

COMFORT AND SAFETY THROUGH WARMTH – ELECTRICAL SUPPLEMENTAL HEATERS FOR AUTOMOBILES







Japan



USA

SOLUTIONS AND INNOVATIONS FOR TODAY – AND FOR TOMORROW

More comfort and safety through warmth – from the world market leader: when it comes to the decisive plus in heating comfort and the operational safety of important technical components, Eberspächer catem is on the scene throughout the world. Whether your needs are for supplemental heating for vehicles with optimised fuel consumption or for forward-looking solutions for warmth and safety – in the future as well, we will be driven by one main motivation: the power of innovative ideas.

A POWERFUL COMBINATION – WORLDWIDE:

Eberspächer catem GmbH & Co. KG, was founded in 1998 and is a wholly owned subsidiary of the world-wide active automotive supplier Eberspächer. The overall aim of Eberspächer catem was and is to respond optimally to the rapidly growing requirements for electrical heating systems. Within the shortest of times Eberspächer catem secured itself a leading position in the development, production and sales of electrical supplemental heaters for automobiles. With its customer-oriented service philosophy and trend-setting solutions which satisfy new requirements as they occur, Eberspächer catem is still advancing right out in front. In order to satisfy the desires of customers for intensive local support and following the trend to internationalisation, subsidiaries in China and Japan were founded. In the USA Eberspächer catem has already been represented for many years with an office in Detroit.

CONCENTRATED KNOW-HOW:

The fuel-burning supplemental and pre-heaters built by Eberspächer have for many years been the first choice of well-known auto-producers all around the world. Eberspächer also counts as one of the largest manufacturers of automotive exhaust systems. Likewise, the principle of the electric heating element – the core competence of Eberspächer catem – is based on long years of technological experience. The dynamic constellation within the Eberspächer group is a guarantee to auto-makers all over the world of the highest degree of competence, performance and innovation.

OUR PRODUCT PORTFOLIO:

- Electrical supplemental heaters for vehicles with optimised fuel consumption (diesel, gasoline and hybrid drives)
- Electrical heating systems for vehicles with hybrid, electrical and fuel-cell drives
- PTC air and coolant heaters with and without integrated power electronics
- Decentralised modules and systems
- Standard programme in three sizes
- Customer specific solutions taking into account individual requirements





ALWAYS ONE STEP AHEAD

Market leadership means always to be one step ahead technologically and always to be where customers need us – in Europe and the USA as well as in the Far East. Whether your needs are for electrical supplemental heaters for diesel or gasoline engines with optimised fuel consumption, for hybrid vehicles or even fuel-cell driven vehicles: we always have the requisite solution available. World-wide there are already millions of vehicles with Eberspächer catem supplemental heaters in service. They all have one thing in common: the best possible heating comfort – with the best possible safety.

OUR PHILOSOPHY:

We can only maintain our leading position in the market with satisfied customers. Consequently it is our goal to satisfy the requirements of our customers to the full with the quality of our products and services, whilst taking into account all relevant environmental aspects. The implementation of a far-sighted quality policy, a continual improvement process, clearly defined business processes and the pursuit of zero-fault production are on-going and zealous practices at Eberspächer catem.

THE MAINSTAYS OF OUR QUALITY POLICY ARE:

- To promote the commitment and satisfaction of our employees through an open management style, delegation of responsibility and systematic further training.
- Maintain and expand our competitive advantage through the development of innovative, technologically superior and highly safe environmentally friendly products.
- The assurance of purchased parts of flawless quality through collaboration with and the early involvement of reliable sub-suppliers.
- Improvement of our production systems and processes through the expansion of applied production techniques, raising the productivity and reducing the production costs.
- Continual improvement of overall quality through further development of an appropriate QM-system and compliance with all contractual commitments regarding quality, costs and delivery dates as well as competent customer support in all aspects of product utilisation.

CERTIFICATION:

We are certified to DIN EN ISO 9001:2000 and ISO/TS 16949:2002.







ENVIRONMENTALLY ORIENTED INNOVATIONS – FOR MORE COMFORT AND SAFETY

The increasingly onerous requirements for environmental protection and reduction of CO₂-emissions present the auto-manufacturers with an extremely challenging task. PTC air heaters from Eberspächer catem ensure that the highly improved efficiency of modern environmentally friendly engines is not to the detriment of the heating comfort. Eberspächer catem offers the suitable components for practically every application – and is working permanently on new, innovative solutions.

THE PROBLEM:

Spurred on by up-coming stricter environmental protection legislation, one of the main goals of engine development is to reduce fuel consumption and harmful emissions. The improved efficiency of the newly developed internal combustion engines with optimised fuel consumption leads inevitably to a deficit in heat dissipation. Especially during operation at idle or partial power (city traffic, traffic jams), a lack of heating in the passenger compartment and a perceptible reduction of comfort results which is not acceptable to the customer.

THE SOLUTION:

Eberspächer catem PTC air heaters can be designed and produced in the specific size required for integration into the ventilation or HVAC module.

THE DESIGN:

The central feature of the design is the mechanical layout of the PTC air heater. The PTC thermistors lie in a layered configuration on the radiator elements or contact plates. The module-type assembly is kept under tension by a spring element, which guarantees a secure electrical and thermal contact of the thermistors to the surrounding parts over the complete lifetime of the heater.

TYPES OF CONNECTION:

The electrical connections of the heating elements can be integrated onto the outer frame in a multitude of ways, e. g. on the side, on the front, from above or below and as direct plug connector, as screw connector or as cable/connector system. In this way the various positioning and layout configurations of the ventilating or HVAC module can be accommodated.

THE POWER RANGE:

The power dissipation of the PTC air heater is dependent upon the available power from the vehicle electrical system. The currently usual 13 V systems enable heating powers up to approx. 2 kW. However, this of course is not yet the last word: Eberspächer catem is already developing today PTC air heaters for high voltage applications in conjunction with the worldwide leading OEMs and HVAC module manufacturers.

GROWING DEMANDS FOR CLIMATE COMFORT IN THE VEHICLE:

- In spite of the ever more frequently encountered heating deficit in automobiles, the occupants wish for the fastest possible creation of a pleasant climate inside the vehicle.
- Whether large or small – Eberspächer catem can deliver a tailor-made solution for every vehicle for a flexible, space-saving, cost-saving, integrable heater.
- The close, partnership-like cooperation with the development departments of all significant automobile manufacturers forms the basis for optimal solutions





APPLICATIONS FOR HYBRID, ELECTRICAL AND FUEL-CELL VEHICLES – FOR A SAFE FUTURE

In the future, the world-wide market share of electrically powered and electrified vehicles respectively will increase significantly. In the first instance this will be driven by the success of hybrid technology, but also the growing number of electrically and – long-term – fuel-cell powered vehicles. Their lack of excess heat emitted into the passenger compartment results in a perceptible reduction of comfort for the passengers. The solution to this problem is offered by the safe technology from Eberspächer catem.

Compact electrical supplemental heaters with heating capacities up to 12 kW for a voltage range up to 500 V can be fitted even when the installation space is limited. Eberspächer catem can draw on its extensive experience from numerous development and series projects. Power electronics tailored to the requirements of electrically driven vehicles and complete with bus communication have already been developed up to series readiness in order to be able to control the heating power according to the respective requirements.

Eberspächer catem PTC heating elements are the ideal solution especially for hybrid vehicles. They can easily be adapted to different voltage ranges and are available in a broad scope of capacities. For these specific applications, Eberspächer catem offers PTC air heating elements as well as PTC coolant heating elements.





PTC AIR HEATING ELEMENTS FOR DECENTRALISED APPLICATIONS – HEATING COMFORT OF A NEW DIMENSION

The shortest of heating-up times – even for the somewhat longer vehicle: this is an argument which convinces demanding car passengers on a broad scale. For this you need PTC air heaters – made by the world market leader Eberspächer catem. These intelligent systems can be installed strategically in various positions in the passenger compartment – and thus provide each passenger with the exact degree of warmth he desires – without detours and within seconds.

RAPID WARMTH IN EVERY PLACE:

Measured against the conventional heat distribution from a central source, the ability to generate warmth at various positions in the vehicle directly where required by the end customer represents clear advantages. There are many conceivable possibilities for the positioning of the PTC air heaters, for example in the B-pillar or under the seats. This however does create a demand for a very compact design due to the usually limited installation space.

EBERSPÄCHER CATEM – THE SYSTEM SUPPLIER:

By reason of the very small installation spaces which are available, Eberspächer catem has developed system solutions, in which the PTC air heater can be supplemented as required by power electronics and/or a fan. The coordination of the individual components is carried out taking into account the high heat density requirement, the highest possible safety and low-noise operation – challenges which Eberspächer catem successfully met in the implementation of the Airscarf® for the Mercedes-Benz SLK Roadster.

THE ADVANTAGES:

- Rapid and optimal heating of the vehicle passenger compartment
- Homogeneous heat distribution
- Maximum safety due to the PTC effect
- Minimal installation volume
- Trouble-free distribution of energy via the vehicle electrics
- High heat density (up to 300 W in the smallest of volumes)
- Switching via relays or stepless switching using power electronics

THE PRINCIPLE:

- Decentralised installation of Eberspächer catem PTC air heaters at various positions in the vehicle
- Heating-up of the complete passenger cell to a comfortable temperature in the shortest of times
- Independently of where the passenger sits: the warmth reaches him directly without delay
- Especially for rear-seat passengers this represents a decisive improvement







A NEW GENERATION OF PTC SUPPLEMENTAL HEATERS

The design of our PTC air heaters is based on a maximum degree of automation in the production process. Components were eliminated using clever technical solutions thus reducing the total number of individual parts. Hence they represent a highly economical and weight saving solution for our customers. The system of sealing the contact surfaces which was newly developed by Eberspächer catem provides protection against the most aggressive of environmental influences.

EBERSPÄCHER CATEM IS SETTING STANDARDS:

In order to address the future market requirements in regard to volume concentration, platform strategies, reduction of investment and higher efficiency, Eberspächer catem has developed a standard programme of PTC air heaters. Eberspächer catem is the first manufacturer of PTC air heaters to make a standard product available to customers for this field of application.

THE IDEA:

A systematic survey of the global PTC market in respect of application in the HVAC module was carried out in order to analyse the technical and economic requirements of the manufacturers of both HVAC modules and automobiles. An analysis was made of the installation size, heating power requirements and the electrical interface to the vehicle electric system.

THE OUTCOME:

The result of this study is a product programme embracing just three standard sizes which offers an economically optimal solution for practically every HVAC module and vehicle.

THE ADVANTAGES:

- A minimum of investment
- The development activities are reduced right down to the application in the HVAC module
- Low, economical unit prices even for small quantities
- Short development times

CUSTOMER-TAILORED SOLUTIONS:

Of course, Eberspächer catem will continue to offer its customers individual solutions as before. The PTC air heaters can still be tailored to specific customer requirements in regard to installation volume, heating power, interface etc. The technical innovations ensure long term cost-effectiveness equally as well for the customer-specific solutions.



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