



2019  
**LET'S SHAPE  
THE FUTURE  
OF MOBILITY**



PLASTIC OMNIUM

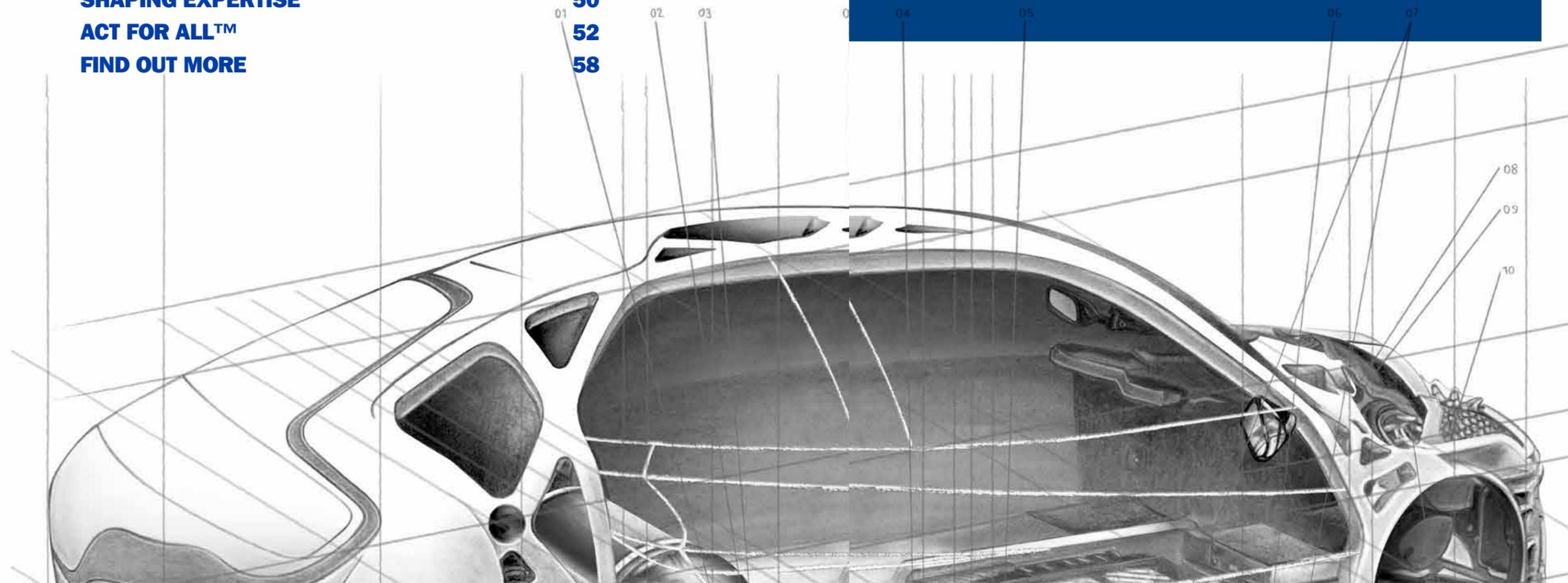
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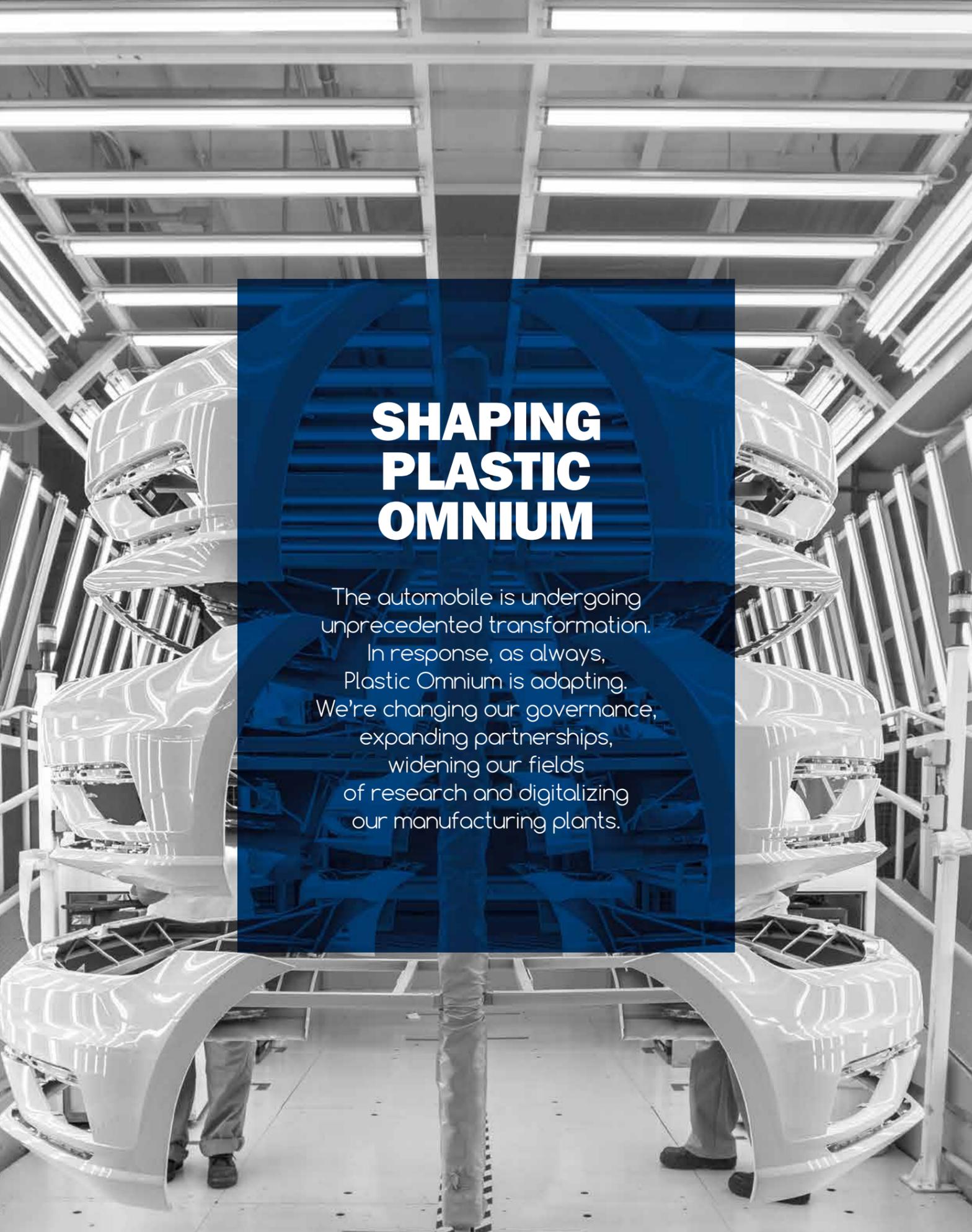
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The automobile is an exciting venture in freedom, in industry, in technology challenges. The automobile now needs to be reinvented. It must be made cleaner, safer, more connected, more autonomous, shared, and sustainable. New solutions must emerge.

The revolution in mobility and energy transition is under way. At Plastic Omnium, we want to shape it. We are making exterior parts and systems smart. We are designing clean energy systems. And our connected modules will in future be an integral part of the self-driving car. Innovation is infinite. It's up to us to invent the future of mobility.

## LET'S SHAPE THE FUTURE OF MOBILITY





# SHAPING PLASTIC OMNIUM

The automobile is undergoing unprecedented transformation. In response, as always, Plastic Omnium is adapting. We're changing our governance, expanding partnerships, widening our fields of research and digitalizing our manufacturing plants.

## FACTS AND FIGURES

### A key sustainable mobility player

Around the world, Plastic Omnium is helping automakers move to clean, smart mobility. As world leader in each of its three businesses, the Group is making today's car safer and cleaner and preparing the car of the future.

#### 3 BUSINESSES 3 WORLD LEADERS



**INTELLIGENT EXTERIOR SYSTEMS:**  
~ €4 billion in revenue  
Smart bumpers and tailgates and function integration



**CLEAN ENERGY SYSTEMS:**  
~ €3 billion in revenue  
Energy storage and emission reduction solutions for all engines



**MODULES:**  
~ €2 billion in revenue  
Development, assembly and logistics of complex modules

**60 MILLION**  
parts, systems and modules manufactured and delivered annually

Powerful plant and equipment

**131 PLANTS**  
in 26 countries

**3,017**  
patents in 2019

Excellence in R&D

**26 R&D CENTERS**

**93**  
partner automobile brands

Global presence

**32,000**  
employees

**91%**  
of sites ISO 14001 certified

CSR commitment

**20%**  
reduction in CO<sub>2</sub> emissions by 2025



MESSAGE FROM THE CHAIRMAN

## A new chapter in our ongoing history

Plastic Omnium is changing its governance in order to continue its growth over the long term and to make the most of the opportunities afforded by the changing automotive market. A new chapter in the Group's history is opening to consolidate its leadership. Laurent Burelle, Chairman of the Board explains.

**LAURENT BURELLE**  
CHAIRMAN OF THE BOARD OF DIRECTORS

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From the time it was founded by Pierre Burelle in 1946 until now, only three people have headed Plastic Omnium: Pierre, Jean and Laurent Burelle. Continuity gave the company strength. With its capacity for long-term decision-making, Plastic Omnium was able to plan, propel and support each major phase of its expansion.

The automotive industry, on which Compagnie Plastic Omnium SE is now fully focused, is currently undergoing change of unprecedented scale and speed.

To address this upheaval, new perspective and a broader frame of reference are called for. For that reason, I expressed the wish to entrust operations at Plastic Omnium to the complementary tandem of Laurent Favre and Félicie Burelle. Laurent Favre, a French engineer who spent 23 years working for automotive suppliers in Germany, has experience that will be invaluable for the Group, which generates 41% of its revenue with German automotive manufacturers. Félicie Burelle, who has been in charge of Group strategy for the past five years, has been closely involved in the Group's acquisitions and key decision-making.

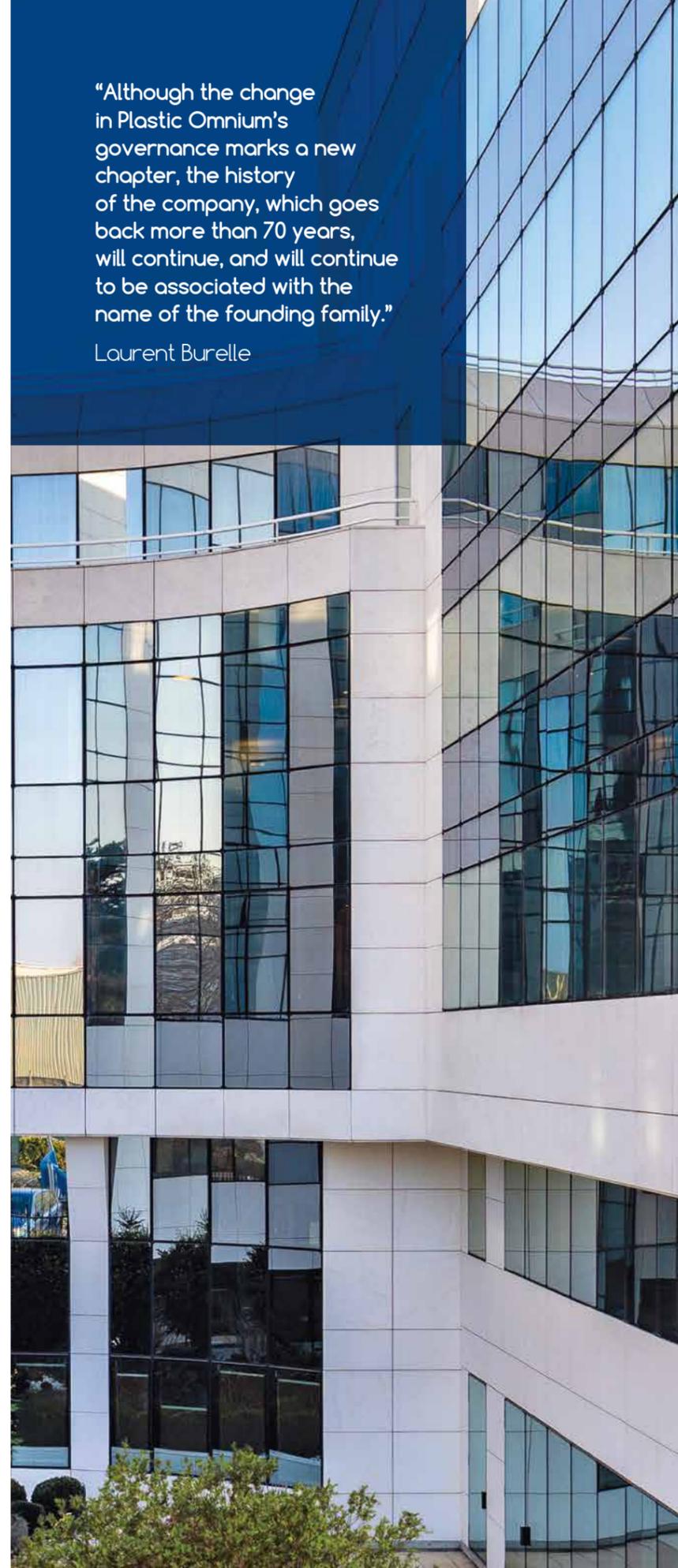
In a difficult business environment, with world automotive production experiencing its first decline in 10 years, the new management tandem will be tasked with restoring the intrepid spirit that drove the creation of Plastic Omnium. To succeed in their mission, they can build on the Group's strong fundamentals, reflected in its balance sheet and liquidity, and its portfolio of innovations centered on the intelligent exterior systems and clean energy systems of the future.

Beyond that, the scale and scope of the Group they will be helming have changed in recent years. Plastic Omnium has moved from supplying automotive components to delivering low-carbon mobility solutions and has become an active participant in the energy transition. It has transformed itself from a French company doing international business into a genuinely global Group, reflected in its adoption this year of the European Company legal form (131 production facilities and 26 R&D centers in 26 countries).

One thing, however, remains unchanged: throughout its history, the Group has made a point of maintaining its independence. The challenge facing Plastic Omnium in coming years will there-

"Although the change in Plastic Omnium's governance marks a new chapter, the history of the company, which goes back more than 70 years, will continue, and will continue to be associated with the name of the founding family."

Laurent Burelle



fore be to combine international expansion, financial independence and ownership stability, as it has done from its inception. The new management team will also be called on to tackle new environmental and social challenges to ensure that Plastic Omnium continues to set standards in corporate social responsibility for the 21st century.

Although the change in Plastic Omnium's governance marks a new chapter, the history of the company, which goes back more than 70 years, will continue, and will continue to be associated with the name of the founding family.

It will continue first, because I am not leaving Compagnie Plastic Omnium SE, but will remain as the Chairman of its Board of Directors. Second, because the family will continue to be represented in the operational team. And lastly, because Compagnie Plastic Omnium SE's strategy of profitable growth and focus on sustainable mobility will have the support and active oversight of its holding company, in which the Burelle family increased its majority control again in 2019.

For nearly three-quarters of a century, the governance, ethics and business conduct of our company have stood for a certain way of life in industrial France. The new team will keep this entrepreneurial culture alive and intensify the transformation currently taking place to make Plastic Omnium a leading player in the clean, connected car.

**LAURENT BURELLE,**  
CHAIRMAN OF THE BOARD OF DIRECTORS

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MESSAGE FROM THE CEO

## Shaping tomorrow's mobility

Laurent Favre was appointed Chief Executive Officer of the Group on January 1, 2020. This French engineer, who has spent the past 20 years working for automotive suppliers in Germany, gives his vision of the automotive market and discusses Plastic Omnium's role in the ongoing automotive revolution.



**"Plastic Omnium's strength lies in its consistent ability to predict market swings and take timely strategic action to boldly and rigorously prepare for them."**

Laurent Favre

### What is your view of Plastic Omnium?

First, I am very proud to head a Group that is among the 30 leading automotive suppliers, but stands out from the others as a family-run, independent company with a rich history rooted in strong values that make all the difference. Plastic Omnium's strength lies in its consistent ability to predict market swings and take timely strategic action to boldly and rigorously prepare for them. This was the approach taken in the Group's successful re-focus on the automotive industry. Every day that I spend meeting the teams in the factories, R&D centers and offices around the world brings home to me our employees' outstanding level of operational excellence and engagement.

### What are the priorities to be addressed by Plastic Omnium?

Short term, we need to absorb automotive market turbulence due to the slowdown in China and Europe and tighter environmental regulations for the automotive sector. We have grounds for optimism. For one thing, we demonstrated our ability to adapt to the less dynamic business environment in 2019. For another, tighter environmental regulations are driving innovation, and with it our future growth. In the longer term, Plastic Omnium is gearing up to take timely decisions to support growth, which will be driven by the technological revolution under way in the automotive sector and ongoing mobility requirements in a number of world regions where automobile ownership remains relatively low.



**LAURENT FAVRE**  
DIRECTOR AND CHIEF EXECUTIVE OFFICER

### How can Plastic Omnium step up its growth?

The Group can build on its balanced worldwide locations and technological capabilities to capture upcoming growth in the automotive sector. It can expand its market share, increase the number of parts sold per vehicle and put even more value into each vehicle with enhanced products and new functions. Our 26 R&D centers and our strategic partnerships with innovative companies such as HELLA and Brose give us what we need to help automakers navigate their technological transformation.

### How is the Group supporting tomorrow's mobility?

As world leader in our three businesses, Plastic Omnium clearly operates at the heart of the transformation of the automotive industry. By reducing the car's energy consumption and pollution emissions, the Group has also become an energy transition player. When we make strong technology choices such as to invest in fuel cells and hydrogen, we become a driving force in the transition. Another strength is the intelligence we are including in exterior systems and energy systems. The technology revolution also extends to production systems, and we are able to assemble complex modules that make life easier for automobile manufacturers. For all these reasons, we are confident going forward.



**FÉLICIE BURELLE**  
DIRECTOR AND  
MANAGING DIRECTOR

SHARED PERSPECTIVES

## Shaping the outline of the future Plastic Omnium

Chief Executive Officer Laurent Favre and Managing Director Félicie Burelle are now at the head of Group operations. They form a tandem that combines the skills of an automotive industry engineering expert and the Plastic Omnium strategy manager for the past five years. They deliver their vision of the Group in areas ranging from corporate social responsibility to innovation.

**“ACT FOR ALL™ is an integral part of the Group’s strategy, providing direction and cohesiveness. That’s why we will apply it across the board throughout the Group.”**

Félicie Burelle

**Plastic Omnium has always been committed to safety. Based on that history, what priority do you give to the ACT FOR ALL™ corporate social responsibility program?**

**Félicie Burelle:** Due to its size and the nature of its business activities, Plastic Omnium is uncompromising when it comes to safety. Our policy is Zero Tolerance. The attention to safety is now extended to encompass issues such as job satisfaction for our employees on both a global and a local basis, as well as our ways of conducting business, and the production processes in our factories. ACT FOR ALL™ is an integral part of the Group’s strategy, providing direction and cohesiveness. That’s why we will apply it across the board throughout the Group.

**Laurent Favre:** Our ACT FOR ALL™ CSR program is not an option but an obligation if we are to continue to conduct our business and remain a leader. Technical and financial performance is no longer enough. We must also demonstrate environmental, social and ethical performance. ACT FOR ALL™ covers such strategic subjects as the carbon footprint of our businesses, and the diversity, gender balance and wellbeing of our employees. This program involves all of us to give us the competitive edge that will make all the difference.



**How do you see the Group 10 years down the road?**

**Laurent Favre:** We are fortunate to live in exciting times and be able to take part in the most extensive transformation of the automotive industry that has occurred in 50 years. New technologies and services are creating a new type of mobility and an unprecedented user experience. With the car incorporating an increasing number of functions within limited spaces, Plastic Omnium is ideally placed to manage this complexity. The Group is stepping up the transformation of its product lines to support automakers as they move to the sustainable, modular and connected car of the future.

**Félicie Burelle:** Plastic Omnium has changed so much over the past two decades that it is difficult to predict exactly what it will look like in the 2030 timeframe. As a pure player in the automotive sector, the Group will be incorporating an increasing amount of intelligence in the parts it manufactures to make the car cleaner, safer and more intuitive. We think that the shift from all-thermal to all-electric will be a progressive one. We will therefore continue our two-track approach: first, make thermal engines cleaner, whatever the fuel used; and second, prepare for electric mobility, for which we are investing in hydrogen. To cover this huge field of sustainable mobility research and capture the best of the new technologies, Plastic Omnium will be reaching out to an increasing number of partners in an open-innovation approach.



# SHAPING PERFORMANCE

Outperforming the market: in 2019, Plastic Omnium again rose to the challenge despite a sharp downturn in the automotive sector. The Group improved its performance and prepared its future in a world undergoing transformative change.

## FACTS AND FIGURES

### Supporting the new automotive trends

Driven by population growth and higher standards of living, mobility demand is increasing against a backdrop of growing urbanization. To remain accepted, and to be sustainable, mobility must be clean and connected.

#### FUEL SYSTEMS VERY PRESENT IN THE FUTURE ENERGY MIX

The Group already supplies solutions for thermal and hybrid engines, and will be offering solutions for hydrogen-powered electric engines in the future.

#### 2019 - 86 M vehicles



**96%**

of vehicles equipped with a fuel system

#### 2030 - 100 M vehicles



**80%**

of vehicles equipped with a fuel system



#### CONTRIBUTE TO CO<sub>2</sub> REDUCTIONS\*



CO<sub>2</sub> in Europe in 2030



CO<sub>2</sub> in China in 2025



CO<sub>2</sub> in the US in 2025

\* Compared with 2020.

## STRONG GROWTH IN 2019

## SOUND FUNDAMENTALS

## PROMISING OUTLOOK

### EQUATION

## Plastic Omnium outperforms the market

Against the 2019 backdrop of a world market down 6 points, strong commercial tensions and tightening environmental regulations, Plastic Omnium turned in an excellent performance, with revenue up 11%. The Group strengthened its fundamentals and continues to invest in the future.



**11% INCREASE**

in consolidated revenue

**€9.2 BN**

revenue

**€512 M**

capital and project investments

**7 POINT INCREASE**

Global market outperformance  
by Plastic Omnium

**€1,005 M**

EBITDA  
11.8% of revenue

**€347 M**

free cash flow

**6% DECLINE**

in automobile production  
worldwide

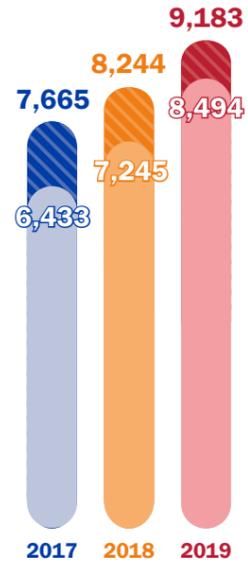
**€511**

operating income  
6.0% of revenue

**5 POINTS**

Annual outperformance  
of the automotive market  
from 2020 to 2022

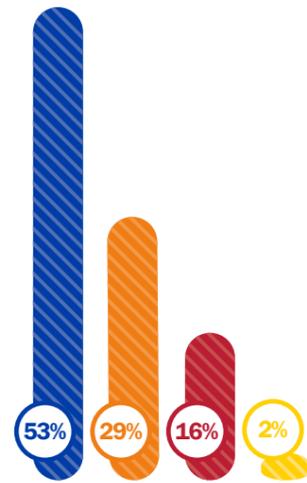
# Financial performance



**Revenue**  
(in € millions)

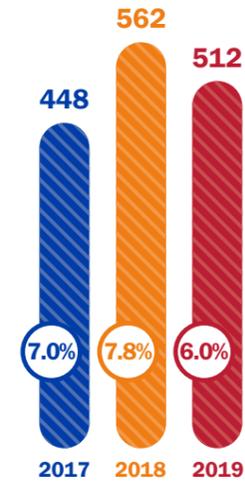
Economic revenue corresponds to consolidated revenue plus the Group's share of revenue from joint ventures based on the ownership percentage in each.

- Consolidated
- Economic

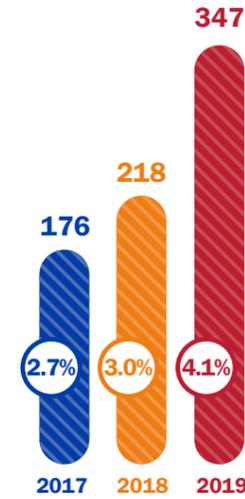


**Revenue by geographic area**  
(as % of economic revenue)

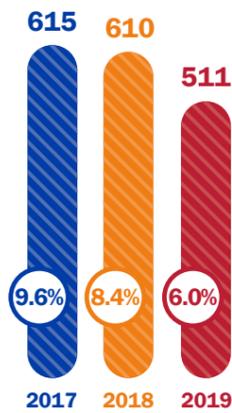
- Europe/Africa
- North America
- Asia
- South America



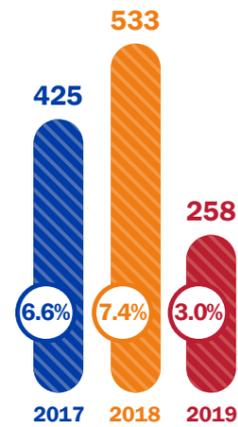
**Capital and project investments**  
(in € millions and as % of consolidated revenue)



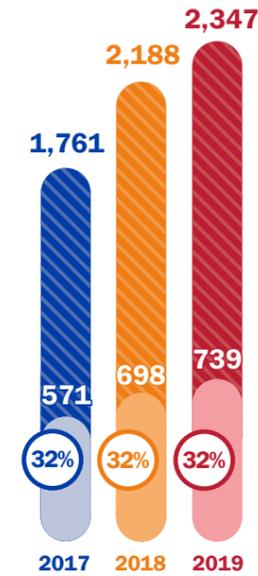
**Free cash flow**  
(in € millions and as % of consolidated revenue)



**Operating margin**  
(in € millions and as % of consolidated revenue)

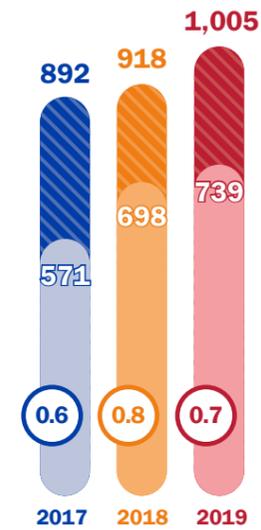


**Net income, Group share**  
(in € millions and as % of consolidated revenue)



**Net debt/equity**  
(in € millions and net debt/equity as %)

- Net debt
- Equity



**Net debt/Ebitda**  
(in € millions and net debt/Ebitda ratio)

- Net debt
- Ebitda



# GOVERNANCE

Governance is changing to address the new challenges facing the automotive industry and to project Plastic Omnium into the future.

## Board of Directors

The board is a collective body that strikes a balance between Burelle family representatives and independent directors.



**LAURENT BURELLE**  
CHAIRMAN OF PLASTIC OMNIUM  
CHAIRMAN AND CHIEF EXECUTIVE OFFICER  
OF BURELLE SA



**LAURENT FAVRE**  
DIRECTOR SINCE 2020  
CHIEF EXECUTIVE OFFICER  
OF PLASTIC OMNIUM



**FÉLICIE BURELLE**  
DIRECTOR SINCE 2017  
MANAGING DIRECTOR  
OF PLASTIC OMNIUM



**ÉLIANE LEMARIÉ**  
DIRECTOR SINCE 2009  
REPRESENTATIVE OF BURELLE SA  
MEMBER OF THE APPOINTMENTS  
COMMITTEE



**JEAN BURELLE**  
DIRECTOR SINCE 1970  
HONORARY CHAIRMAN  
OF PLASTIC OMNIUM



**PAUL HENRY LEMARIÉ**  
DIRECTOR SINCE 1987  
CHIEF OPERATING OFFICER  
OF BURELLE SA



**VINCENT LABRUYÈRE**  
DIRECTOR SINCE 2002  
CHAIRMAN OF THE AUDIT COMMITTEE



**ANNE-MARIE COUDERC\***  
DIRECTOR SINCE 2010  
CHAIRWOMAN OF THE COMPENSATION  
COMMITTEE AND THE APPOINTMENTS  
COMMITTEE



**JÉRÔME GALLOT**  
DIRECTOR SINCE 2006



**PROF. DR. BERND GOTTSCHALK\***  
DIRECTOR SINCE 2009  
MEMBER OF THE COMPENSATION  
COMMITTEE



**ANNE AENSIO\***  
DIRECTOR SINCE 2011  
MEMBER OF THE AUDIT COMMITTEE



**AMÉLIE OUDÉA-CASTÉRA\***  
DIRECTOR SINCE 2014  
MEMBER OF THE COMPENSATION  
COMMITTEE



**LUCIE MAUREL-AUBERT\***  
DIRECTOR SINCE 2015  
MEMBER OF THE AUDIT COMMITTEE  
AND THE APPOINTMENTS COMMITTEE



**CÉCILE MOUTET**  
DIRECTOR SINCE 2017



**ALEXANDRE MÉRIEUX\***  
DIRECTOR SINCE 2018



**AMANDINE CHAFFOIS**  
DIRECTOR REPRESENTING EMPLOYEES  
SINCE 2019



**IRENEUSZ KAROLAK**  
DIRECTOR REPRESENTING EMPLOYEES  
SINCE 2019



**LAURENT FAVRE**  
CHIEF EXECUTIVE OFFICER



**FÉLICIE BURELLE**  
MANAGING DIRECTOR



**RODOLPHE LAPILLONNE**  
SENIOR EXECUTIVE VICE-PRESIDENT,  
CHIEF FINANCIAL OFFICER AND  
CHIEF INFORMATION OFFICER



**STÉPHANE NOËL**  
PRESIDENT AND CEO,  
INTELLIGENT EXTERIOR SYSTEMS



**CHRISTIAN KOPP**  
PRESIDENT AND CEO,  
CLEAN ENERGY SYSTEMS



**MARTIN SCHÜLER**  
PRESIDENT AND CEO OF HBPO

## Executive Committee

A new team for renewed momentum.



**JEAN-SÉBASTIEN BLANC**  
EXECUTIVE VICE-PRESIDENT  
HUMAN RESOURCES



**VALÉRIE BROS**  
CORPORATE SECRETARY AND EXECUTIVE  
VICE-PRESIDENT, LEGAL AFFAIRS



**ADELINE MICKELER**  
EXECUTIVE VICE-PRESIDENT,  
COMMUNICATIONS



**RONAN STEPHAN**  
SCIENTIFIC DIRECTOR



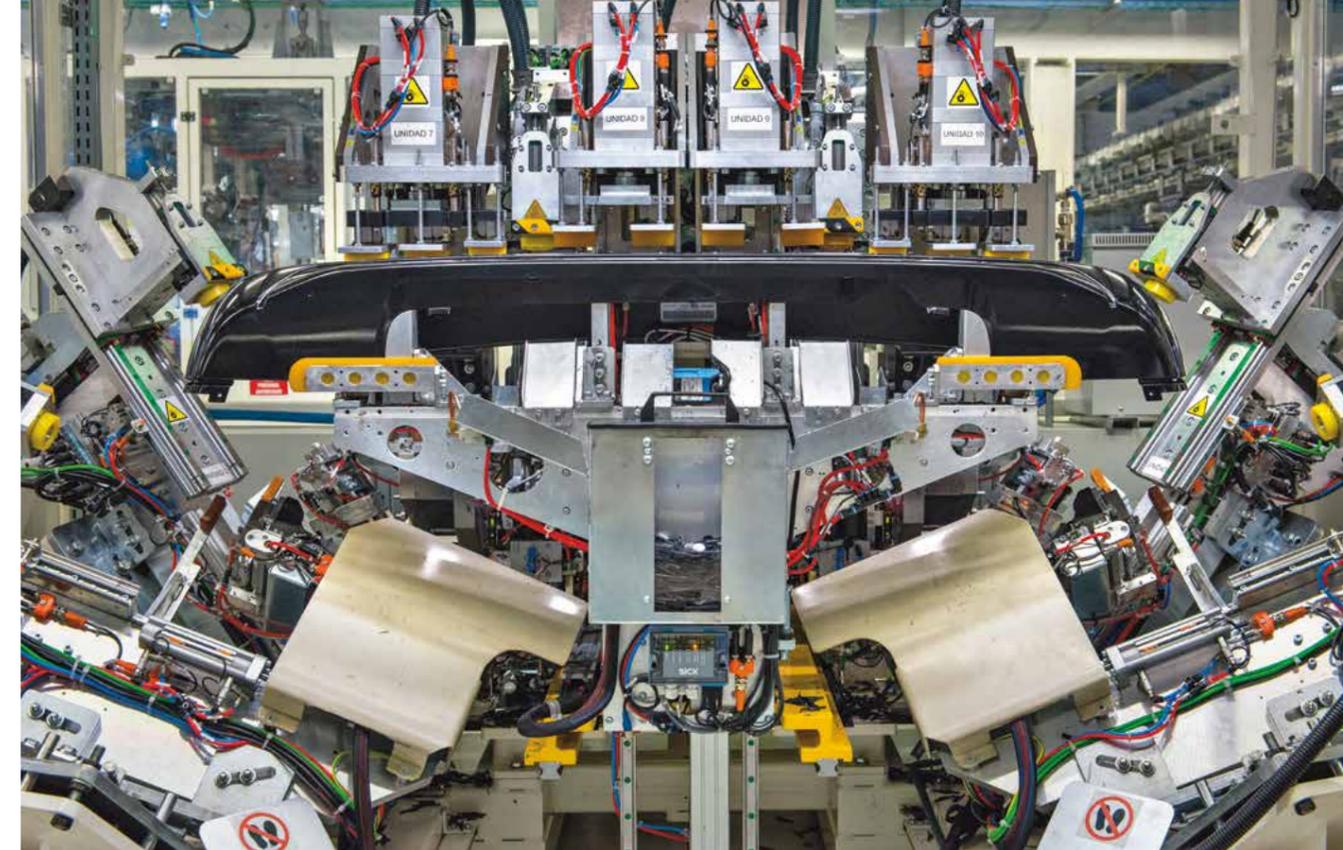
**DAMIEN DEGOS**  
PRESIDENT AND CEO OF NEW ENERGIES  
(CLEAN ENERGY SYSTEMS)





# SHAPING INTELLIGENT CARS

The art of shaping the car of the future lies in integrating several technologies in exterior systems to make them intelligent without detracting from their protective and aesthetic primary functions.



## Intelligent Exterior Systems

Smart bumpers and tailgates, function integration

**For weight reduction, protection, enhancement and beauty**

Plastic Omnium develops complex exterior systems that improve the car's performance and design. At the Group's 64 plants across 15 countries, the Intelligent Exterior Systems business designs, develops and manufactures increasingly intelligent technological solutions with strong styling and new functions for 60 automotive manufacturers. The smart bumper with built-in radar and lidar systems that communicate with the road is one example, as is the communicating tailgate. These components, which integrate several functions, are the result of a continuous innovation process spanning three fields of research: aerodynamics, lighting and interactivity. Plastic Omnium is world leader in bumpers – one

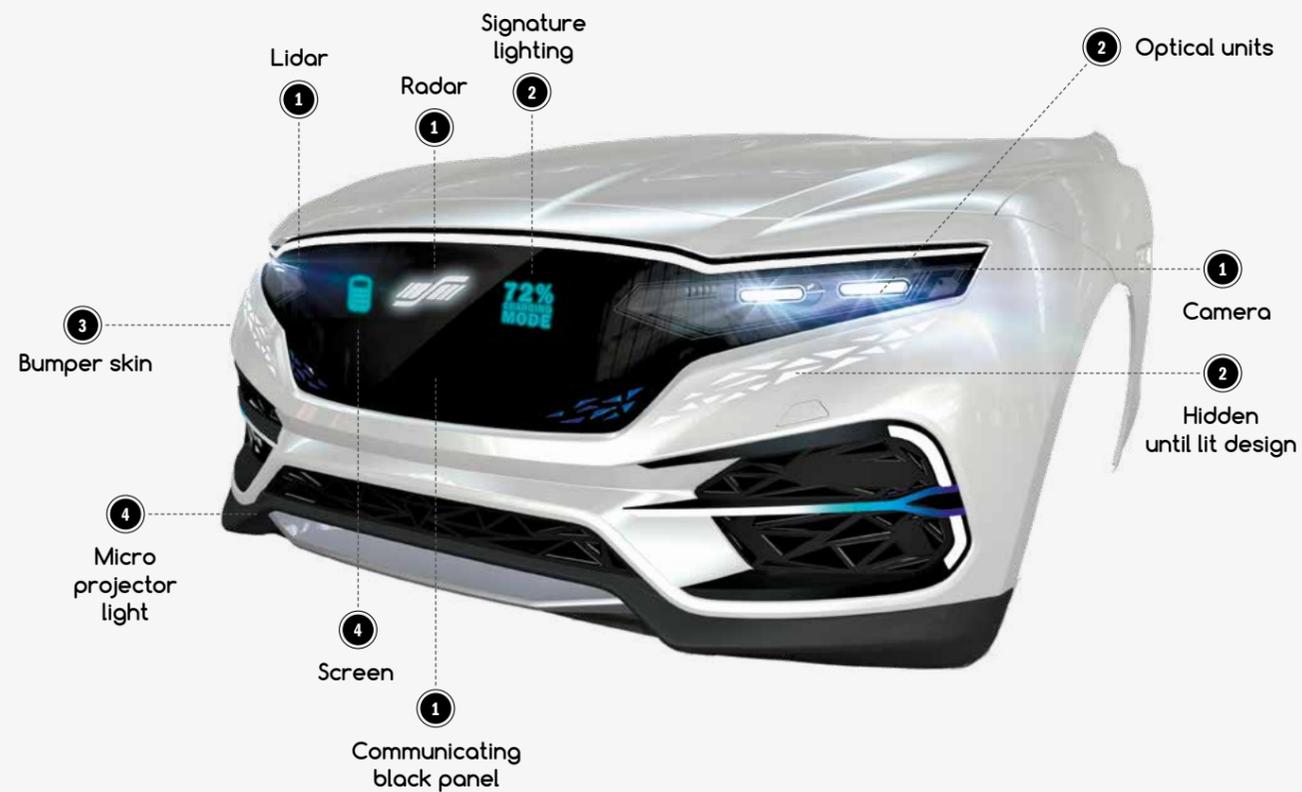
in every six vehicles produced worldwide is equipped with its bumpers – and is developing new products such as the Smart Face and the Smart Tailgate. To accelerate the innovation process in which several functions are integrated, it has forged strategic partnerships with leading German automotive suppliers. It is working with mechatronics specialist Brose, for example, to develop a hybrid door that is smart, automated and attractively styled. It is working with HELLA, which specializes in lighting systems and electronic components, to develop innovative technologies that combine lighting and exterior systems to give every vehicle a distinctive, customized appearance.

## OUTLINES

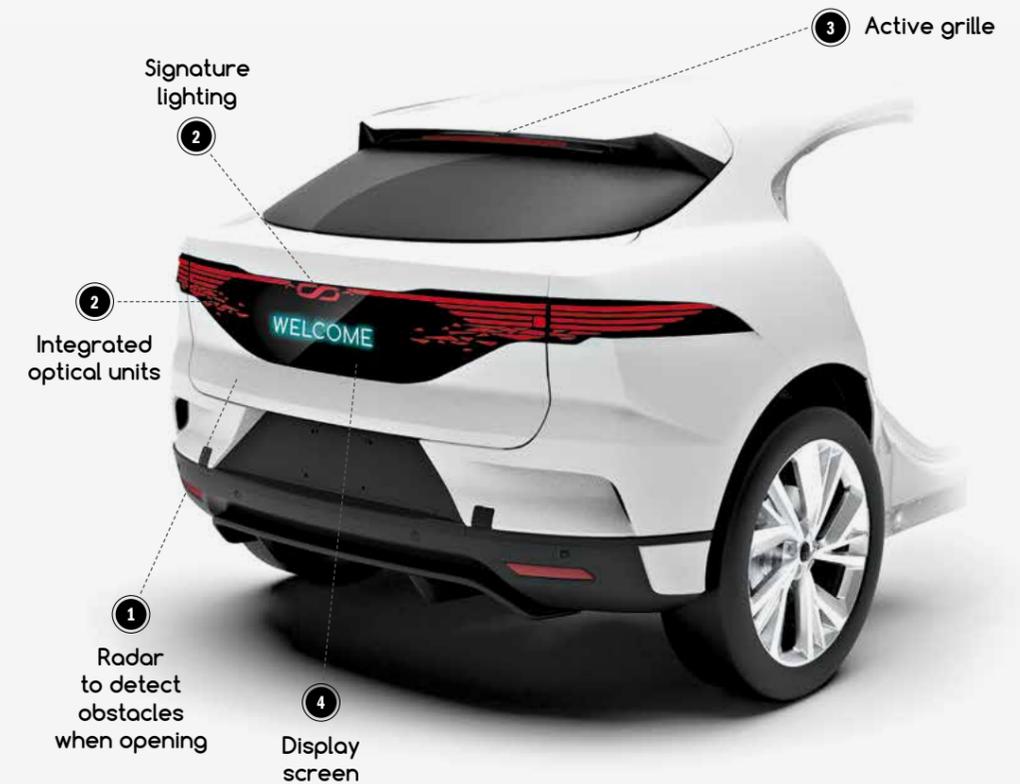
# Designing the clean, connected car of the future

Lighter in weight and more aerodynamic due to the use of plastics, the car incorporates radar, lidar and other sensors. In particular, its front- and rear-end systems are increasingly connected for more safety and differentiation.

## Smart Face



## Smart Tailgate



### 1 Impact prevention and safety

Intelligent and attractive thermoplastic panels make it possible to integrate and protect radars and lidars, while guaranteeing optimal functionality. In particular, these driver-assistance technologies detect surrounding obstacles.

### 2 Style and customized lighting

Thanks to plastics, advanced lighting functions can be integrated that enable vehicle style to be highly customized. LEDs create a dynamic signature lighting system that also contributes to user safety and autonomous vehicles.

### 3 CO<sub>2</sub> emission reduction

Lighter components and the integration of active solutions improve vehicle performance and aerodynamics to meet current regulations on emission reductions.

### 4 Communication with other users

The bumper and tailgate are fitted with screens and micro projectors that display messages – vehicle maneuvers, traffic, remaining range of electric car-sharing vehicles – to provide more safety and communication.



**CÉDRIC GESNOUIN**  
PLASTIC OMNIUM LEADER  
OF THE PLASTIC OMNIUM-  
HELLA PARTNERSHIP

SHARED PERSPECTIVES

## Increasing integration and innovation

Plastic Omnium is forging strategic partnerships to shape the car of the future, which will be electric, communicating and stylish. The goals are to devise tomorrow's connected car, accelerate innovation and integrate innovative functions. HELLA and Brose, which respectively offer expertise in lighting and in mechatronic and door systems, are cases in point. Cédric Gesnouin and Aurélien Moressée discuss these two cooperative partnerships.

### In a nutshell, who are HELLA and Brose?

**Cédric Gesnouin:** HELLA is a German automotive supplier. Like Plastic Omnium, it is a family firm with a long history and world leadership. The company is number one in the development and production of lighting systems and electronic components.

**Aurélien Moressée:** Brose is also a leading family-owned German automotive supplier, which like Plastic Omnium has third-generation senior managers. It is similar in size to Plastic Omnium and specializes in mechatronic systems for vehicle doors and seats.

“The biggest challenge is to succeed in getting different technologies to co-exist in the same environment and in a tight space. The value-added of our partnership with HELLA lies in this integration.”

Cédric Gesnouin

### What applications are you working on with your partners?

**Aurélien Moressée:** Our engineering and design team based in Nuremberg is designing a complete door that can be entirely produced by our partnership. The hybrid door incorporates electronic and structural elements as well as new functions such as sensors for motorized doors, smart access, and functional and decorative lighting. In 2019, our partnership achieved a major milestone with the development of a complete door demonstrator. The goal is to technically validate the concept in 2020.

**Cédric Gesnouin:** Our combined team is working in Berlin in startup mode to develop concepts (communication display, panel lighting, dynamic light bar, etc.) that incorporate technologies combining front and rear lighting and exterior systems. The challenge is to succeed in getting different technologies to co-exist in the same environment and in a tight space. The value-added of our partnership lies in this integration. Over a period of six months, we have developed a demonstrator that brings all the latest technologies together in a single unit, including decorative lighting concealed by the paint, which astonished the market. In 2019 we also won a first pre-development contract from a European automaker for a function included in the demonstrator.



### How do these alliances benefit customers?

**Cédric Gesnouin:** Automakers are now looking for distinctive dynamic lighting that sets their product apart. With HELLA, we are accelerating the provision of this type of innovative product, which integrates lighting and electronics in plastic exterior parts. Our comprehensive approach reduces product cost and weight by pushing integration (lighting, electronics, exterior components) beyond conventional limits. It also offers greater styling freedom to enhance the automotive manufacturer's brand image.

“The hybrid door incorporates electronic and structural elements as well as new functions such as sensors for motorized doors, smart access, and functional and decorative lighting.”

**Aurélien Moressée:** The door of the future – motorized, autonomous, aesthetic and communicating – has substantial value-added. It meets the needs of the autonomous car, for example by recognizing the user, and will hold out new styling potential. The turnkey door is delivered ready to install and is designed as a module to simplify automotive production lines and reduce capital investment by automotive manufacturers.

Aurélien Moressée

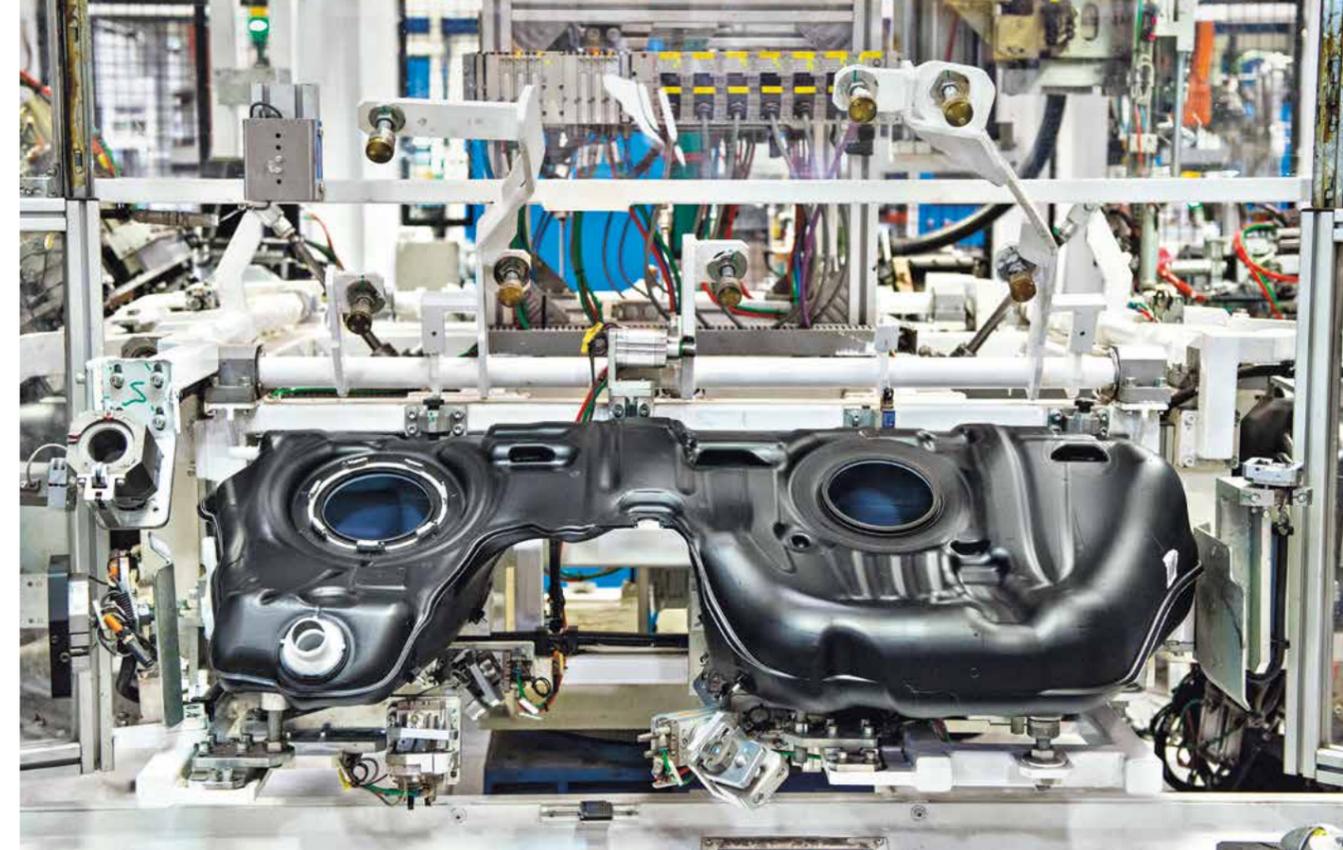
**AURÉLIEN MORESSÉE**  
PLASTIC OMNIUM LEADER  
OF THE PLASTIC OMNIUM-  
BROSE PARTNERSHIP





## SHAPING CLEAN CARS

Plastic Omnium's advances in energy storage and the design of emission reduction systems, as well as its contribution to electric propulsion, have made the Group a major player in the energy transition to cleaner mobility.



## Clean Energy Systems

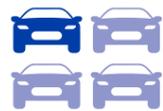
Energy storage and emission reduction solutions for all types of engines

**One in four vehicles produced is equipped with a fuel tank or emission reduction system made by Plastic Omnium, a standard-setting world leader in energy storage systems.**

The Group owes its leadership to its world-class R&D, strategic choices and capital investments. At a point in time when the automobile sector is undergoing far-reaching change, Plastic Omnium is addressing the needs of both today's and tomorrow's automobile. In 2019, it produced over 21 million fuel systems meeting ever-stricter environmental standards. The Group optimizes the efficiency of gasoline engines and reduces their CO<sub>2</sub> emissions with

its new Water Injection system. To equip the new generation of mild, full and plug-in hybrid vehicles, Plastic Omnium develops innovative solutions such as Tanktronic<sup>®</sup>, its intelligent high-tech fuel tank. And there is more. The Group is working assiduously on the electric car, for which it is investing in hydrogen. To this end, it has created the dedicated New Energies activity and opened two research centers, in Wuhan and Brussels, where, in addition to research into existing products, it is testing composite high-pressure hydrogen tanks. In a major milestone for both Plastic Omnium and the market, it obtained R134 international certification of its first 700-bar hydrogen tank in November 2019.

CLEAN ENERGY SYSTEMS



1 vehicle in 4 produced is equipped with a Plastic Omnium fuel system

21 million fuel and emission reduction systems in 2019

7,600 EMPLOYEES

including 1,000 engineers

172 PATENTS

covering emission reduction in diesel and gasoline vehicles

68

brands equipped

PATENTS  
250

covering fuel systems for plug-in hybrid vehicles



EQUATION

Storing energy, reducing emissions and inventing the way forward

From diesel to hydrogen, Plastic Omnium optimizes energy storage and emission reduction systems for all types of engines and develops new systems for tomorrow's clean mobility. As world leader in energy storage systems, the Group supports automotive manufacturers in their work to develop the sustainable car.

2019

1st order

to develop 350-bar (bus) hydrogen tanks for a German manufacturer

2 new R&D centers opened:

Δ-Deltatech in Brussels, Belgium and ω-Omegatech in Wuhan, China

1st tank

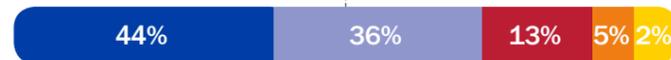
700-bar tank made of composite material obtains certification for international standard R134

2020

2 new production lines

for high-pressure hydrogen tanks

2030



80% of vehicles equipped with a fuel system

● Gasoline/Diesel ● Hybrid ● Electric battery ● Compressed natural gas ● Hydrogen/Fuel cell



**WILFRID SCHÖN**  
VICE-PRESIDENT RESEARCH  
CLEAN ENERGY SYSTEMS

WORK IN PROGRESS

## The hydrogen car: the Plastic Omnium solution

In 2030, engines will use multiple technologies, most of which will require a tank. Although Plastic Omnium is working to help develop the electric car using a fuel cell and hydrogen, it is investing in all engines that contribute to clean mobility. Wilfrid Schön, Vice-President for Research and head of the Δ-Deltatech center in Brussels, Belgium, explains these choices and the most recent innovations.

### Why does Plastic Omnium believe that hydrogen is the right way to go for electric vehicles?

Hydrogen propulsion fuels an electric motor and is an efficient way to generate electricity on board the vehicle. Another interest of hydrogen is that the tank can be filled in less than five minutes and gives the car a driving range of 700 km – the same as an internal combustion engine today. Also, hydrogen can be produced by electrolyzing water using renewable energy, without any CO<sub>2</sub> emissions. This is a major advantage now that clean mobility has become a regulatory obligation and a pressing necessity for our planet.

### What steps remain to be taken to democratize hydrogen-powered electric mobility?

Toyota, Hyundai and Honda are starting to sell hydrogen vehicles. It takes time since this is revolutionizing the automotive sector. Other markets exist for buses, trucks and trains. These are all markets in which we can take positions. Development is under way and technologies are changing. For example, in a major milestone for the entire market, Plastic Omnium recently

### Three key carbon emission reduction dates, according to Wilfrid Schön

- **2019**  
Plastic Omnium obtains R134 certification for a 700-bar hydrogen tank designed for use in cars.
- **2021**  
Enforcement of penalties in Europe (€95 per gram of CO<sub>2</sub> in excess of 95 grams).
- **2030**  
2 million hydrogen cars.

won certification for a 700-bar hydrogen tank meeting the requirements of the international R134 standard. The obstacles are now more less technological than structural – the distribution network must expand, and production costs come down – and regulatory. With a market estimated to reach 2 million hydrogen vehicles in 2030, we're confident about its development and proud to be contributing.



(1) Selective Catalytic Reduction.  
(2) Nitrogen oxide.



# SHAPING MODULAR CARS

Integrating ever more components and functionalities in a compact, aerodynamic front-end module demands great technical expertise.

And Plastic Omnium has just that.

Today, that expertise is broadening to take in other parts of the vehicle, such as the cockpit and center console.



## Modules

Developing and assembling front-end modules and the logistics involved.

### Paving the way for the modular car

The all-in-one front-end module, a strategic part of the vehicle, is technically highly complex. Not only does it combine vital components – shock absorption beam, active front grille flaps, lighting, engine cooling systems, radars and driving assistance sensors – it is also a key part of the vehicle's design and identity. Its silhouette is part of the vehicle's signature while its equipment directly impacts the vehicle's safety and operation. These elements are extremely customized – there are now up to 3,000 possible combinations for any one model – and feature strong modularity and connectivity. Their growing complexity calls for perfect control of the entire process from development to design, assembly

and logistics. Plastic Omnium is one of the few players to offer this end-to-end coverage, following the acquisition of a 66.66% controlling interest in HBPO, world leader in front-end modules, in 2018. With an 18% market share, HBPO produces 6 million modules a year. In future, ready-to-assemble modules will be produced for other parts of the vehicle, including the interior, with consoles, cockpits and other modules on the drawing board. Plastic Omnium has already begun to work on these elements.

**HBPO**  
THE MODULE COMPANY



**RALF SCHMIDT**  
DIRECTOR R&D, HBPO

“To extend the range of electric vehicles and reduce polluting emissions, we are focusing our research on optimization of aerodynamics, especially in the front-end module.”

Ralf Schmidt

SHARED PERSPECTIVES

## Moving to ready-to-assemble

The clean connected car of the future will be more customized and modular. What is driving these trends? What are Plastic Omnium’s advantages? HBPO Business Development and Marketing Director, Martin Brüne, and, Director R&D, Ralf Schmidt, explain.

### Why has modularity become so important in the automotive industry?

**Martin Brüne:** The trend today is toward increasingly modular architecture in automobile production. In contrast to part-by-part assembly, the module-based approach reduces complexity and smooths process flows in automotive assembly plants. The move from internal combustion to all-electric is amplifying the trend, since there are necessarily more components to assemble in a module.

**Ralf Schmidt:** Modularity is also a response to the development of autonomous driving. Over the next 15 years, this is set to increase and will give rise to new mobility concepts. Our expertise enables us to combine the growing demand for integration and customization, which opens up new market opportunities for our modules.

### What are the value-added and specific features of HBPO modules?

**Martin Brüne:** Electrification and autonomous cars are increasing the number of components to be assembled in the module. As a result, a module can comprise up to 140 parts and support up to 3,000 different combinations in the same vehicle model! The parts are essentially sensors such as lidar, radar and camera systems and components that optimize aerodynamics and safety, such as active front grille flaps, air tightness and air guide parts, and collision absorbers.

**Ralf Schmidt:** At HBPO, our expertise covers design, customization and integration of an increasing number of functions within a limited space. We build on our state-of-the-art engineering capabilities to develop systems and complete modules for all engine types while reducing complexity for our customers. Our high degree of customization and integration positions us as a standard setter in the market.

### What are your most recent innovations?

**Martin Brüne:** We are proud of having developed new products to enhance vehicle performance, such as the plastic shock absorbers we are currently developing for a high-end automotive manufacturer. Another example is the Active Grille Shutter, which improves a car’s aerodynamics by automatically controlling air inflow into the front-end module. And then our DC-DC Converter manages and converts the different voltages of the components of an electric vehicle. We’re also very proud to be the global equipment supplier for all of BMW’s EV production plants. Our expertise in modularization and customization and our very high standards have also opened up new opportunities for us in interior cockpits and center consoles. We recently produced these two elements, which are so important for brand image and driving pleasure, for the Porsche Taycan and the Audi Q3.



“The move from internal combustion to all-electric is amplifying modularity, with ever more components to be assembled in a module.”

Martin Brüne

**Ralf Schmidt:** We are also innovating to reduce fine particle emissions by including a particle filter in the front-end module. Going forward, the goal is to bring the fine particle emissions of an internal combustion vehicle down to those of an electric vehicle. And we’re developing specific solutions for electric and hybrid cars. To reduce polluting emissions and extend the range of these vehicles, we’re working on the optimization of front-end module aerodynamics. Our Rollo system is more compact and airtight than a conventional active front grille. It regulates air inflow depending on driving conditions and electric car battery temperature. This innovative system extends EV driving range by about 8 km.

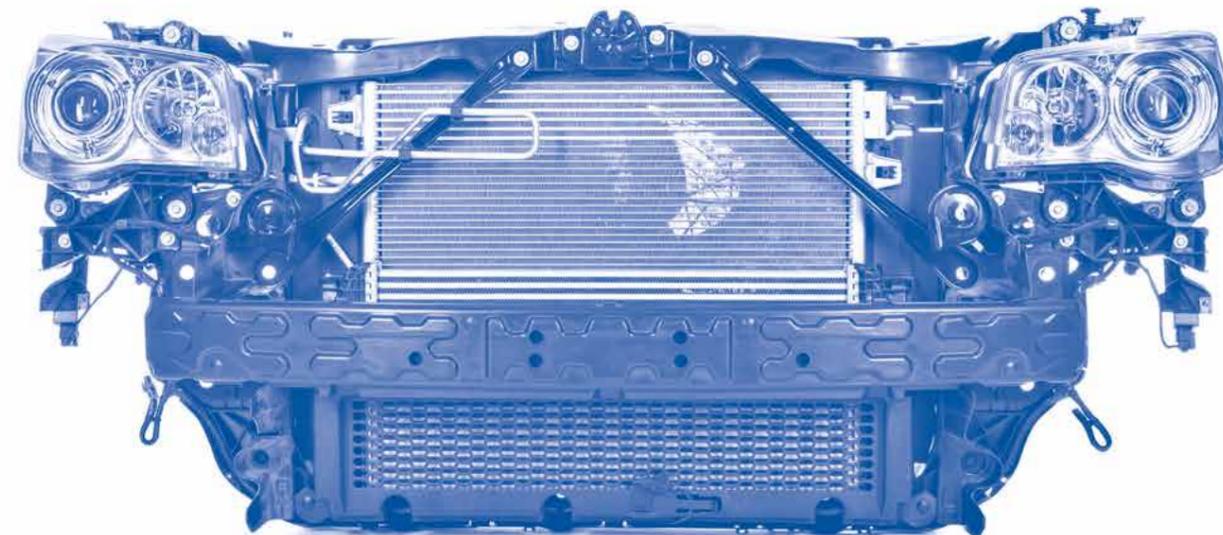


**MARTIN BRÜNE**  
BUSINESS DEVELOPMENT  
& MARKETING DIRECTOR,  
HBPO

EQUATION

# Mastering complexity

As world leader in the design and assembly of front-end modules, Plastic Omnium assembles 6 million units annually. These assemblies are increasingly complex, customized and connected, and they offer worldwide best-in-class quality.



**1ST FRONT-END MODULE**  
Produced by HBPO

**66.66%**  
Plastic Omnium's stake in HBPO



**WORLD NO. 1**  
in front-end modules

**11 COUNTRIES**  
and 27 HBPO sites

**18%**  
market share

**2,600 EMPLOYEES**

**UP TO 140**  
components in a front-end module

**3,000**  
combinations possible for any one model

**6 MILLION**  
front-end modules assembled in 2019



# SHAPING INNOVATION

Plastic Omnium's goal is to prepare for the major technological disruptions that lie ahead and take part in the process. The Group can build on the strength and excellence of its 26 R&D centers and targeted open-innovation strategy to stay in the vanguard today and 20 years from now.



**MEHDI FERHAN**  
ADVANCED  
TECHNOLOGY  
DIRECTOR

## WORK IN PROGRESS

### Harnessing the full scope of innovation

Because mobility is an open, rapidly evolving ecosystem, Plastic Omnium is opting for open innovation to broaden the scope of its research, detect opportunities early and step up innovation. Mehdi Ferhan, Advanced Technology Director, explains.

#### Why does Plastic Omnium avail itself of open innovation?

The automobile is now being developed in an open ecosystem. With autonomy and connectivity, onboard services and new electric propulsion systems, the car of the future combines a wide variety of complex technologies. Open innovation enables us to broaden our horizons, harness technologies developed in other sectors earlier and faster, and limit risk. This is what drove our investments in Aster and AP Ventures.

#### How are you putting this approach into practice?

Plastic Omnium has opted to invest in two investment funds. The first, Aster, specializes in digital transformation and new industrial models. The second, AP Ventures, focuses on expertise in hydrogen, fuel cells and tomorrow's mobility. These investments give us access to a flow of startup transactions and a way to identify industrial best practices that we can test in our plants.

#### What are the initial results?

In two years, the open-innovation activity has come down the learning curve. We have learned not to push the system to accelerate collaborative work with startups and instead encourage teams to take on an idea by showing its potential. We analyzed thousands of startups and selected dozens of experiments that have enabled us to make significant progress in areas such as digitalization of industrial processes, cyber-security and non-destructive testing of manufactured parts. We also pay careful attention to companies innovating in areas such as artificial intelligence, big data and cognitive sciences. The impact of their work is still hard to measure in the short term, but the learning process is bringing a wealth of knowledge.

### THE THREE KEY DATES ACCORDING TO MEHDI FERHAN

**2017**  
Initial investments in startups and venture capital funds

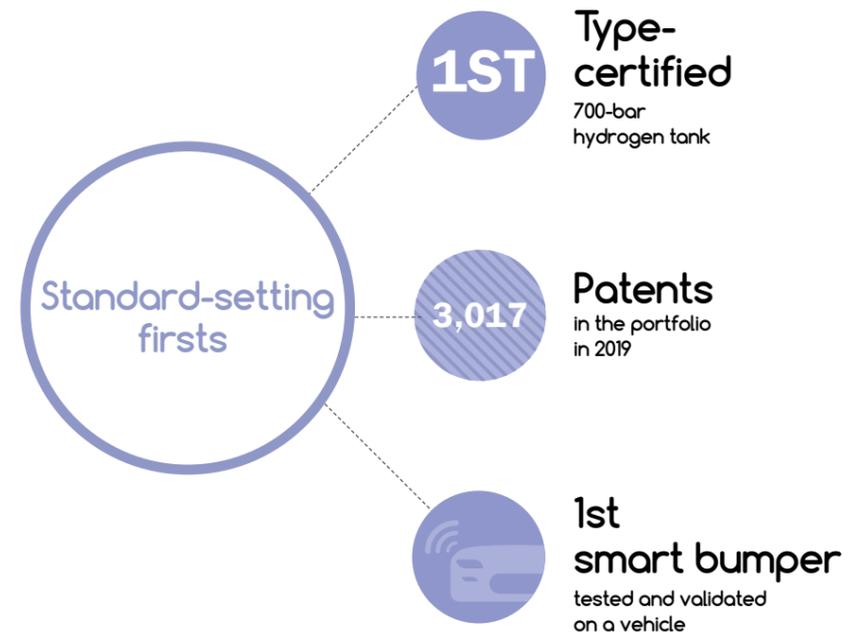
**2020**  
Initial industrial applications of open innovation with startups

**2030**  
Initial impact of major technological disruptions – AI, big data, hydrogen fuel cell propulsion, smart ultra-connected surfaces – on society



FACTS AND FIGURES

## World-class R&D



**Future door**  
A concept developed by Plastic Omnium-Brose

**Smart Face**  
Integration of lighting and exterior systems: Plastic Omnium-HELLA

**DC-DC Converter**  
developed by HBPO for a premium customer in Germany



## A MULTI-LOCAL GLOBAL GROUP

Plastic Omnium is steadily expanding and extending its worldwide network of manufacturing plants and R&D centers. The Group does everything it takes to be ever closer to its customers and provide automakers' production lines with just-in-time supplies. The key is optimal logistics flows and reduced distances.

## In the right place, everywhere

With 131 plants and 26 R&D centers in 26 countries, Plastic Omnium has formed a one-of-a-kind, highly advanced global industrial and research network.



### Operating around the world and in all the major automotive markets

The Group is ideally placed to cover the specific features of each market, to engage in ongoing dialogue with automakers to focus on their requirements, and to supply their plants on a just-in-time basis. At a time when automotive production calls for JIT delivery of ready-to-assemble components, this dense geographical network gives Plastic Omnium a strong competitive edge and makes it a preferred

partner of automotive manufacturers. With its sites located near the 93 automotive brands it serves, the Group can develop products in phase with local requirements and anticipate regulatory changes. To boost its research and development work, Plastic Omnium inaugurated two new R&D centers in 2019 – Δ-Deltatech in Brussels and ω-Omegatech in Wuhan, China, both focused on New Energies. Plastic Omnium is a multicultural group whose common language is excellence.

IN SITU

## Compiègne: heading for the factory of the future

What is immediately striking on entering the huge white building with the large OP letters written in blue is the silence, the almost clinical cleanliness and the discreet human presence. Welcome to Compiègne, an hour's drive north of Paris, at one of the Group's historic factories and one of the first in Europe to begin its digital transformation.

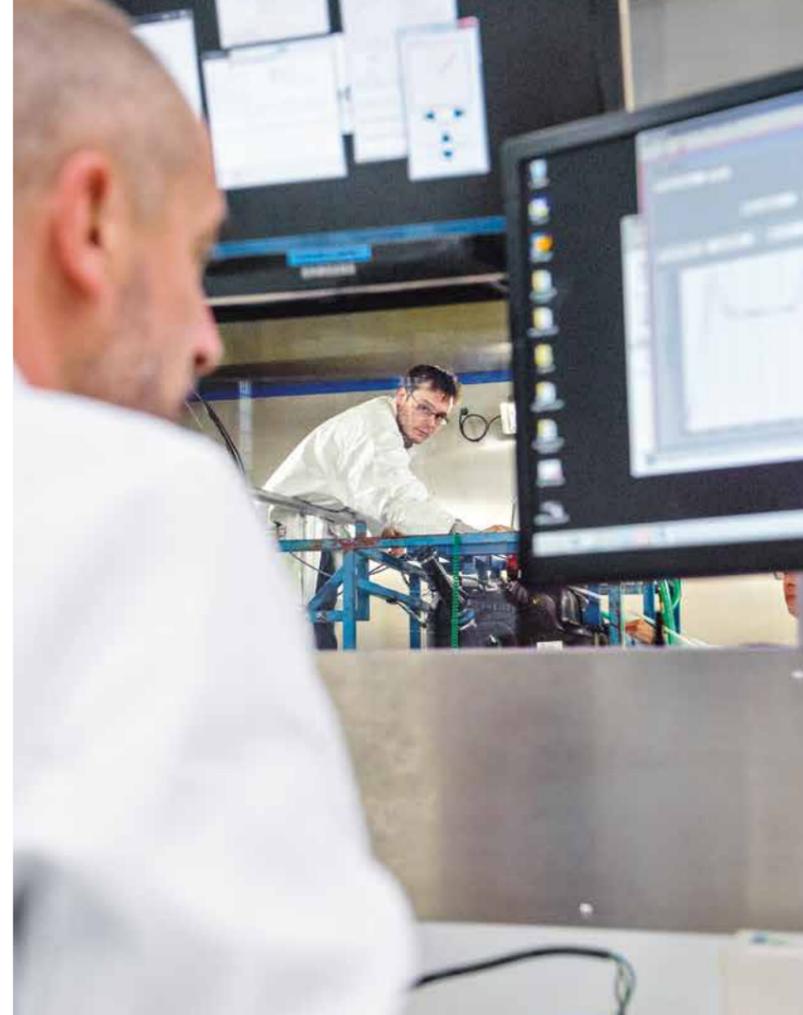
### Looking toward the future

In this factory, where Plastic Omnium developed its first blow-molding and extrusion activity, the future is being shaped. It will be the Group's digital transformation 4.0 pilot plant in Europe for the Clean Energy Systems business. A 4.0 factory uses the computing power of new technologies to support preventive maintenance, improve quality, model production and adjust production operations in real time in accordance with the information collected and analyzed. In other words, the Compiègne plant will use the new technologies to boost the performance of its six production lines.

### Welcome to the data management era

This factory, outmoded in the recent past, is now in the vanguard of the Group's digital transformation. It has its own Digital Lab. Behind large bay windows overlooking the production lines, a team of developers and programmers faces a wall of screens. From this data control tower, they track the thousands of data points transmitted by dozens of sensors attached to machines, sensitive parts such as heating collars, carts, and products coming off the lines. The sensors measure everything from vibration to temperature and movement and the data is sorted and analyzed to track the slightest anomaly, locate each component, predict equipment maintenance needs and check the quality of the parts produced. The result is reduced downtime and fewer rejects.

Compiègne is one of Plastic Omnium's historic sites, built over 60 years ago and acquired in 1986. On entering, you are immediately struck by the order and silence. There are no fumes, no stains on the ground, no deafening noise. Everything is orderly, clean and under control. The only reminder that this is an extrusion and blow molding plant is the smell of hot plastic. Around the clock, 150 people are at work here producing multi-layer plastic fuel tanks and tubing for four car models made by Renault and PSA. The factory produces 600,000 units per year. The process extends from extrusion to blow molding at 220 °C, finishing, stabilization, assembly, and conformity testing in a laboratory.



"It is important to avoid seeing digital transformation solely from a technological vantage point. It above all involves an organizational and cultural transformation."

Philippe Convain  
Digital Manufacturing  
Director

### An organizational and cultural transformation

The ubiquitous technologies at Compiègne do not replace human beings, but they do cause an upheaval in the established order. "It is important to avoid seeing digital transformation solely from a technological vantage point. It above all involves an organizational and cultural transformation," says Philippe Convain, who is in charge of the digitalization process, in particular at the Compiègne plant. He adds, "For the digital transformation to succeed, everyone must accept the transparency and traceability provided by data that give an objective snapshot of a situation at time T." Bit by bit, habits are changing, workstations are evolving, new responsibilities are being created and human expertise is being replaced – but only in places – by algorithms. Care must therefore be taken to provide the training for local supervisory personnel on which the success of the project depends. Though the Digital Lab is still in the learning phase, the Compiègne plant now has both feet in the new era.

IN SITU

## In China, Plastic Omnium is investing in clean mobility

In China, the world's biggest market for the automobile, Plastic Omnium is in the forefront of the endeavor to invent tomorrow's clean mobility. It is notably active in Anting, where it develops exterior parts and systems, and in Wuhan, with its brand-new R&D center focused on fuel systems and new energy sources.

At the Anting site near Shanghai, Plastic Omnium is working with its joint venture YFPO to develop bumpers, tailgates and exterior systems that integrate multiple functions for 36 automobile brands. Since it was set up in 2013, the Anting R&D center has grown steadily. It now employs 500 people and is working on 190 programs (a 20% increase from 2018) and has booked outstanding contracts. "We are particularly proud of our partnership with Tesla at its first location abroad. We will be supplying bumpers for the California automaker's Model 3, which will be assembled in its Shanghai gigafactory," says Dominique Barbe, the Anting center CEO. The partnership with Tesla is an achievement, and other new projects also got under way in what was a very full year, including the Volvo XC40 and XC60 models, the BMW X1 and X3, and the NIO ES6, an all-electric, high-end SUV. 2019 was also a busy development year, with 12 tailgate models, two of which won awards – one for the Nissan QASHQAI and the other for the Honda Civic.



Anting R&amp;D center



ω-Omegatech R&amp;D center

ω-Omegatech is also a pilot center for developing Plastic Omnium's new energies solutions in Asia. The hydrogen market is in its infancy, but it has a promising future.

In Anting, visitors enter an enormous reception area where a first showroom exhibits the month's production. After having passed through the facial recognition access point, they see a car without a roof or chassis floating in a giant mobile. The installation is designed to magnify the exterior system elements designed by Plastic Omnium. Continuing the visit, the laboratory testing area begins. Here the exterior systems undergo stringent tests to check their resistance to cold, heat, bending, etc. Upstairs, engineers and designers brainstorm future developments, often as part of joint supplier-customer teams. The strong customer service culture and employee engagement at this site are striking. This mindset is reflected in the site's responsiveness and the high quality of the solutions offered to its customers.

### ω-Omegatech, the showcase for the Group's excellence in China

Some 800 km to the west, near Wuhan, the ω-Omegatech center was inaugurated in June 2019. The investment amounted to €30 million. Located in the heart of Optics

Valley, China's answer to Silicon Valley and a hydrogen propulsion pilot city, the center specializes in developing, testing and prototyping fuel systems and in new energies. Plastic Omnium hopes to build on the center to double its fuel systems market share to 17% by 2022. At the end of 2019, more than 160 engineers were working there to develop 50 projects for 16 customers, including six Chinese companies. To address the clean mobility challenge, ω-Omegatech has installed state-of-the-art fuel tank testing equipment to provide comprehensive validation. The facility is also a pilot center for developing Plastic Omnium's new energies solutions in Asia. After manufacturing a first Type 4 hydrogen tank prototype at the end of 2019, the center will focus on ramping up the New Energies activity in 2020. This will include testing the high-pressure tank to be sold in South Korea and then in China. The hydrogen market is in its infancy, but it has a promising future with the bus fleet market. Hydrogen buses will be used during the Winter Olympic Games in Beijing in 2022.

# SHAPING EXPERTISE

In any successful transformation, people are key. This is particularly true in the automotive industry due to the scale and pace of change. New jobs are appearing, others are changing. Everywhere the new technologies are calling habits and work processes into question. Plastic Omnium supports its employees to make sure that everyone is part of the transformation.

## FACTS AND FIGURES

### New challenges, new jobs

New sectors such as electrochemicals, plastronics and mechatronics are emerging and new jobs are taking shape. Plastic Omnium forms a community of experts who undergo constant training in new technologies and continuously challenge themselves to address the new automobile landscape.

91%

of employees received at least one training course in 2019

22 HOURS

of training per employee in 2019

75%

of management posts filled internally in 2019

21%

of women managers in the workforce in 2019

2,700

engineers

816

interns, work-study employees and Volunteers for International Experience (VIE) in 2019

## WORK IN PROGRESS

### Sustainable mobility job training

Near Barcelona, Spain, the Plastic Omnium plant is progressively adopting new technologies to become a pilot 4.0 factory. The transformation is technological, but also organizational and cultural. Production operator Sabrina talks about her experience.

● 2017  
1st deliveries using CRM software

● 2018  
Automated management of production components

● 2019  
Automated management of all factory logistics flows

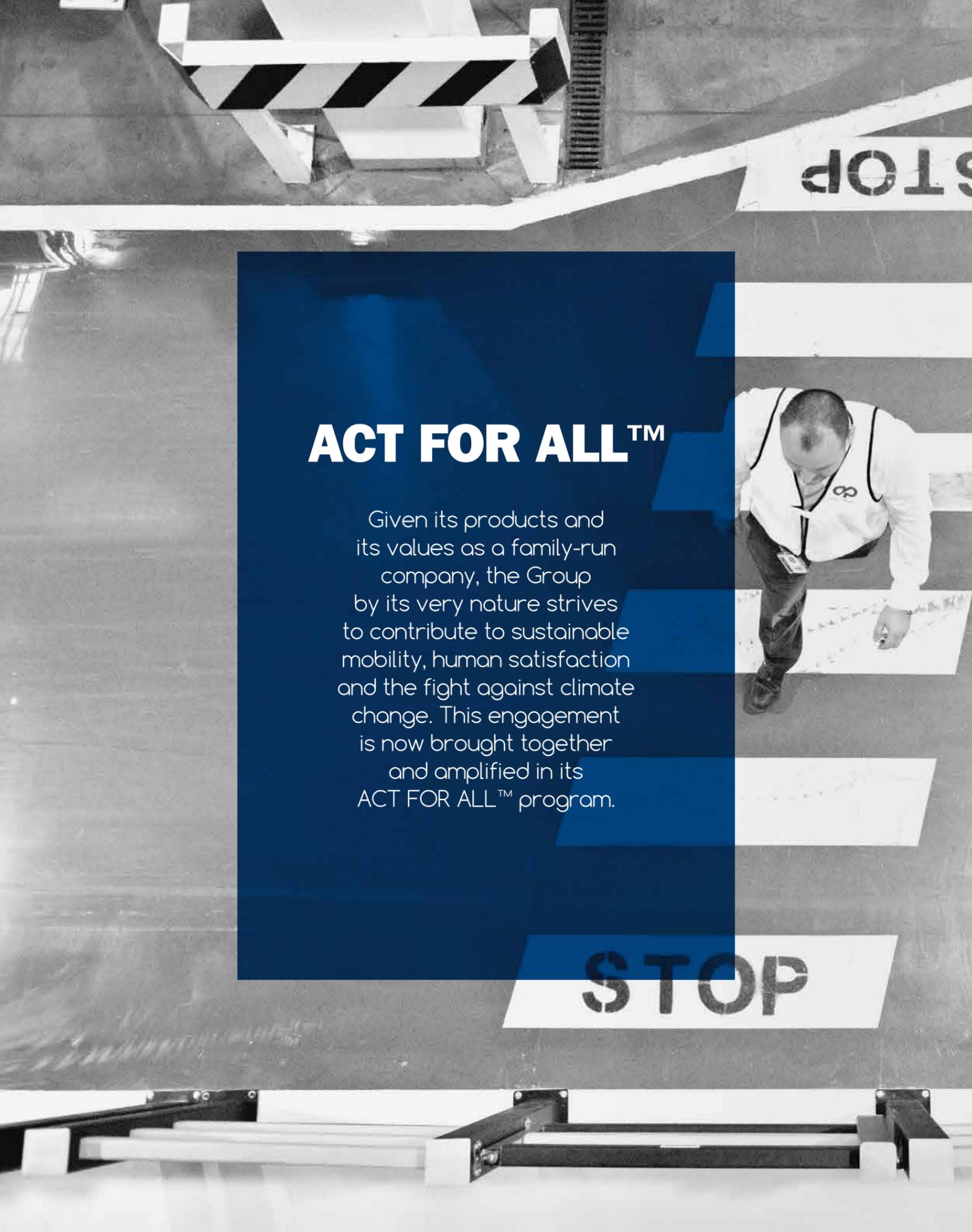
#### What changes have the new technologies brought about in your day-to-day work?

My work used to be mainly manual and physical, but I now operate in a more virtual environment where I need to take a more conceptual approach. For example, I no longer need to go pick up the components of a bumper. Now I ask the system

to order the parts and an automated guided vehicle brings them to me from an automated warehouse. In the new environment I need to trust the tools and the new technologies. I put in queries and communicate with them, for example when I need to change an order for parts. These technologies help us and provide us with very useful information that we share. They do not replace interaction between people, but the interaction is different.



SABINA SAAVEDRA  
PRODUCTION OPERATOR  
AT THE REDONDELA PLANT



## ACT FOR ALL™

Given its products and its values as a family-run company, the Group by its very nature strives to contribute to sustainable mobility, human satisfaction and the fight against climate change. This engagement is now brought together and amplified in its ACT FOR ALL™ program.



**The ACT FOR ALL™ program is far more than a set of goals. It engages all of the Group's employees in a committed effort to make clean mobility possible.**

Corporate social responsibility is rooted in the Plastic Omnium Group's DNA, and the deployment of ACT FOR ALL™ in 2019 takes the program to a new level. ACT FOR ALL™ has three pillars: responsible entrepreneurship, care for people and sustainable production. The program articulates the Group's new objective of acting for all for many years to come to benefit all stakeholders and future generations. To address this challenge, Plastic Omnium strives to serve

as a responsible entrepreneur, with an exacting purchasing policy and approach to business ethics that must be applied worldwide. The Group pays close attention to the wellbeing of its employees, to diversity and the number of women managers, as well as to workstation ergonomics, youth employment, training possibilities and internal promotion opportunities. Plastic Omnium also wants to be a responsible producer by reducing its carbon footprint and energy use, and by recycling the materials used in its plants and developing the use of renewable energy. ACT FOR ALL™ steers and brings together all these actions around three pillars and 10 markers with ambitious targets.

IN SITU

## Forging ahead in Herentals

Plastic Omnium demonstrated its ACT FOR ALL™ engagement and responsibility in Herentals, Belgium, where it made substantial progress, especially in renewable energy use and inclusion.



**Responsible entrepreneurship**  
Green spaces around the plant are maintained by employees enrolled in work integration programs.



**Care for people**  
Diversity is at the center of the recruitment process: one in three employees hired at Herentals is a woman.



**Sustainable production**  
Installation of 3,725 solar panels to generate 10% of the factory's power needs and avoid 230 metric tons of CO<sub>2</sub> emissions per year.

EQUATION

## Stepping up engagement

The ACT FOR ALL™ program spans all countries where the Group operates and is stepping up Plastic Omnium's engagement and taking it to a new level. The first ACT FOR ALL™ event, held on October 23, 2019, mobilized the Group's 32,000 employees.



3 PILLARS  
10 MARKERS

# 2025 TARGETS



### Responsible entrepreneurship

90%  
responsible purchasing

100%

of employees  
trained in business ethics



### Care for people

**EMPLOYEE HEALTH**  
100%  
of sites covered  
by an annual  
health campaign

**ERGONOMICS**  
100%  
of workstations  
audited

**YOUTH EMPLOYMENT**  
1,000  
young people  
trained every year

**SAFETY**  
0.5  
Fr2

**DIVERSITY**  
25%  
women  
managers  
and senior  
executives

**LOCAL INITIATIVE**  
100%  
of sites engaged in local  
outreach activities



### Sustainable production

**TOP PLANET**  
60%  
of plant and equipment  
included in program



OVER 50% OF SITES



using renewable energy





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