

# Discover ebm-papst in medical technology.

Innovative ventilation and drive solutions for increased efficiency.

# ebmpapst

The engineer's choice



# About ebm-papst.

*As technological leader for ventilation and drive engineering, ebm-papst is in demand as an engineering partner in many industries. With over 15,000 different products, we provide the right solution for just about any challenge. Our fans and drives are reliable, quiet and energy-efficient.*



## **Six reasons that make us the ideal partner:**

### **Our systems expertise.**

You want the best solution for every project. The entire ventilation system must thus be considered as a whole. And that's what we do – with **motor technology** that sets standards, sophisticated **electronics** and **aerodynamic** designs – all from a single source and perfectly matched.

### **Our spirit of invention.**

We are also always able to develop customized solutions for you with our versatile team of over 600 engineers and technicians.

### **Our lead in technology.**

We are pioneers and leaders in the development of high-efficiency EC technology. Already today almost all our products are also available with GreenTech EC technology. The list of benefits is long: higher efficiency, low maintenance, longer service life, sound reduction, intelligent control characteristics and unrivalled energy efficiency.

### **Closeness to our customers.**

ebm-papst has 25 production locations worldwide (including facilities in Germany, China and the USA), together with 49 sales offices, each of which has a dense network of sales representatives. You will always have a local contact, someone who speaks your language and knows your market.

### **Our standard of quality.**

Our quality management is uncompromising, at every step in every process. This is underscored by our certification according to international standards including DIN EN ISO 9001, TS declaration of conformity and DIN EN ISO 14001.

### **Our sustainable approach.**

Assuming responsibility for the environment, for our employees and for society is an integral part of our corporate philosophy. We develop products with an eye to maximum environmental compatibility, in particular resource-preserving production methods. We promote environmental awareness among our young staff and are actively involved in sports, culture and education. That's what makes us a leading company – and an ideal partner for you.

# Powerful, reliable and application-specific.



## 100% quality inspection

*Despite the fact that all products and production processes are optimized to ensure top quality, every drive and fan is subjected to 100 per cent final inspection on the production line in accordance with the applicable medical test requirements. All the necessary equipment is available in in-house test laboratories. This enables both simulation and practical testing to be performed on the components developed using state-of-the-art computer programs. The findings obtained are then incorporated into the further development of the components to ensure perfectly matched and highly reliable products. The medical components are real winners in terms of environmental protection as well: In line with the company's GreenTech philosophy they are produced using as little material and energy as possible and are of course soldered without the use of lead. The highly efficient operation and low energy consumption of the drives are the perfect complement to the resource-preserving design of the fans and drives.*

### **Customized air flow.**

All axial, centrifugal and diagonal fans are designed for years of reliable, maintenance-free operation. Heavy-duty fans are available for demanding applications involving extremely high mechanical stress, for instance to provide cooling in the rotor of a CT scanner with acceleration rates up to more than 50 times the acceleration of gravity or for use in analyzers requiring particular protection against corrosion. In addition to versions with stainless steel ball bearings other options include vacuum-cast windings and electronics or protective varnishing for circuit boards, to name but a few. External or integrated sensors, with the Variofan models for example, automatically regulate the air flow depending on the temperature or humidity and there is no need for external control. Particularly inner rotor motor fans permit the operation of CPAP machines in bedrooms, ensuring a rapid pressure build-up matching the breathing frequency to fill the lungs – and the units are quiet enough to ensure undisturbed sleep.

Our many years of experience with successful BLDC and DC drive systems in the field of dialysis systems, incubators, electromechanically adjustable high-end operating tables and many other applications qualify us as a preferred supplier. As such we are ideal partners not just for the big players in the medical technology sector, but also for innovative small and medium-sized companies.

In many cases use can be made of a modern electronically commutated drive such as the VDC-3-49.15-K4, offering maximum efficiency alongside great functionality and a compact design, making it an ideal drive system in combination with low-noise gearboxes.

### **Customized drive engineering.**

Drive engineering has to satisfy a wide range of different requirements in medical equipment, but custom designed drive units are usually expensive. Which is why the specialists at ebm-papst decided on a system with modular design. This offers the advantage of economical mass production whilst allowing users to combine the modules to form a drive system perfectly matched to their applications. The system concept not only encompasses motors, sensors, gearboxes and brakes, but also the control system and, where required, the complete assembly of all mechanical components to form a drive system.

# ebm-papst technology in medical technology:

One of the challenges encountered in medical technology is to design complex devices requiring a minimum of space. The demand for a small size arises from a desire to make the devices as compact and user-friendly as possible. As new products are packed with even more functions, there is a need for them to be both compact and efficient.

This calls for specialist expertise to create an optimum ventilation and drive engineering system concept: Even the most efficient compact technology generates waste heat which has to be dissipated. High-performance, and highly efficient low-noise fans with a long service life can be a real help. Just as important are small, powerful, efficient drives offering extremely precise control. Nowadays, a modern operating theater without such equipment is virtually unimaginable.

## The advantages at a glance:

### 1 Incubator for newborn babies.

- Long service life and low operating noise
- Protection against humidity
- Integrated operation and control electronics
- Wide range of speeds
- Very smooth running



### 2 Wheelchair.

- Efficient drive for longer ranges
- Multiple drive overload possible
- Very compact, light design
- Distinctive dynamic



### 3 Walker.

- Efficient drive for long battery life
- Low cogging torque
- With external operating electronics
- High efficient motor and gearbox
- Compact design



### 4 CPAP-breathing devices.

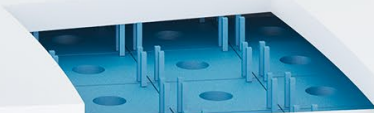
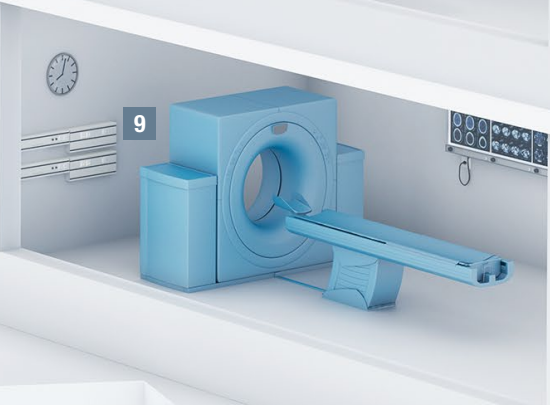
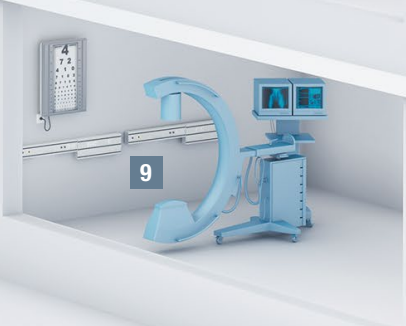
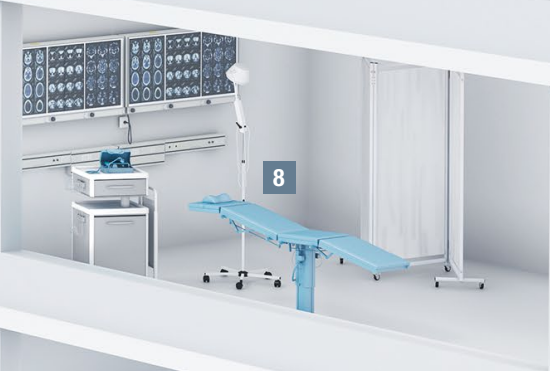
- EC-technology with slotless stator design
- Extremely silent running, no cogging torque
- Determination of rotor via 3 Hall sensor  
Option: motor without sensors for sensorless operation
- Precision ball bearings for long service life and silent running
- NTC can be fitted on request
- Very suitable for high speed applications





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

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| <b>1</b> Incubator for newborn babies | <b>6</b> Leg splint                   |
| <b>2</b> Wheelchair                   | <b>7</b> Patient lift                 |
| <b>3</b> Walker                       | <b>8</b> Operating table              |
| <b>4</b> CPAP-breathing devices       | <b>9</b> CT scanners and MRI machines |
| <b>5</b> Dialysis-Blood pump drive    | <b>10</b> Fermenter                   |



**The advantages at a glance:**

**5 Dialysis-Blood pump drive.**

- Low operating noise
- Long service life and high reliability
- Optimized braking characteristics for high-efficiency dialysis
- Drive with IP54 protection
- Wide range of speeds

**6 Leg splint.**

- Compact design
- Low operating noise
- Drive system with good control characteristics
- Long service life and high reliability

**7 Patient lift.**

- High efficiency due to high overall efficiency
- Compact design
- Load-dependent friction lining brake for patient safety
- Low operating noise
- Application optimized gearbox version

**8 Operating table.**

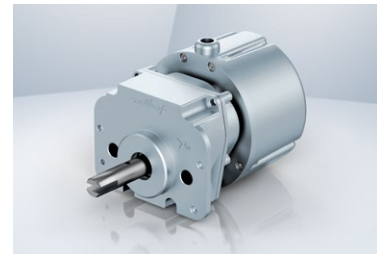
- Long service life and high reliability
- Low operating noise
- Brief overload possible
- Very compact design
- Fulfills EMC requirements
- Integrated operation and K4 control electronics

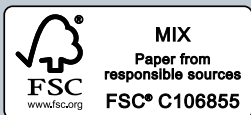
**9 CT scanners and MRI machines.**

- Reinforced bearing system to withstand high g-forces
- Customized control input options
- Long service life and high reliability
- Wide product portfolio
- Low operating noise

**10 Fermenter.**

- Wide control range
- Soft start
- Field-oriented control for very low speeds
- Integrated operation and K4 control electronics





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