

## Discover ebm-papst in automotive technology.

Innovative drive and ventilation solutions for passenger cars and commercial vehicles.

# ebm papst

The engineer's choice



# About ebm-papst.

*As a responsible leader in ventilation and drive technology, our thoughts and actions have always been guided by considerations of environmental compatibility and sustainability. For decades, we have worked according to the simple but strict conviction of our co-founder Gerhard Sturm: "Every new product we develop has to be economically and ecologically superior to its predecessor." GreenTech is the ultimate expression of this corporate philosophy – to the benefit of the environment and our customers.*



## **Top ventilation and drive technology.**

The ebm-papst product portfolio includes over 14,500 products, so we can offer the right solution for almost any ventilation and drive engineering task. In consultation with you, we can also work out custom solutions that go beyond our regular product portfolio thanks to our diversified team of more than 500 engineers and technicians at our three locations in Germany.

## **Global presence.**

Being a specialist for customized solutions around the world calls for strong partners. Being globally local, i.e. present all over the world while acting as a local company in each country, is how we have established ourselves with successful subsidiaries in all of the world's important markets. And it's why you can always get advice and information from local partners. In addition, our worldwide production alliance serves as a basis for competitive pricing. Our global services and logistics offerings ensure quick responses and just-in-time delivery.

## **Core competencies: motor technology, aerodynamics and electronics.**

Our innovative technologies regularly become industry standards. Our advantage: We take a comprehensive approach to aerodynamic processes, combining standard-setting motor technology with sophisticated electronics and aerodynamically optimized designs. The system solutions that result from these core competencies generate unique synergy effects worldwide.

## **Passion, quality, responsibility: three factors for success.**

Our passion for fans and motors is the key to top performance. With our clear organizational structure, flat hierarchies and high degree of individual responsibility, we establish a basis not only for technological innovations but also for outstanding service and active cooperation with our customers.

And of course our products are manufactured according to the highest quality standards – at 18 production facilities around the world. Our quality management is uncompromising, everywhere and in every process step, as confirmed by our certification according to the international standards DIN EN ISO 9001, ISO/TS 16949-2 and DIN EN ISO 14001.



# Experience, expertise and passion.

## Everything from a single source

*At ebm-papst, we develop and produce motors, fans, electronics and systems in-house. We ensure that all components are perfectly matched for maximum performance with minimum noise. And of course our delivery and logistics are centrally controlled to work on a just-in-time basis. You can rely on our first-class service and our ability to react flexibly to the demands of global markets. That's what ebm-papst stands for. All over the world.*

*We take an active part in the development of vehicle innovations, including mechanical systems, electronics and software. We work with manufacturers and system suppliers to develop trend-setting solutions based on your requirements, adapting them exactly to your operating conditions. By integrating intelligent platform modules, we also contribute to more economical production. We make the most of synergies to minimize development time and reduce costs.*

Electromechanical components for ventilation, air conditioning and auxiliary drives are often very loud and obtrusive, but our vision for the automobile of the future is quite different. With our state-of-the-art GreenTech EC technology, the cooling and drive units we develop work almost silently. Without the driver even noticing, they allow safe and stress-free driving and contribute to reductions in fuel consumption and pollution in many ways, such as exhaust gas treatment and cooling for energy storage systems in electric and hybrid vehicles. Have a look at some of our automotive innovations:

### **Compact and convenient: drives for every requirement.**

Not only do drives increase convenience for drivers, they also enhance safety. Electronics integrated in their motors make constant improvements in reliability, output control and ease of use possible. ebm-papst has the right drive concept for a wide range of applications:

- Internal rotor drives for pumps used in extreme conditions  
Example application: oil pump drives for automatic transmissions
- Hollow-shaft motors as space-saving drive solutions  
Example application: power steering motors
- External rotor motors as compact, high-torque pump drives  
Example application: DNOX urea pumps
- Internal rotor motors as highly dynamic actuators  
Example application: clutch actuators, rear-axle steering

### **Quiet and powerful: components for moving air.**

In addition to electric motors, ebm-papst develops and produces components for heat control and air movement, including both normal and compact fans that are used in different parts of a

vehicle for optimum electronics cooling and air conditioning. Our fan design, patented worldwide, combines high efficiency and quiet operation in a compact package. Here, for example:

### **The facts at a glance:**

- Special fans integrated in seats and backrests guarantee maximum seating comfort.
- As in-vehicle “climate observers,” sensitive sensor fans provide optimum air conditioner control.
- A wide range of axial and centrifugal fans provides powerful and reliable cooling for demanding vehicle electronics.
- We developed high-temperature fans for use in temperatures up to 120 °C, e.g. for LED headlight ventilation.





# ebm-papst innovations for automotive technology:

As a highly qualified engineering partner of the automotive industry, our innovations have been helping to make the driving experience safer, more comfortable and less stressful for over a decade.

A growing number of renowned manufacturers and system suppliers, in both the passenger and commercial vehicle areas, are among our

customers. Their satisfaction is the result of co-operation as partners and sophisticated, highly reliable products.



## 1 Exhaust gas treatment.

- High power density
- Wide range of speeds
- Low operating noise
- Long service life and reliability
- Maintenance-free



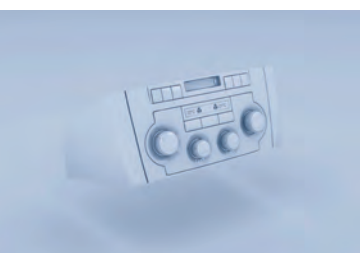
## 2 Actuator.

- Maintenance-free
- Highly dynamic
- Long service life and reliability
- Customized adaptations
- For 12V- and 24V-application



## 3 Electronics cooling.

- Compact design
- Low power consumption
- For use at high ambient temperatures up to 85°C
- Adjustable speed



## 4 Climate control.

- Extremely quiet
- Long service life and reliability
- Precise temperature sensor system
- Robust
- Efficient
- Integrated motor electronics

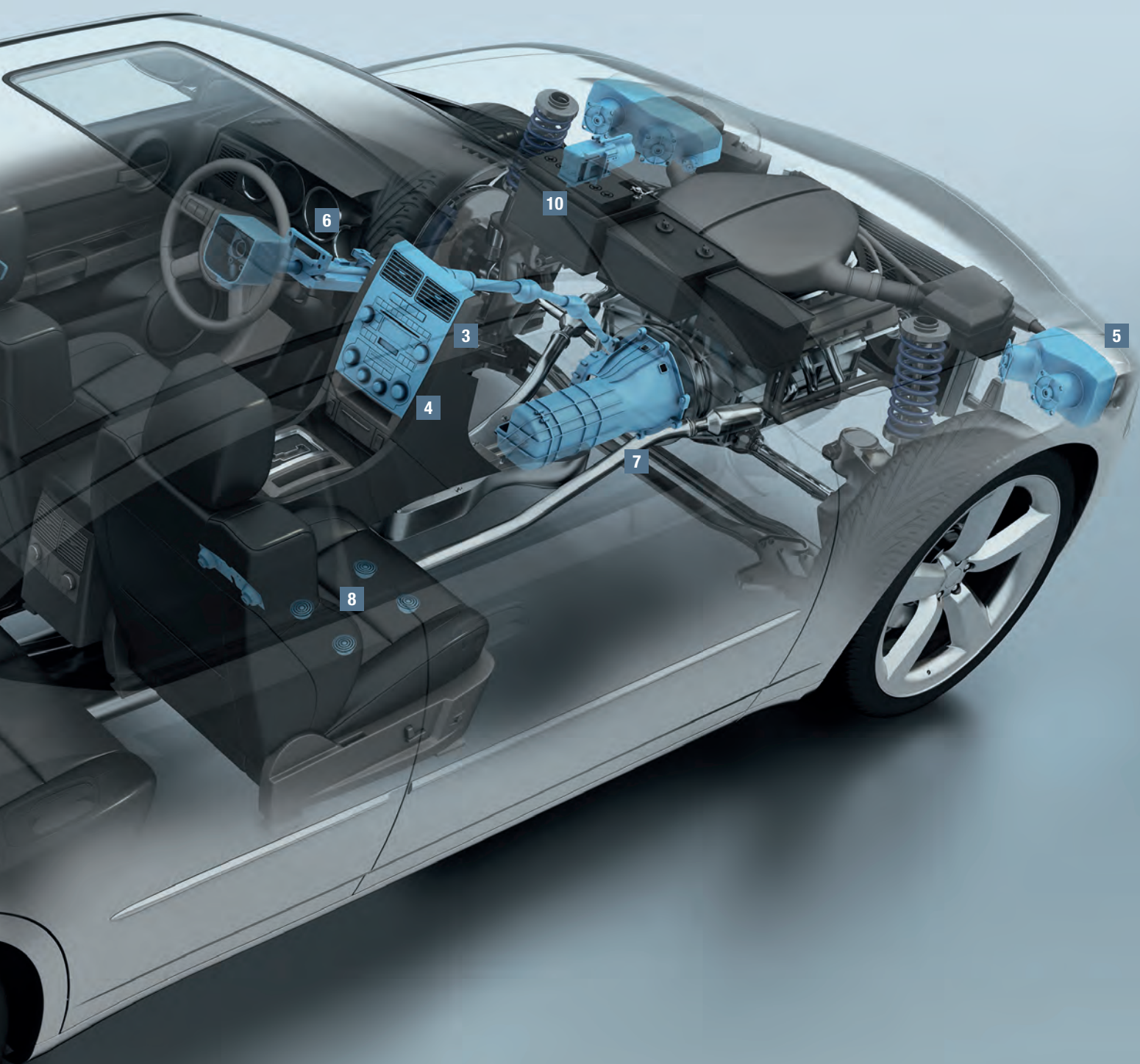


**Examples of applications for ebm-papst products.**

- |                                |                                |
|--------------------------------|--------------------------------|
| <b>1</b> Exhaust gas treatment | <b>6</b> Active front steering |
| <b>2</b> Actuator              | <b>7</b> Pumps                 |
| <b>3</b> Electronics cooling   | <b>8</b> Seat ventilation      |
| <b>4</b> Climate control       | <b>9</b> Head space heating    |
| <b>5</b> LED cooling           | <b>10</b> Auxiliary heating    |









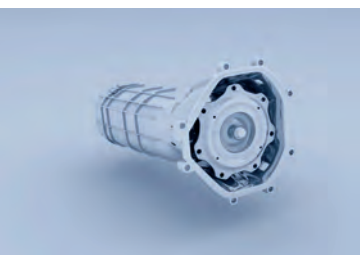
#### 5 LED cooling.

- Compact design
- For use at up to 120 °C
- Low weight
- High-temperature electronics
- Low-outgassing plastics
- Diagnostic signal



#### 6 Active front steering.

- Extremely compact design
- Highly dynamic
- Long service life and reliability
- Contributes to increased driving convenience and safety



#### 7 Pumps.

- Glandless
- Fuel savings
- Long service life and reliability
- High power density
- Resistant to transmission Gearoil
- Complete electronic system



#### 8 Seat ventilation.

- Aerodynamic design in seat / customized
- Noise-optimized
- Optimized for installability
- Low operating noise at high flow rate



#### 9 Head space heating.

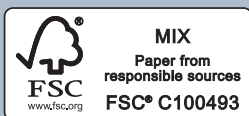
- 3-phase fan drive with very smooth operation
- High pressure build-up
- Diagnostic signal
- Output control
- System integrated in headrest
- Customized housing shape



#### 10 Auxiliary heating.

- Fully integrated solution
- Robust and maintenance-free
- High efficiency, Highly efficient
- Customized design via software and hardware adaptations





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