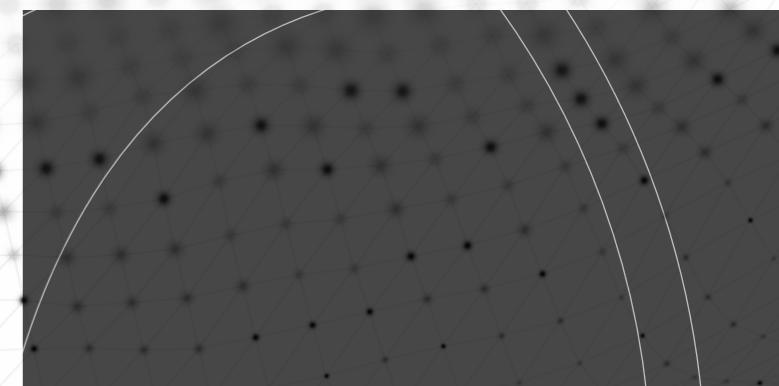
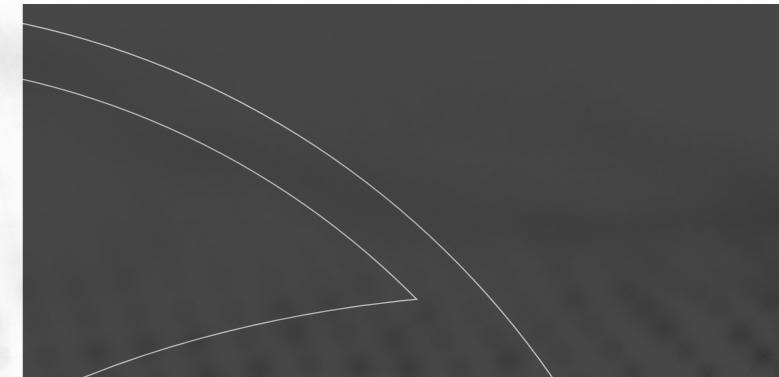
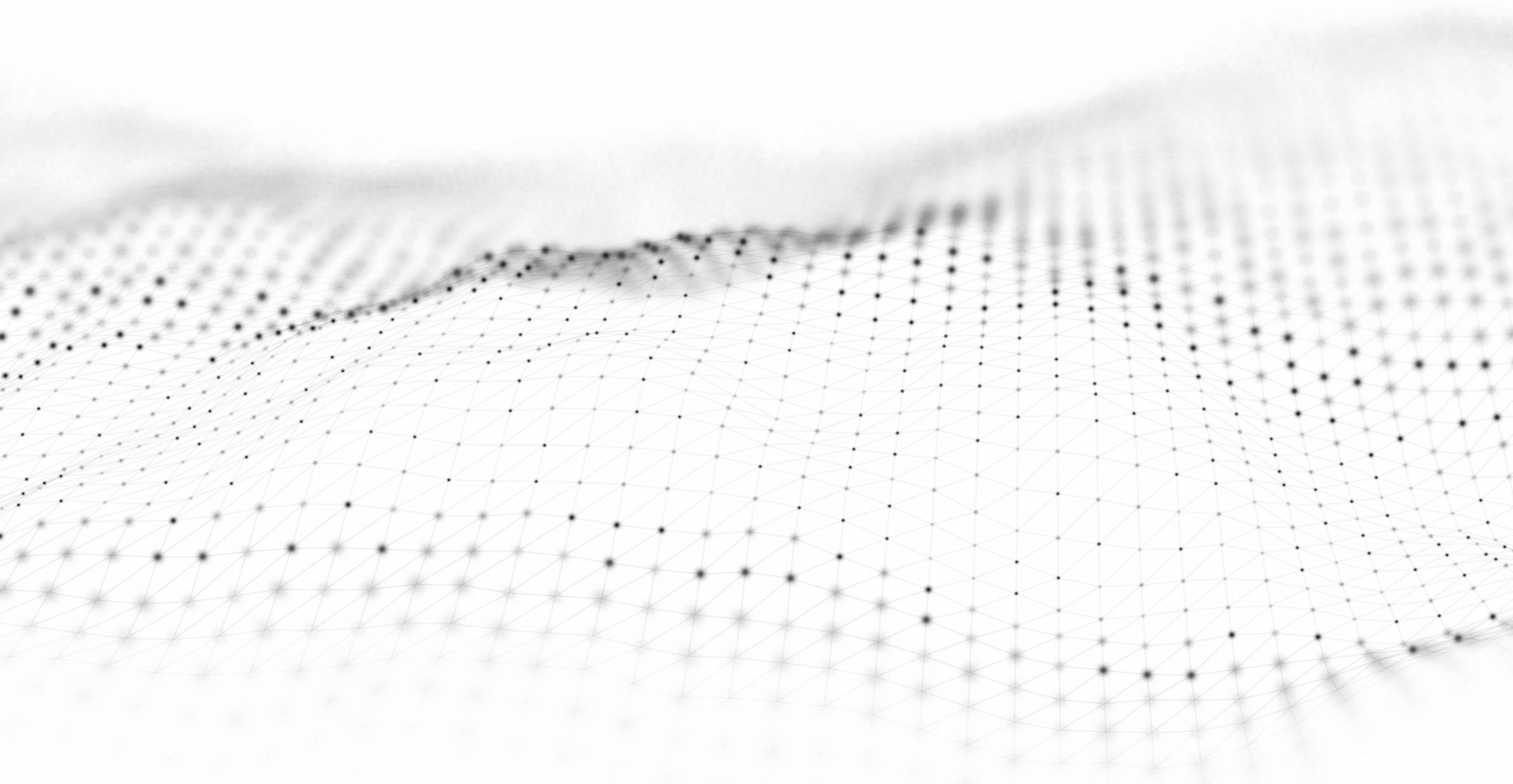




**SPAL**

AUTOMOTIVE

**COMPANY PROFILE**



We always strive for excellence, through quality, innovation, and service. We have built our reputation on these values over the years, positioning SPAL as the ideal partner for designing, producing, and marketing engine and passenger compartment ventilation solutions for all types of vehicles.

Alessandro Spaggiari  
CEO Spal Automotive



# OVERVIEW Vision and Mission

## ► VISION

"Even in a period of profound change, every vehicle will need increasingly reliable and efficient cooling and ventilation systems that can ensure an increasingly greater durability of the product they equip."

## ► MISSION

"We have always aimed for excellence through quality, innovation and service. SPAL has built its credibility over the years on these cornerstones, acting as an ideal partner to design, produce and market engine compartment cooling and cabin ventilation solutions for all means of transport."



# MILESTONES

## shaping air since 1959

1959

### Company foundation

The company was born in Correggio, Italy, from the minds of its founders Terzino Spaggiari and Alberto Alberti, during a period of strong development and expansion in plastic molding, specializing in the production of plastic components for third parties.

1970

### Axial Fans and Centrifugal Blowers

Starting with an important entrepreneurial intuition, SPAL moves towards the production of electric fans and blowers for the automotive sector. To cope with the steady increase in market demand, it expands its product range and installs its first structured production lines, becoming one of the world's benchmarks in the design and production of electric axial and centrifugal fans for all types of vehicles and applications.

1990

### Increasing research and development

Area: 135.000 square metres.  
Covered Area: 35.000 square metres

SPAL starts in-house production of electric motors used on fans and blowers, gradually winning portions of the market and expanding its product range. Constant evolution and the need to improve production processes lead to the transformation of production lines from manual to semiautomatic in 1999.



### 50 years of SPAL

In 2009, SPAL celebrates 50th year since its founding.

2000

### Opening new branches

From 2000, SPAL began its global expansion with the opening of several branches, including:

- SPAL Shanghai CHINA (2001)
- SPAL USA (2004)
- SPAL do BRASIL (2005)
- SPAL INDIA JV Pee Aar Exim (2006)
- SPAL UK (2008)
- SPAL RUSSIA (2008)
- SPAL JAPAN (2011)
- SPAL KOREA (2012)



### 60 years of SPAL

In 2019, SPAL celebrates the 60th year since its founding.

2010

### Brushless Axial Fans development

Since 2010, began the production and marketing of axial fans and centrifugal blowers with Brushless/Electronic Intelligent Drive technology.

2020

### SPAL Automotive Technology India Private Limited Established

In 2021, SPAL acquires full control of the Indian joint venture Pee Aar Exim Private Limited, leading to the establishment of SPAL Automotive Technology India Private Limited, which is dedicated to the production of brushed-engine axial fans and centrifugal blowers for the local market and the marketing of SPAL products in the Indian market.

### Opening Changzhou Production Plant

In 2022, to meet the growing demand of the Chinese market, SPAL built a new production plant in China with an area of 23,000 square meters, where SPAL Automotive Technology (Changzhou) Co. Ltd. has started the assembly of Brushless axial fans.

### ...Today

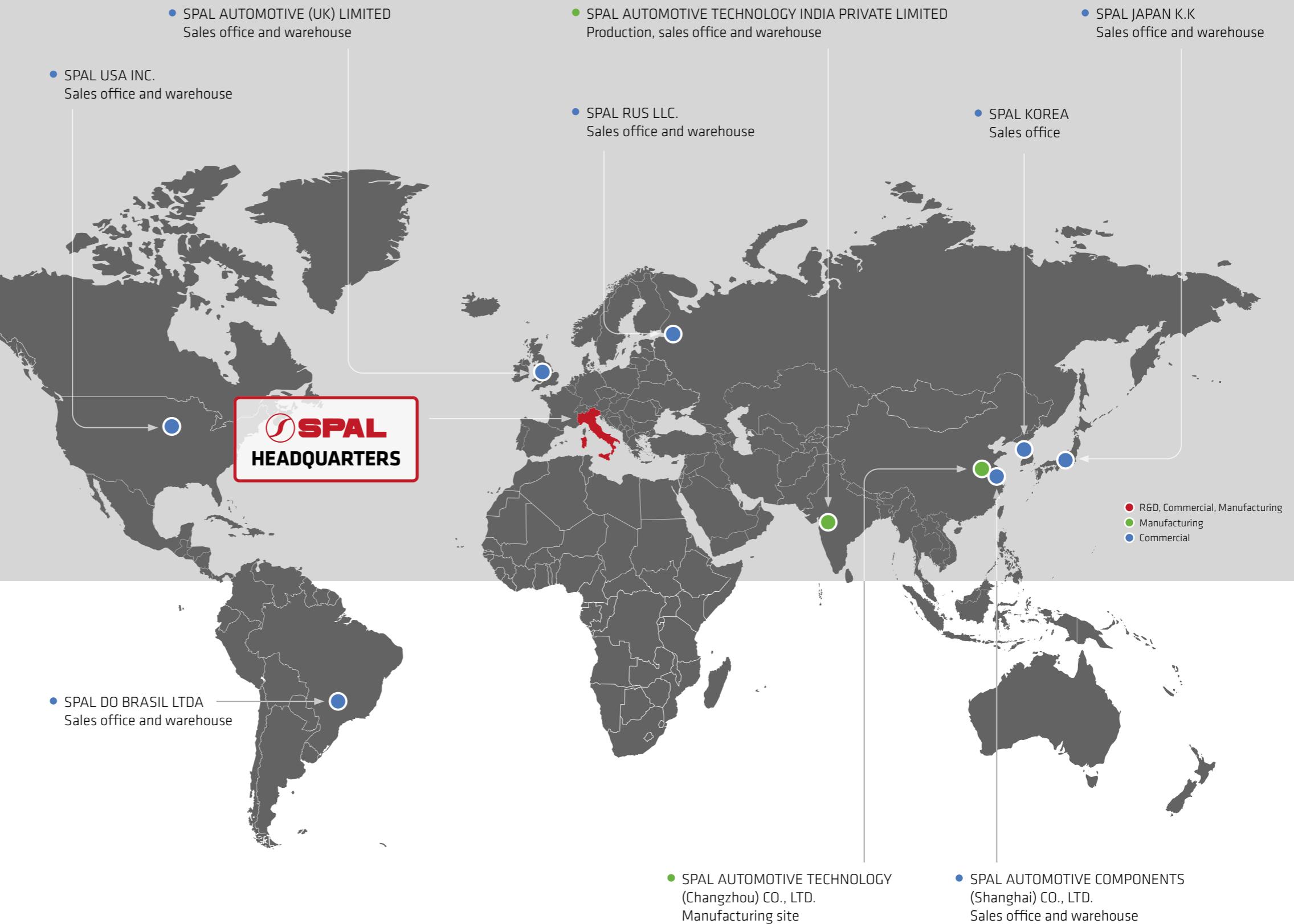
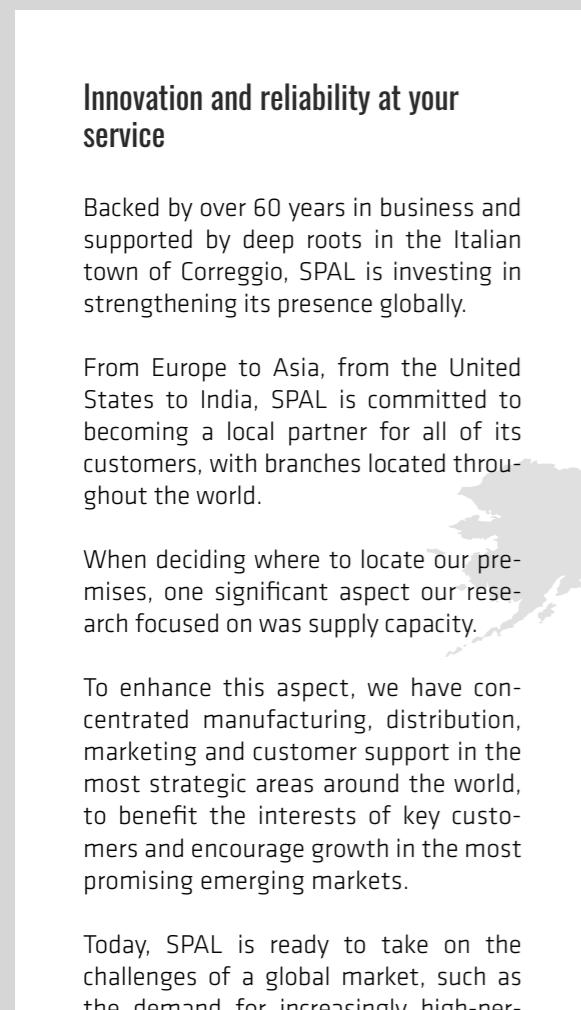
Area 180.000 square metres - Covered Area: 80.000 square metres

Today the corporate area of the headquarter covers 180.000 square meters, confirming SPAL's ongoing commitment to offering innovative solutions for the automotive industry.



# THE SPAL TEAM

## and our international presence



# BRUSH E BRUSHLESS

## Technologies

### Brushed Axial Fans

Our axial fans, with brushed DC motors, are water and dust resistant and are suitable for particularly harsh operating conditions. They have compact dimensions, low noise and aerodynamic design, while IP68 rating ensure their system integrity.



#### Brushed axial fans

12V - 24V DC

- ▶ IP68 drive
- ▶ Reliability in harsh conditions
- ▶ Long working life

### Brushed Centrifugal Blowers

With a compact design and several sizes available, our centrifugal blowers with brushed DC motors are synonymous with reliability and superior performance. These fans ensure long operating life and quiet functionality.



#### Brushed centrifugal blowers

12V - 24V DC

- ▶ Extended temperature range
- ▶ Reliability in harsh conditions
- ▶ Long working life

### Brushless Axial Fans

Our brushless axial fans are water and dust resistant with IP68 and IP6K9K sealed motors. Brushless technology not only ensures efficient operation but also extremely quiet, making the fans ideal for meeting the requirements of next-generation cooling systems in every industry.



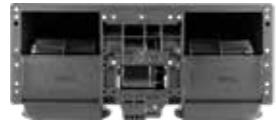
#### Brushless axial fans

12V - 24V DC

- ▶ IP6K9K drive
- ▶ High efficiency
- ▶ Integrated electrical protection
- ▶ Wide range of operating temperatures
- ▶ Smart control

### Brushless Centrifugal Blowers

Our brushless centrifugal blowers with IP68 and IP6K9K sealed motors ensure safe operation even under extreme conditions, offering wide temperature tolerance, reliability and superior efficiency.



#### Brushless centrifugal blowers

12V - 24V DC

- ▶ IP6K9K drive
- ▶ High efficiency
- ▶ Integrated electrical protection
- ▶ Wide range of operating temperatures
- ▶ Smart control

### Coolant Pumps

The coolant pumps were developed as a compact unit capable of handling a wide range of temperatures so as to ensure high performance even under extreme environmental conditions. With sealed brushless motors (IP68 and IP6K9K) and with PWM, CAN or LIN control, the pumps are robust, reliable and provide high efficiency and quiet operation for many types of applications, even the most extreme ones.



#### Coolant pumps

12V - 24V DC

- ▶ IP6K9K drive
- ▶ High efficiency
- ▶ Integrated electrical protection
- ▶ Wide range of operating temperatures
- ▶ Smart control



# BRUSH E BRUSHLESS

## Technologies

### Latest in development 48V Brushless Axial Fans

Our 48V axial fans are created to meet the cooling requirements of vehicles moving toward electrification. Thanks to brushless motor technology with IP68 and IP6K9K standards, they provide outstanding protection against external agents. With an intelligent control system, optimal operation is ensured in any situation and over a wide temperature range.



#### 48V Brushless axial fans

48V DC

- ▶ IP6K9K drive
- ▶ High efficiency
- ▶ Integrated electrical protection
- ▶ Wide range of operating temperatures
- ▶ Smart control

### HV Brushless Axial Fans

SPAL's high-voltage axial fans are an advanced solution for thermal management in electric vehicles and heavy-duty vehicle applications in particular. With power ratings starting at 850W, they feature IP68 and IP6K9K sealed brushless motors, new electronics, and a new intelligent control and drive system that ensures high standards of safety and protection for both the fan and the customer. They also ensure optimal performance and efficiency, bringing the benefits of high voltage even under extreme conditions and temperatures.



#### HV Brushless axial fans

800V DC

- ▶ IP6K9K drive
- ▶ High efficiency
- ▶ Integrated electrical protection
- ▶ Wide range of operating temperatures
- ▶ Smart control

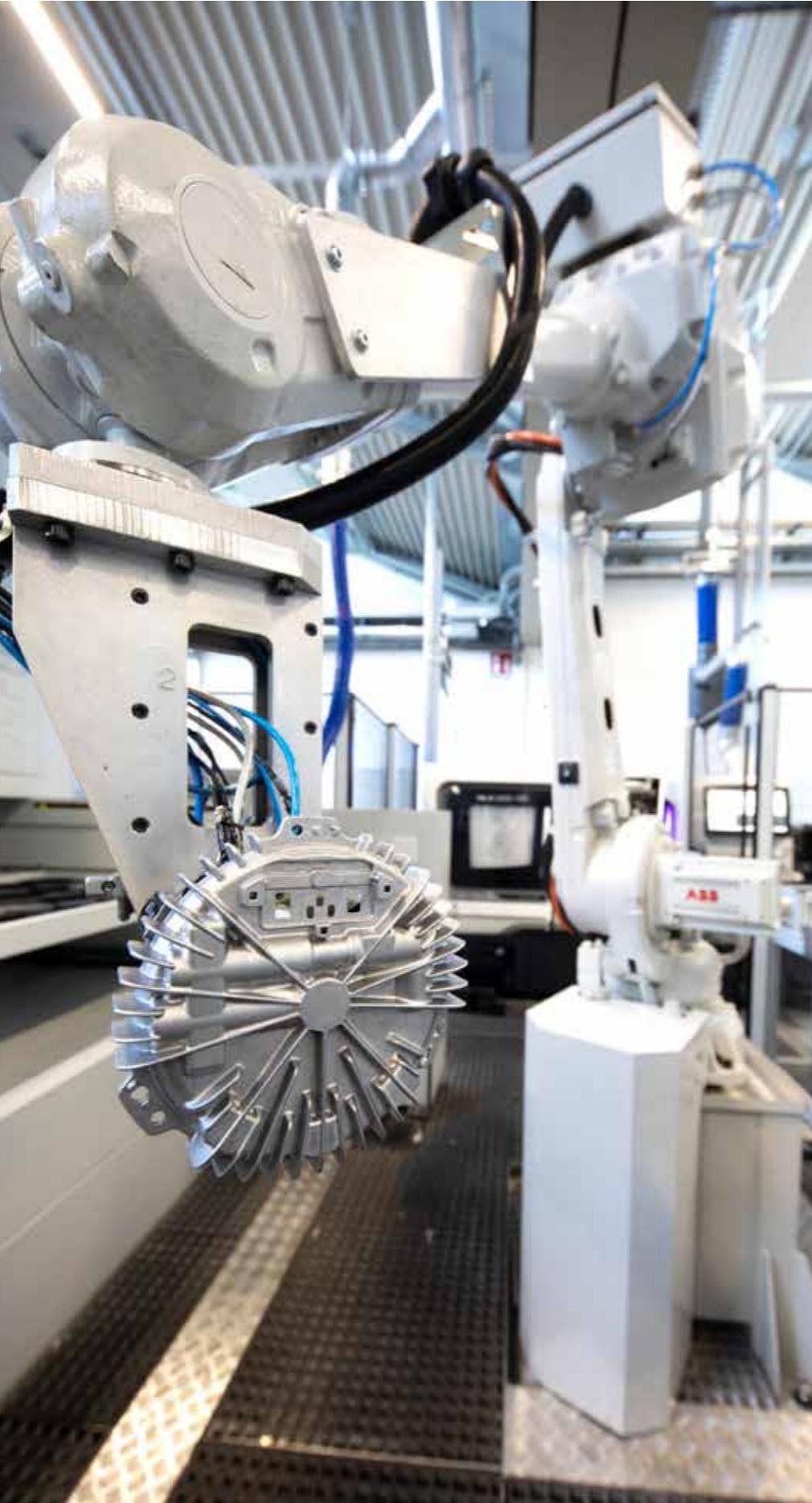


# RESEARCH & development

SPAL has always firmly believed that research and innovation are crucial to its competitiveness, which is why it focuses on constantly building and enhancing its R&D division.

The company's investments in **research and development** have always been guided by high market standards, to ensure every component employed in SPAL products is designed and tested internally; **from engines and blades to software and hardware**, all components must be guaranteed for all operating conditions.

As a result of its continuous attention to research and development activities, SPAL quickly made a name for itself for pioneering solutions that meet customer needs.



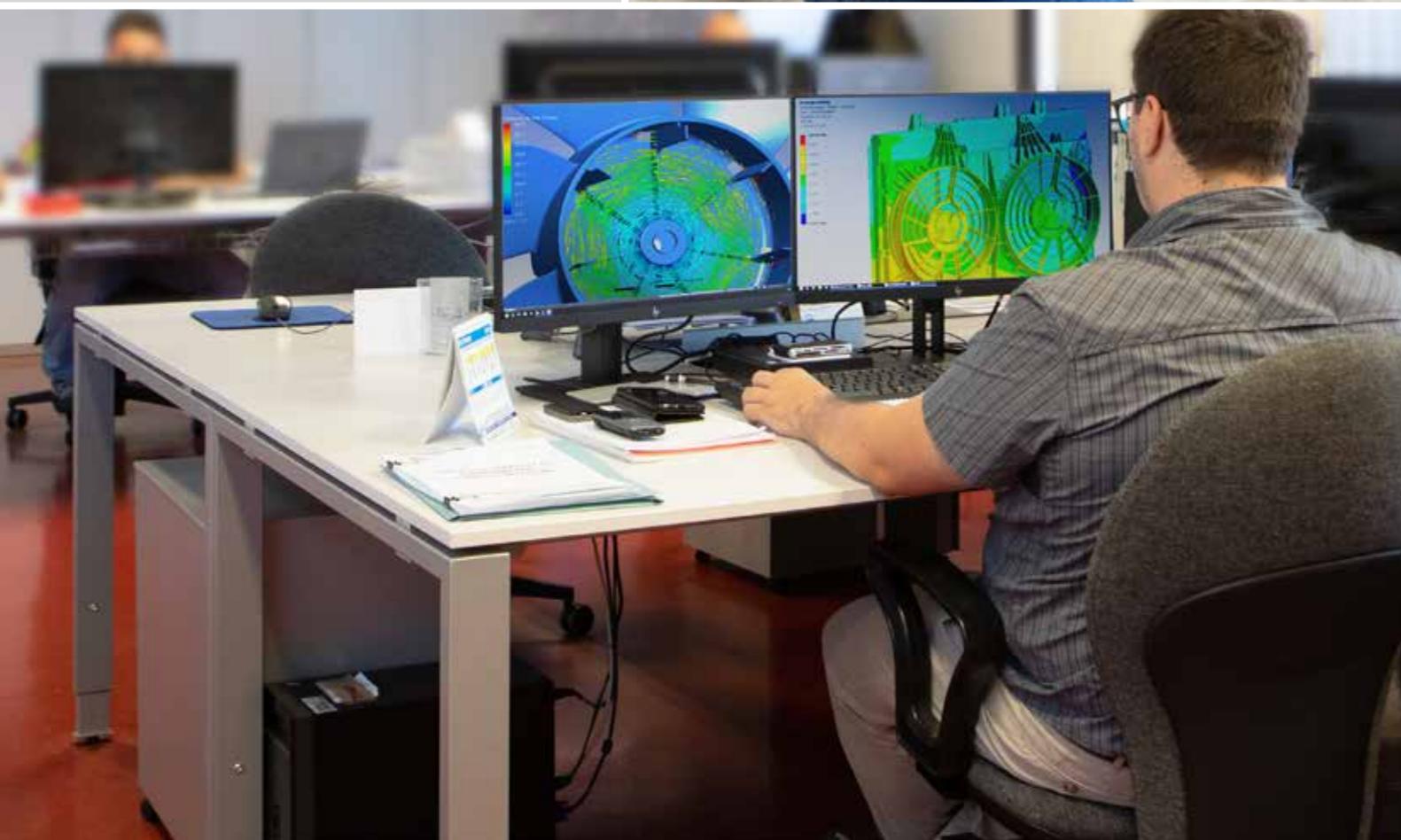
# INNOVATION

## advanced SPAL technology

Within a time of great change for the automotive industry, marked by the transition to a more sustainable future, SPAL plays a key role in fuelling progress thanks to its work in technology innovation and energy efficiency.

SPAL's design engineers and technicians are committed to creating custom products tailored to customers' specific needs, while also providing highly innovative, advanced solutions.

However, SPAL's dedication does not stop at the development of high quality products, as the company also embraces a **strategic vision** that involves the future of the entire industry, which it hopes will have a **lasting impact**.

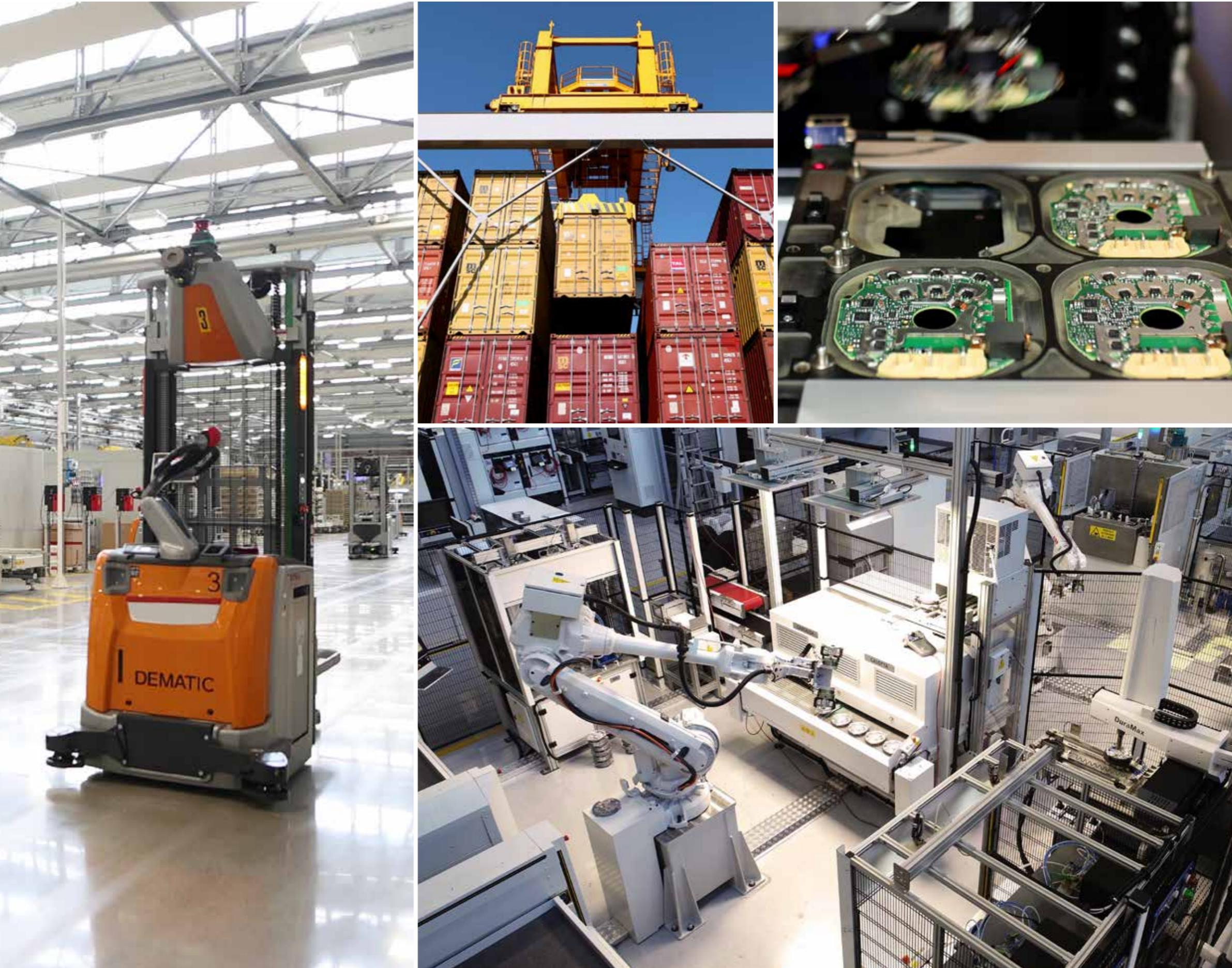


# CORE Competence

Having achieved a high level of vertical integration, SPAL now has constant control over every stage of the creation of its products.

A strategic decision was made to have all processes in-house, including the design of products and equipment (moulds and tools for assembly) and production (moulding, circuit board assembly, brushed and brushless motors, wiring harnesses, fans and coolant pumps).

In addition to that, SPAL's certified laboratories also ensure high standards are maintained and specific compliance checks are conducted for each stage of the production process.



## Technical Knowledge

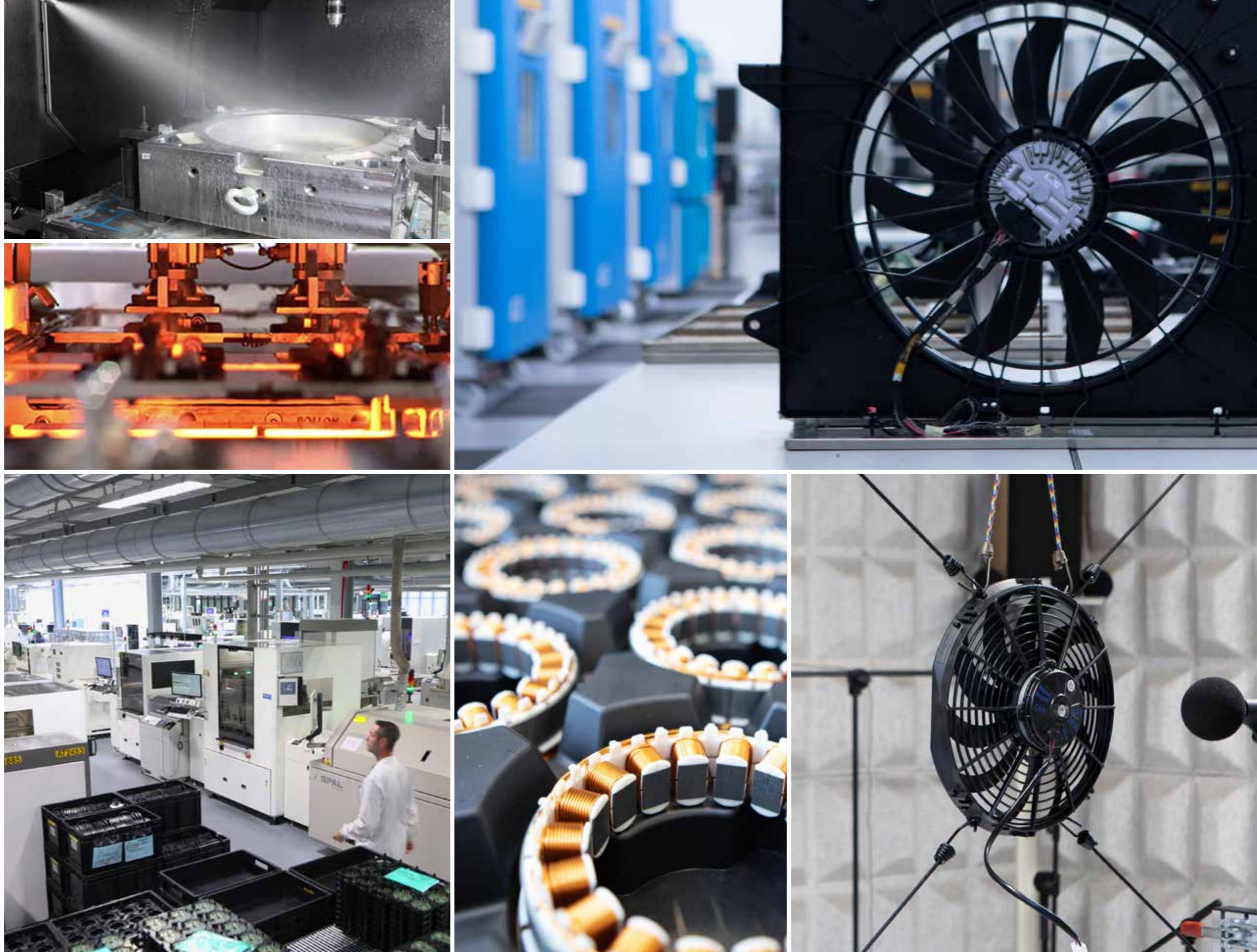
- Fluid-dynamics
- Thermodynamics
- Electronics
- Electro-magnetic
- Electromagnetic Interference and Compatibility (EMI/EMC)
- Mechanical

## In-House Testing and Validation Equipment

- Climatic chambers
- Thermal shock chamber
- Oven & hot test chambers
- Water & salt spray chamber
- Vibration test benches
- Vibration test bench in climatic chamber
- Airflow test chambers
- Anechoic chamber with spectrum analyzer
- Endurance test facility
- Motor torque test bench
- 3D tester
- Laser sintered prototype machine
- EMC test equipments: Emi Receivers, RF amplifiers, Antennas etc..
- Semianechoic chambers EMC for Low and High Voltage components, Fan and coolant pumps.
- Four Quadrant Battery Supply Simulator
- Simulators for Automotive Transients
- Electrostatic Discharge Simulator Guns
- Electrical Safety Tester
- EMI/EMC Simulation & Analysis tools
- HV Motors test
- Pumps endurance test facility

## Fully Integrated Processes

- Rapid prototyping
- Chemical Department
- Tool shop
- Moulding
- Motor design and production
- PCB In-house Production
- Electronics SMD
- Automated assembly process



For SPAL Automotive, People represent the most important and strategic Value to bring innovation, development and thus meet the challenges of the company in an increasingly complex and competitive global context.

In fact, for SPAL Automotive, paying attention to the "person" means:

- making the most of individual singularities;
- finding a convergence between personal aspirations and motivations and the role to be filled and developed;
- offering a work context/climate that offers security, economic solidity and proximity to the person.

**SPAL Automotive has always been characterised by a strong orientation towards innovation and expansion and therefore, a constant numerical growth of people within the company. In fact, the recruitment and selection process has been one of the main activities involving HR in recent years.**

SPAL has always furthered the fulfilment and growth of people through the enhancement of experience and knowledge, and the development of individual skills aimed at fostering pluralism.

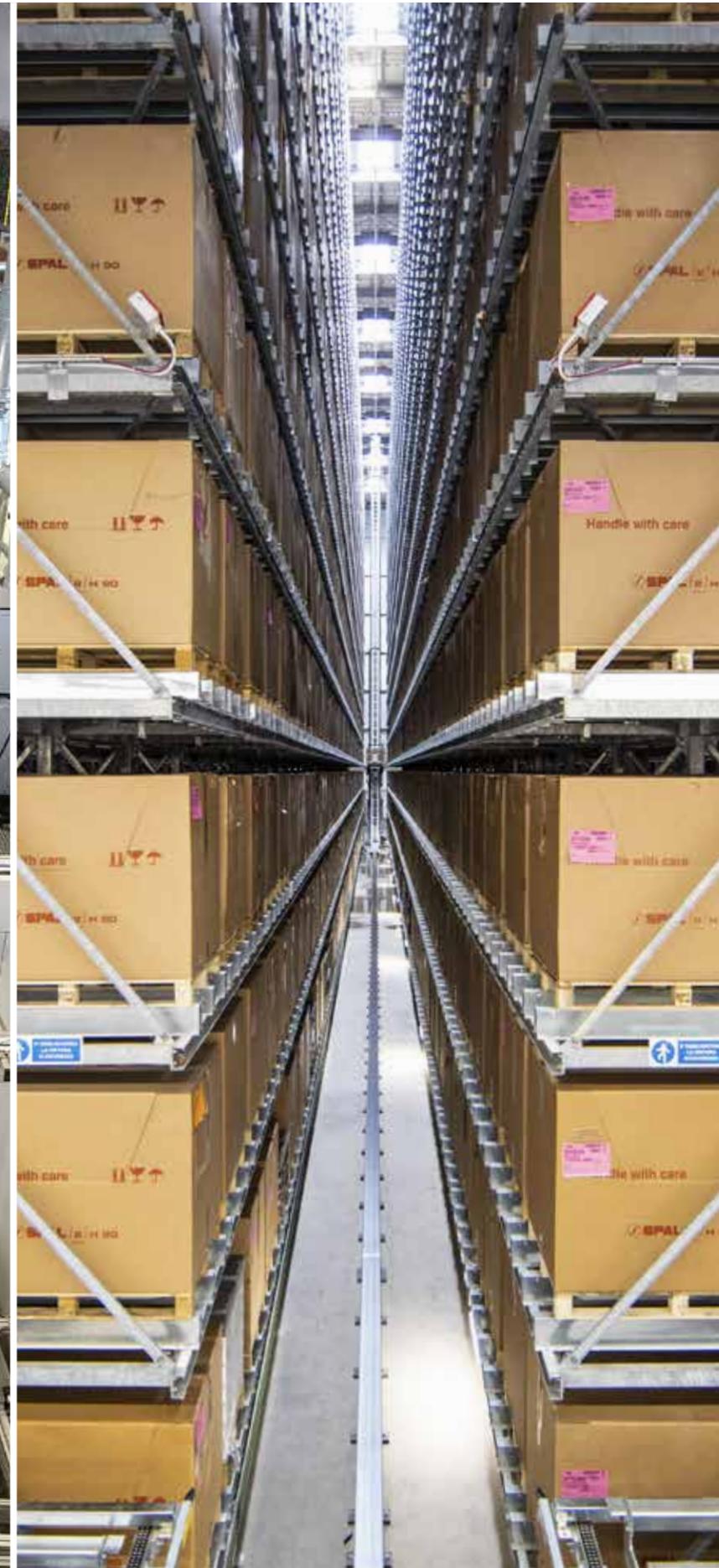
**Passion, respect, humility and responsibility** are the values that distinguish the company. These guide the SPAL strategic choices.



# CERTIFICATES

Certifications can be downloaded from our official website.

- ▶ IATF 16949
- ▶ UNI EN ISO 14001:2015
- ▶ UNI EN ISO 9001:2015
- ▶ UNI EN ISO 45001:2018
- ▶ AEO
- ▶ AUTOMOTIVE SPICE 3.1 ASSESSMENT
- ▶ TÜV Laboratoty Testing UN-R 10, 97/24/ EC and 2009/64/EC
- ▶ TISAX ASSESSMENT



# SOLUTIONS for any APPLICATION

CAR



BUS & COACH



POWERSPORT



# SOLUTIONS for any APPLICATION

## TRUCK



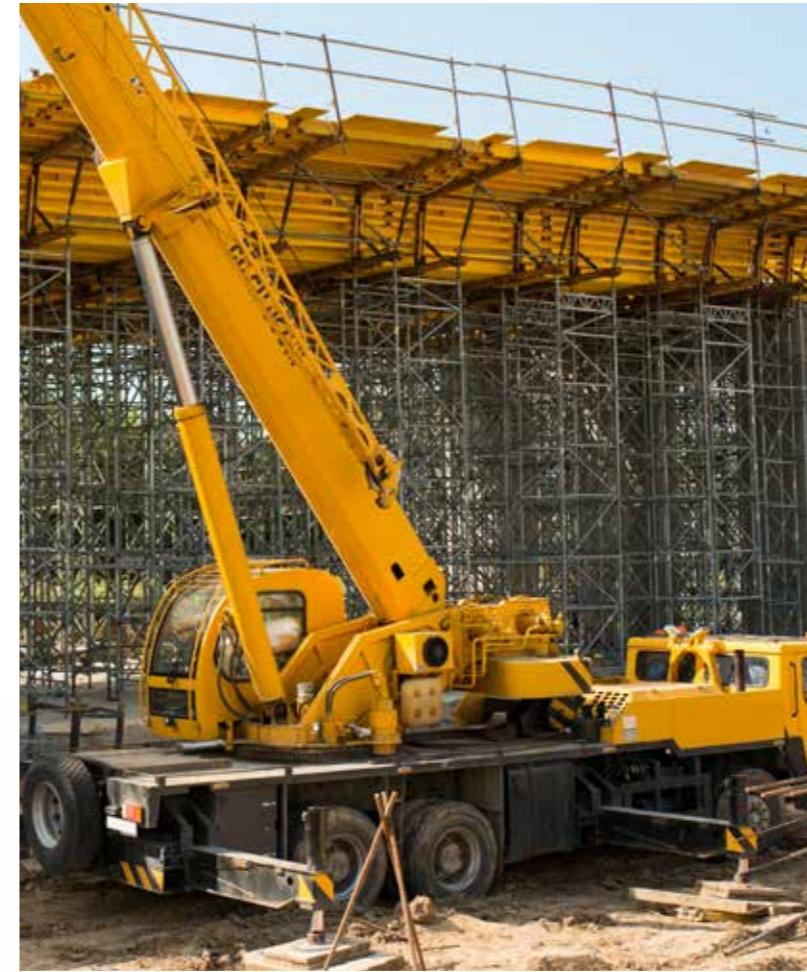
## AGRICULTURE



## CONSTRUCTION EQUIPMENT

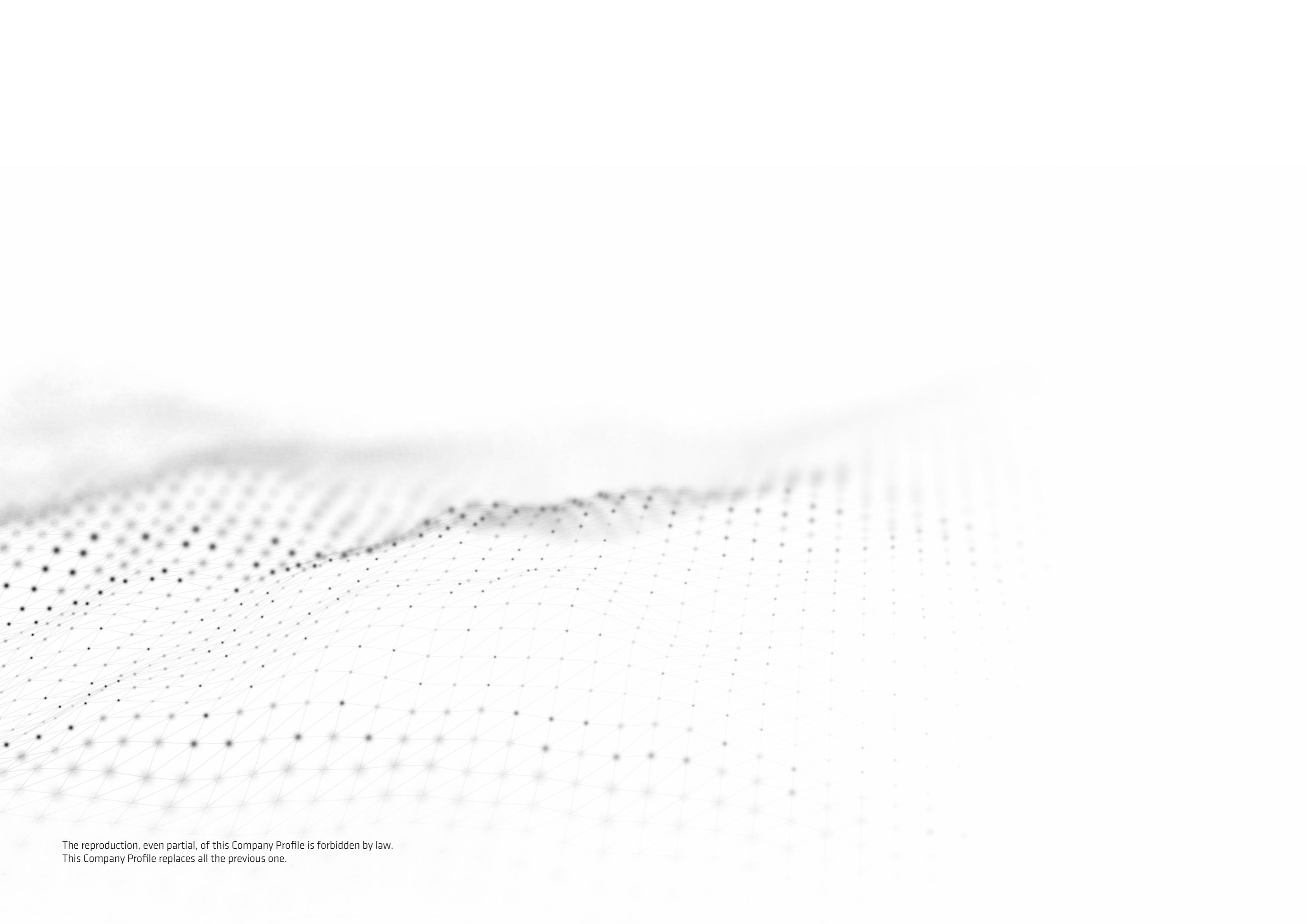


# SOLUTIONS for any APPLICATION

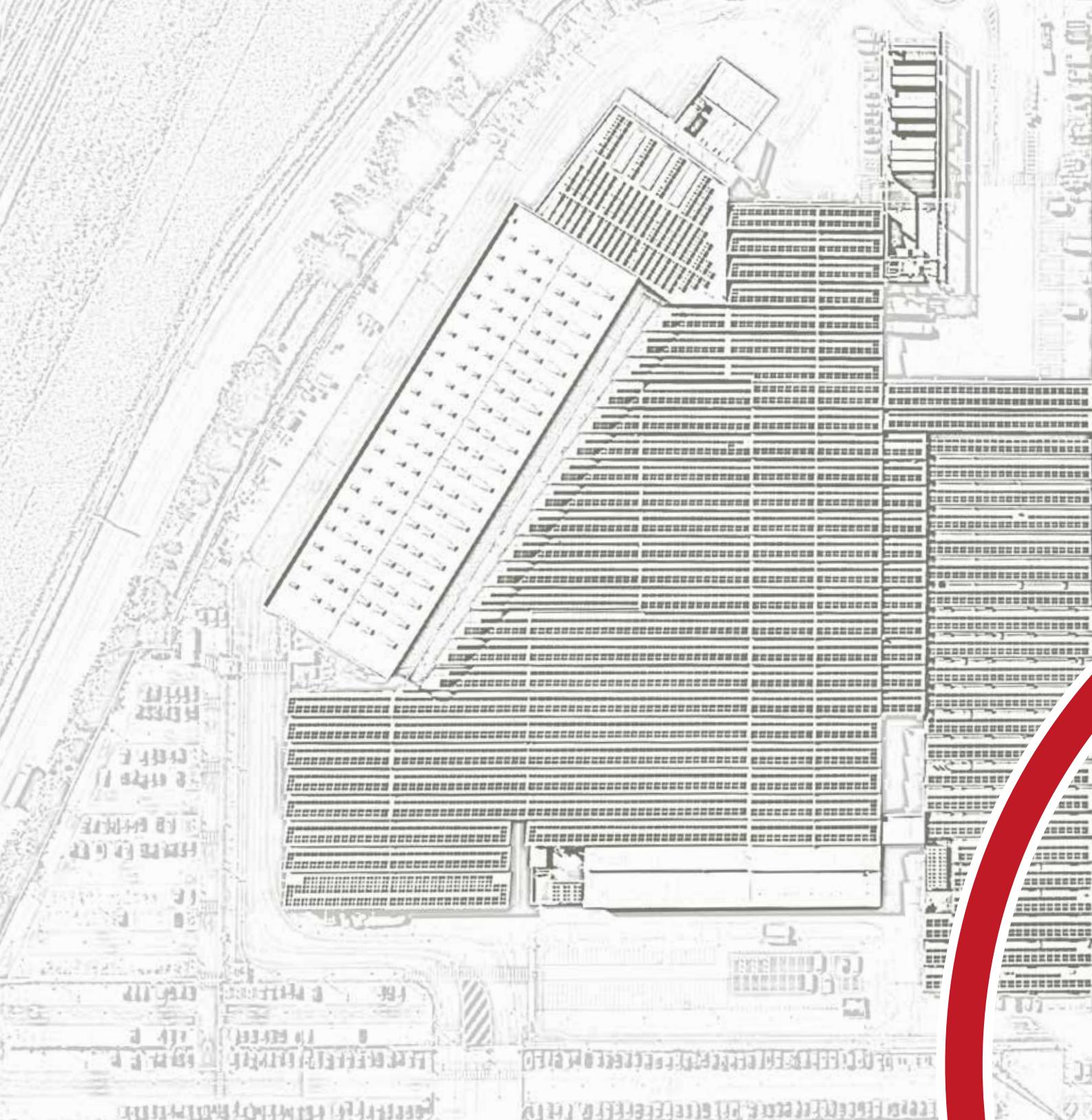


SHAPING AIR SINCE **1959**





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