

CASE STUDY

Vehicle climate control

Automatic climate control systems depend on sensor blowers from ebm-papst

Automatic climate control systems are increasingly becoming standard equipment in today's cars. These immensely popular systems are taking over both the premium class and the high-volume segment. Compact sensor blowers with integrated or external measuring sensors form the technological basis.

Climate control for new automobiles places ever higher demands on the development of climate technology. The well-being of passengers depends on the ideal balance of many climate factors: Temperature, air movement, humidity and solar radiation must be managed efficiently. With the reliability and precision of a Swiss watch, sensor blowers provide the right temperature for maximum comfort. Quick-acting and highly reliable, they do their job in a variety of locations – without any need for passenger intervention. Developed cooperatively by ebm-papst and system partners, the active ventilation principle prevents measurement errors, transmits temperature information in mere seconds, and ensures that the automatic climate control system keeps the interior temperature of the vehicle at the manually set level by detecting a wide sample of interior temperature values. Sensor blowers from ebm-papst are used by virtually all leading domestic and international automakers as a technology for transmitting information to the vehicle's climate control system.



In the climate or roof control units of many makes of vehicle, sensor blowers accurately detect the interior temperature of the vehicle. Alternative variants of these tiny blowers, equipped with independent operating electronics, can also be used at any desired location in the instrument panel or rear passenger area.



Intelligent technology provides a stable climate

Regardless of season, outside temperature or sun intensity, sensor blowers from ebm-papst provide climate control that adapts to the comfort of the passengers. The well-engineered ebm-papst solution sets new standards for noise emissions, temperature constancy and quality of control. Electronically commutated external rotor motors are used as the drive units. The advantages of this motor type include low-noise performance, durability and reliability.

The quality of a bearing system is the critical factor that determines its service life and running smoothness. Sensor blowers are equipped with ebm-papst Sintec®-compact bearings, a sleeve bearing system that defines the technical state of the art in vehicle applications with its low-noise behavior and shock resistance.

The plug-in version: easily and efficiently integrated into the control system electronics of climate control units or roof lamps.

Modular system provides flexibility of use

Greatly fluctuating temperatures in the passenger compartment, extreme solar radiation, open windows and different temperature values in the driver and rear passenger areas require highly developed measuring systems. The faster and more precise the measurement, the more efficiently the climate control system can work. If even greater accuracy in measurement is required, particularly in large passenger compartments or vehicles with individual seating zone climate control, sensor blowers work hand in hand in a single control system. The temperature sensors at various locations in the interior of the vehicle play an active role in controlling the climate control system. Different applications in this area require different adaptation options. Supported by a painstaking search for improvement potential and the desire to match customers' wishes as closely as possible, a modular system is being developed which unites individual features and adaptation options in a building block system. This will make it possible to fulfill the demands of the market quickly and flexibly.

Requirements for automated climate control systems

- ▶ Noise emissions below 24 dB(A) at a microphone distance of 10 cm during operation with unimpeded airflow.
- ▶ High operating reliability in the electronically commutated motor within a temperature range from -40 to +95 °C.
- ▶ Sensor blowers have to be compatible with the on-board electronics and conform to EMC directives. Assembly and contacts must be implemented in a way that ensures process reliability.
- ▶ The systems are to exceed the service life requirements of the automotive industry.
- ▶ Continuous process monitoring during manufacturing and traceability of each individual product by date code.

Engineering partner of the automotive industry

As an engineering partner of the international automotive industry, ebm-papst contributes its knowledge and skills in drives and fans to a wide variety of areas in automotive development. Sensor blowers, seat ventilation fans, BLDC drive systems and fans and climate control components for the commercial vehicle industry ensure higher performance and increased driving comfort. Ventilation components enhance the reliability of electronics cooling, instrumentation and audio and navigation devices, as well as complete telematics and multimedia applications.