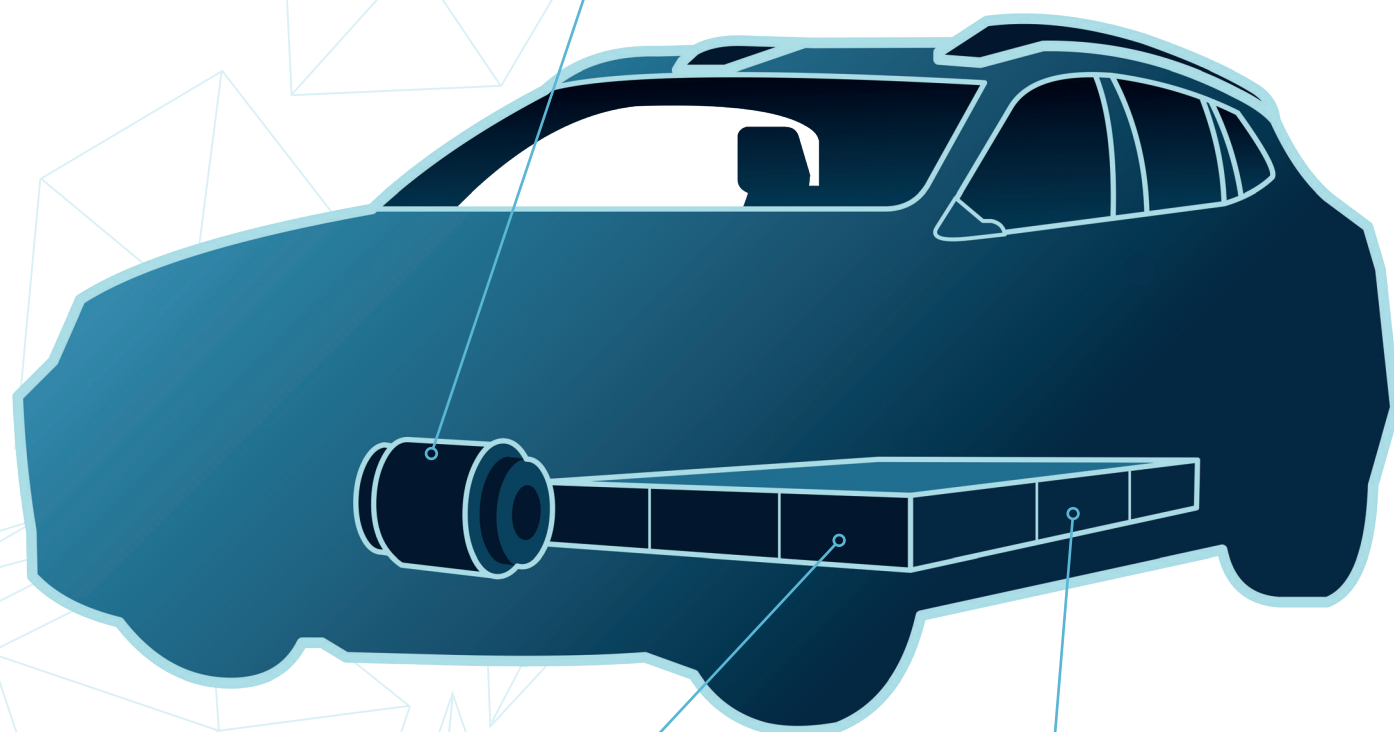


## e-Powertrain

25

### E\_MACHINE COMPONENTS

Light electric engine subsystems



23

### COOLING FRAME FOR BATTERY MODULE

Advanced battery cooling system

24

### BATTERY MODULE SIDE PLATE

Light battery module

15

# NOVA CAR 2

## 25 INNOVATIONS

### Interiors innovations



Interior  
& Car Body Trim



Air Vents  
& Decoration Trims



Bezels  
& Clusters



Handles

## 1 | FLEXVIEW MAX



FlexView Max is a giant flexible (OLCD) and tactile screen, perfectly integrated into cockpit design for centralised vehicle communication and ideal and intuitive interaction with users.

Intuitive User Interface and comfort wellness.

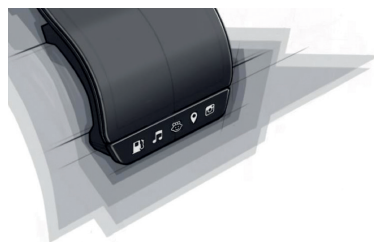
X-Wide Screen (2x 12.1" display) for maximum comfort and a perfect user experience.

Safety first: The driver is not distracted by its use: communication at eye level with haptic touch.

- Connected to all of the vehicle's cameras and sensors: Virtual exterior mirrors, temperature and air quality control.



## 2 | TOUCH'N PLAY



Touch'n Play is a tactile screen with integrated shortcuts to provide all users with easy and rapid access to their favourite applications. The driver is not distracted by its use.



## 3 | SCROLL'N FEEL



Scroll'n Feel offers several tactile functions with a single smart button; the haptic touch is adapted to each function for an advanced user experience. This technology enables drivers to avoid taking their eyes off the road.



### USE CASES



Beautiful System Integration



New UX



Green Mobility



Adas



Self driving cars



Car sharing/ride hailing/ride sharing



Health comfort wellness



Intuitive UI



Electrification

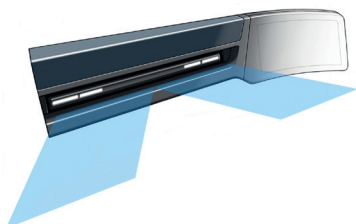


Last mile delivery



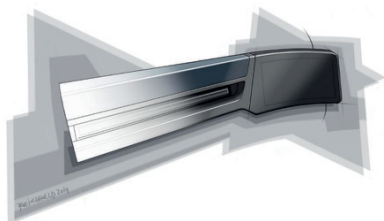
## 4 | SQUEEZE COMMAND

Squeeze Command replaces all door control with a single control button with movement recognition. It makes it possible to add new functionalities without needing to introduce new buttons.



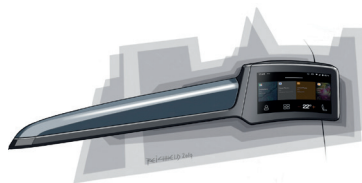
## 5 | SMART BREEZE

Smart Breeze is a streamline and intelligent automatic air flow device that is perfectly integrated into the interior and adapts to all passengers. Directly accessible via FlexView Max, it does not require any manual adjustment and enables drivers to remain focused on the road. Light strips indicate the air current direction.



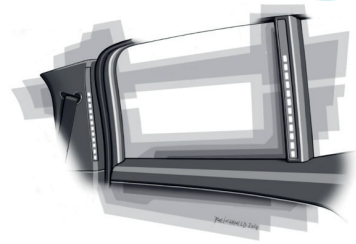
## 6 | FLEXVIEW MIRROR

FlexView Mirror a flexible screen integrated into the vehicle interior which replaces the wing mirrors thanks to augmented reality. Image processing makes it possible to go beyond the limits of traditional rear-view mirrors (night, blind spots, reflections, pedestrians, etc.).



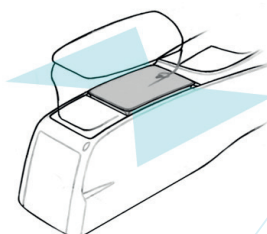
## 7 | MY FLEXVIEW

My FlexView is a personal tactile screen interface for each passenger. It provides access to various information (ventilation, radio, air quality etc.).



## 8 | MY TRAVEL THERAPY

My Travel Therapy is a travel sickness prevention device by means of virtual horizons generation. It enables passengers to read a book, work or even surf on their tablet computer without sickness.



## 9 | JUST BREATHE

Equipped with sensors, Just Breathe conducts an interior air quality analysis and detects pollution and bad smells. It then filters and processes the air in order to guarantee clean air.





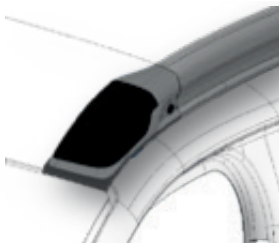
## External Parts



Handles



Exterior Paint  
& Surfaces



### 10 | WATCH POD ON THE ROOF

Watch Pod on the Roof acts as a control tower to protect passengers. It comprises 5 cameras and 5 lidars connected to all the interior screens.



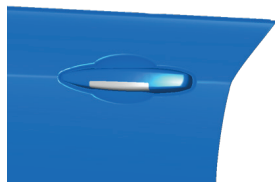
### 11 | DROP IN CAR

Thanks to Drop in Car, the car becomes a delivery point for e-marketing orders.



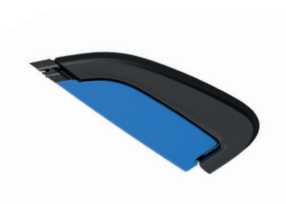
### 12 | BRIGHT & SHADOW

The latest hallmark of the Electric Vehicle brand.



### 13 | NOVAHANDLE SWIPE

Novahandle Swipe makes it possible to unlock your car as easily as a smartphone.



### 14 | STEALTHY HANDLE

Stealthy Handle is an invisible tactile door handle.



## Engine innovations

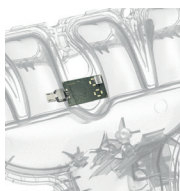


Engine Components



### 15 | HYBRID COVER

Light aesthetic cover to reduce engine noise at reduced cost.



### 16 | ODOR DETECTION SENSOR

Sensor enabling control of unexpected emissions thanks to smart monitoring of engine fluid and an alarm system in case of fire.







## 17 | PILOTED THERMOSTAT WATER OUTLET

Economic heating system concept controlling opening and closing of the thermostat.



## 18 | OIL SEPARATION FLAP

Effective and economic oil decantation system.



## 19 | FAST WARM UP BAFFLE PLATE

Optimises oil circuit heating to reduce CO2 emissions.



## 20 | TURBO ATTENUATOR

Reduces air intake system noise.



## 21 | ACOUSTIC WHEEL ARCH LINER

Reduces vehicle movement noise.



## 22 | EASY BOX

Easy synthetic filter panel maintenance.

# Electric Engine Innovations



e-Powertrain



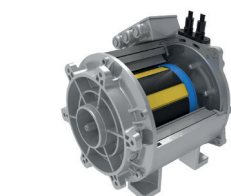
## 23 | COOLING FRAME FOR BATTERY MODULE

Battery cooling module. Helps reduce vehicle weight.



## 24 | BATTERY MODULE SIDE PLATE

Battery module to reduce vehicle weight.



## 25 | E-MACHINE COMPONENTS

Electric engine subsystems to reduce vehicle weight and cost.



## ABOUT NOVARES

Novares is part of the Equistone Partners Europe capital risk fund, with BPI France as its second largest shareholder.

Novares, whose registered office is based in France, is a global plastic solutions provider that designs, manufactures complex components & systems serving the future of the automotive industry. Specialised in advance plastic injection techniques, the company creates high-tech solutions contributing to the development of cleaner, lighter, more connected and more user-friendly vehicles in which all passengers can enjoy intuitive interfaces.

Novares co-develops its products and supplies the automotive sector's major Tier 1 actors, manufacturers and suppliers. Following the integration of MPC, Novares' 2019 turnover is set to reach 1.4 billion euros.

With the inclusion of Novares Venture Capital shares, the group operates in 22 countries with 47 factories, 8 skill centres, 8 technical centres and 17 customer service centres serving its clients worldwide.

[www.novaresteam.com](http://www.novaresteam.com)



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Novares Group



Novares Group



**NOVARES**  
*Beyond plastics*

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