CASE STUDY

Seat ventilation

Fan technology from ebm-papst powers seating comfort in the new S-Class

The increasingly compact design of car seats places complex requirements on climate management. Manufacturers of a variety of components have contributed to significantly increased seating comfort in the new S-Class. With ebm-papst's expertise in the area of fans, a perfectly air-conditioned seat has been developed that regulates the constant exchange of air between body and seat.

Mercedes drivers expect to stay cool in their cars. To make this possible, fan engineers occasionally break out in a sweat in their work. This is particularly true when the performance specifications include a long list of requirements, such as the least possible vibration, optimum air flow, and great robustness and a long service life of the active seat ventilation. Another critical point was easy integration of the fans into the smallest possible space.

In the new S-Class, as in its predecessor, DaimlerChrysler uses the fan expertise of ebm-papst. To provide new means of comfort in seat ventilation, fan developers must look for new solutions deep inside the seat. The air exchange created by the climate control system can only reach the front of passengers' bodies. Air cannot circulate behind them to cool their backs. Particularly in the car seat area, external environmental factors such as outside temperature, solar radiation and humidity can result in more extreme climate conditions than those in other areas of the vehicle. Perspiration that is not drawn away causes discomfort and, even in an air-conditioned car, can lead to painful muscular tension during long trips. It can also cause back problems and pain in the abdomen and kidney area. Small fans from ebm-papst are on duty to prevent this whenever possible. Though the seat has two fewer fans compared to the predecessor model, the total output is slightly higher.

With up to eight small ebm-papst fans integrated into the seat, heat and perspiration are gently drawn away.

ebmpapst

Small fans from ebm-papst are the heart of the S-Class seat ventilation system.

With active seat ventilation, sweaty driving is a thing of the past. The starting points for the development partnership with Mercedes-Benz were three central requirements that could be solved by ebm-papst fans: continuous heat exchange between the body and seat, prevention of trapped moisture, and gentle ventilation of clothed body surfaces. In the new S-Class, ebm-papst's development expertise was particularly useful in the area of heat exchange. Because of the air supply over a wide area, which can be adjusted in three stages using fan controls, the surface of the seat stays dry at all times. The arrangement of the fans and the design of the air circulation, together with the different seat materials, play a special role in the seat ventilation. The active air supply cools clothed body surfaces while simultaneously carrying away moisture from the inside of the seat. In large part this is made possible by newly developed small fans, which feature more power in the smallest possible space, especially quiet running, stable torque and continuous pressure buildup. With up to eight small fans integrated in each seat, the seat cooling of the S-Class creates a kind of wellness center for the driver and front and back seat passengers, providing lasting comfort in contact with the seat – and creating a microclimate that gives a new feeling of well-being while driving. For all of these reasons, the current S-Class is the leader among cars in the area of seat ventilation.

Seat ventilation in the new S-Class

Together with DaimlerChrysler, ebm-papst developed the seat ventilation fans for the new S-Class. Up to 8 small fans, between 40 and 60 mm in diameter and built into the seat and backrest, provide the occupant with an optimized climate. Equipped with brushless EC motors, the air-conditioning system is quiet, intelligently controlled and extremely durable. The technology used here defines the standard of future seat applications, both for the premium class and other automotive segments – as well as commercial vehicles including trucks, tractors and even construction equipment.