



**HEATING ELEMENTS
AUTOMOTIVE**

Heated Crankcase Ventilator Unit



Fuel Pre-heater Unit



Heater for Thermostat Element

CUSTOMER FOCUS

Eichenauer is active in over 45 countries in Europe, Asia, North and South America as well as in Australia. With over 30 sales offices worldwide, we are nearby, wherever you are. We speak your language! Our local representatives have the technical ability to assist you.

Our manufacturing sites are situated where they are most needed: in Germany, the Czech Republic and the USA.

Steering Wheel Heater



Washing Water Heating



LEADERS IN TECHNOLOGY • INNOVATIVE • COMPETENT



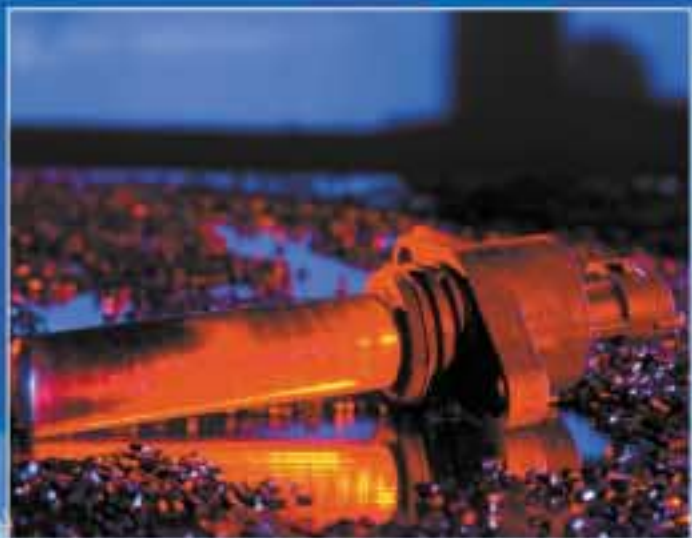
Eichenauer's Headquarter in Hatzenbühl/Pfalz.

USE OUR YEARS OF EXPERTISE TO YOUR ADVANTAGE

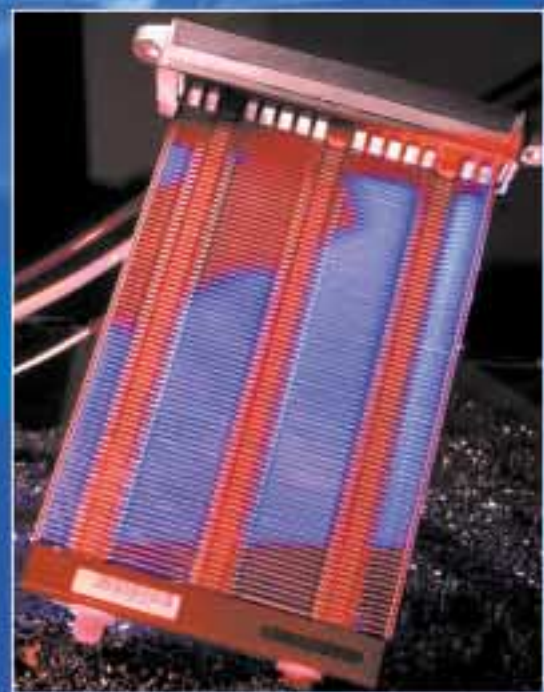
Our special expertise: The development, manufacture and sales of electric heating elements for domestic appliances, automotive and various industrial applications. Eichenauer Heizelemente - a resourceful and reliable partner.

A company at the forefront of technology, welcoming the challenge of innovation, succeeding consistently over 75 years. Over 100 patents applied and registered designs last years reflect the company's position as leader in the field of heating technology.

Heating Element for Corrosive Media



Fluid Heater



Interior Car Heater Unit

QUALITY BY THE MILLION

We supply large companies all over the world with state-of-the-art heating technology. These customers of course expect first-class quality in high quantity. For the harmonization of quality there are norms such as TS 16949. We comply with and are certified to this norm. Yet more important than this is the inner commitment to continuous improvement, in order to provide optimal quality and process reliability. We achieve this quality 150 000 times a day on our most modern production lines.

THE PTC-HEATING ELEMENT

In one function:

- heating
- control
- safety



Principles of function:

The main advantage of PTC-heating elements is its unique temperature-resistance characteristic. The conventional components for temperature control and thermal safety are no longer required.

The high duty PTC-elements show an extremely positive degree of electrical resistance related to temperature (see figure). This gives the name: **PTC** \triangleq **P**ositive **T**emperature **C**oefficient. The heating elements are rated to give an operational point mainly in the low ohmic range of the R/t characteristic. Due to the low resistance, the resultant high heat outputs are within this characteristic.

This self regulating feature controls the output of the PTC-heating element based on the required temperature. This allows a very sensitive temperature control of the material to be heated.

For the required operating temperature, the output depends on the heat transfer of the PTC.

Construction:

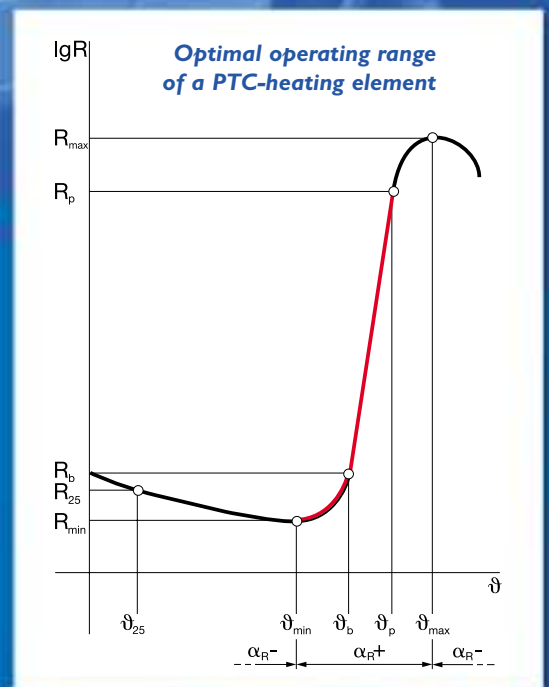
PTCs are made from doped, polycrystalline ceramics with bariumtitanate as the basic component. The usual PTCs have a flat shape. The large interfacing surfaces are metal coated.

The metal electrodes placed on these surfaces allow the current transfer to the PTC and take, at the same time, heat from the PTC elements.

The assemblies are inbedded in an insulation compound with good heat transfer and electrical insulating properties.

Application:

PTC-heating elements are used in cases where heating, excess temperature protection and other controls and regulating components have to be fitted in a small space. Very often this solution proves the most economic.



Advantages:

- compact heating element with high power density and operational reliability
- low weight - small air resistance
- self-regulating, safe temperature limitation of the heater's surface temperature in operation and failure, without additional excess temperature protection
- high operation reliability by omitting active components, as controls/excess temperature protection, switches etc.
- long life - no maintenance needed
- EMC / ESD proved
- without glowing parts, without fire risk



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