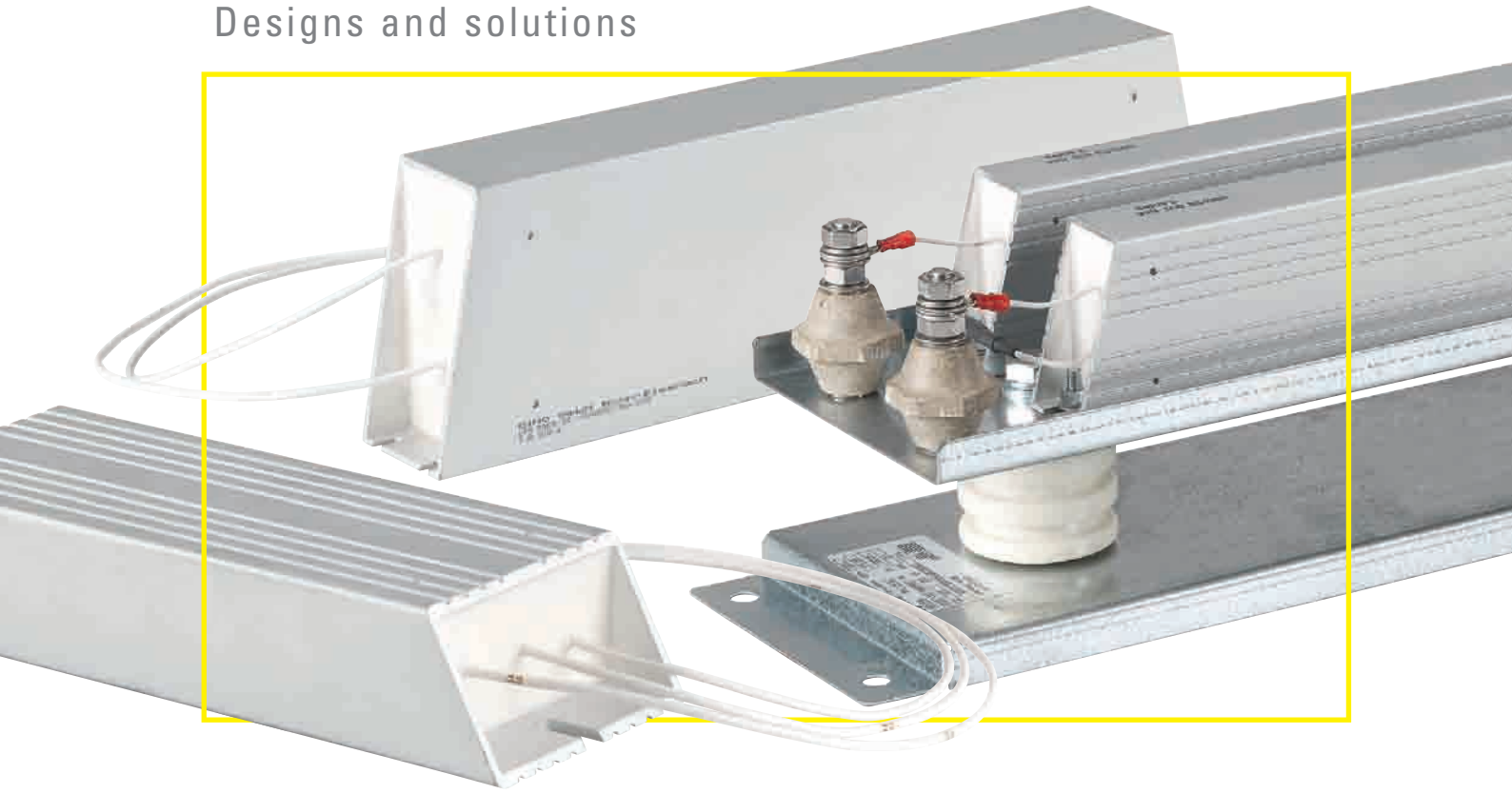
Enclosed

High-Performance Resistors

Designs and solutions



- Fully enclosed design
- Type of enclosure IP54/IP65
- Pulse-proof, high overload capacity
- Low inductivity
- Robust, durable and vibration-proof
- With or without protection against accidental contact
- Combinations and special solutions

GINO ESE

Enclosed high-performance resistor profiles

System VPR

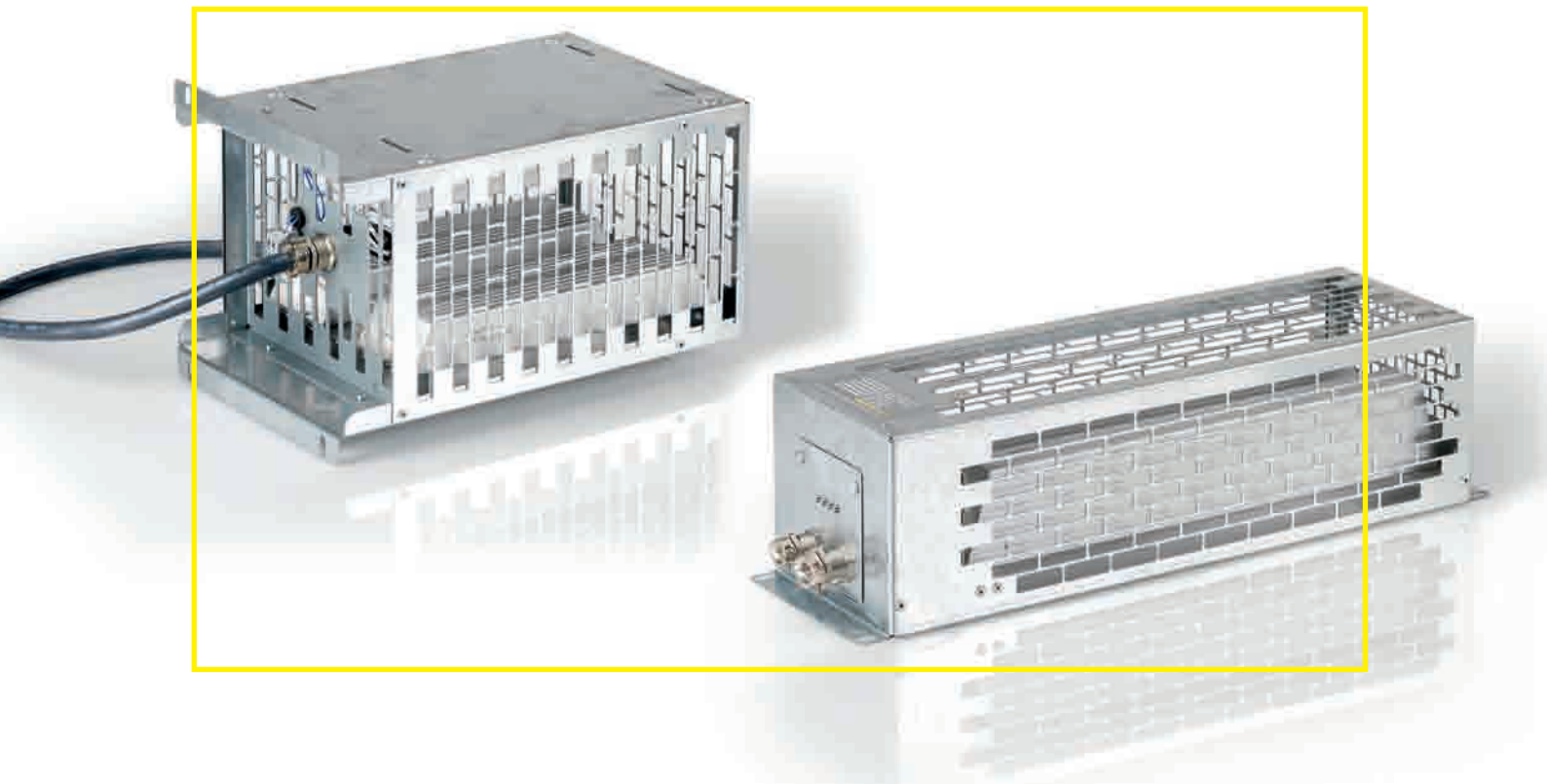
VPR resistors are enclosed in an aluminium profile with PTFE insulated connecting wires of pure nickel. The designs S = vertical and L = horizontal are available.

The resistors can be mounted as standalone units or on a mounting base. The mounting area must be resistant to the intended operating temperature, and flame-retardant. Any installation location is possible, optimum cooling conditions are achieved in vertical position with the connecting wires at the lower end.

- Type of enclosure IP65
- Permanent performance from 60 W to 500 W and 800 W to 1500 W
- Operating voltage: 800 V up to 200 W, 1000 V > 200 W, in special design also 1500 V
- Test voltages up to 2.5 kV or 4 kV, in special designs also up to 6 kV
- Vibration-proof up to 4 g
- Tensile strength of wires 100 N
- Resistant to climatic conditions and rupture-proof
- Dimensions from 102x40x21 mm to 337x60x31 mm or from 340x50x100 mm to 700x50x100 mm

VPR profiles in various housings

System DEG

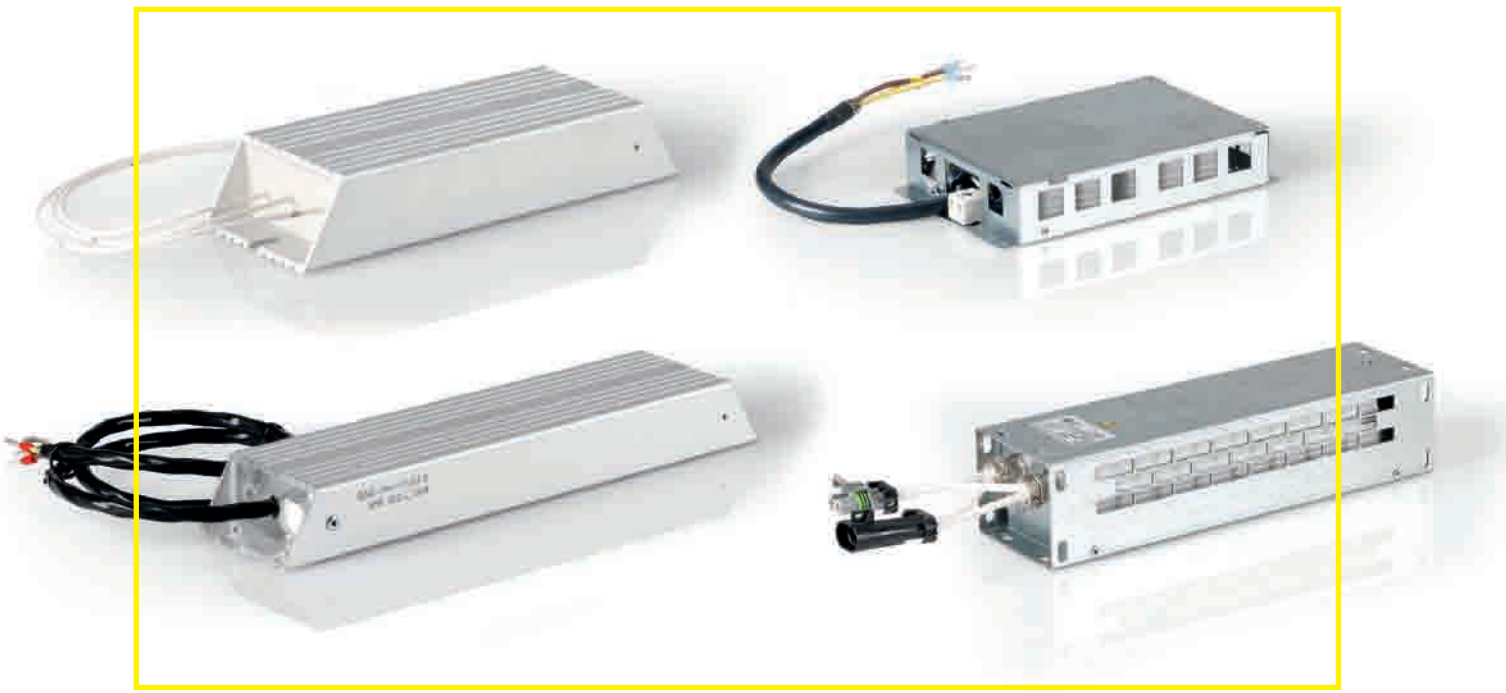


The enclosed resistors can be combined in various housings. Due to their design, the DEG types are also suitable for operation in high humidi condition. In the standard design, the resistors are mounted on a terminal block so that the resulting type of enclosure is IP20 or, with connection box or connection line, IP54. Cable entry is ensured through cable glands.

- Resulting type of enclosure IP00 to IP54
- Permanent performance from 100 W to 4000 W
- High overload capacity in short-term operation
- Operating voltage: 800 V up to 200 W, 1000 V > 200 W, higher voltages available in special designs
- Test voltages up to 2.5 kV or 4 kV, higher test voltages available in special designs
- Resistor profiles can be combined
- Vibration-proof and impact-proof
- Resistant to climatic conditions and rupture-proof
- Optional temperature monitoring

Special designs

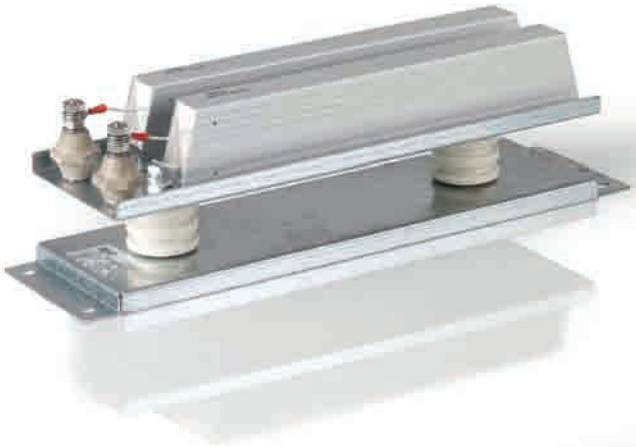
Systems VPR and DEG



Different requirements are to be met by special, customer-specific solutions. Enclosed resistor profiles are also available in three-phase design and integrated star-type jumper or equipped with a shielded connecting line. The flexible application range is rounded off by project-specific assemblies and housings for direct installation underneeth the frequency converter.

Applications:

- Precharging and discharging resistors, e.g. for capacities
- Voltage-limiting resistors and series resistors
- Three-phase load resistors
- Assemblies for the traffic sector
- Automotive applications
- Housings for substructures
- Braking resistors

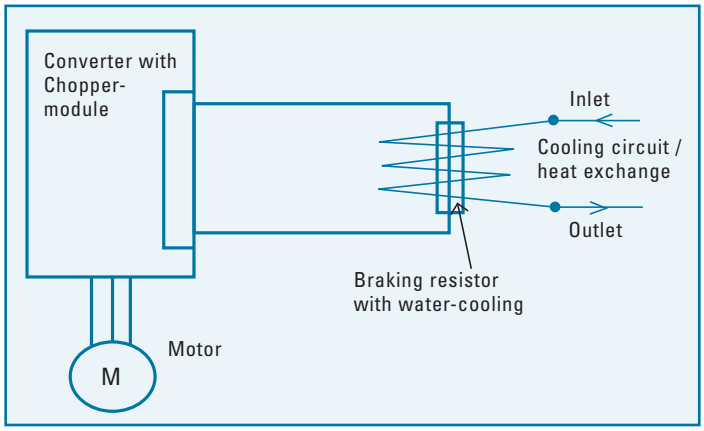


Other technical data as for VPR ... resistors or DEG ... housings.

Water-cooled resistor solutions

System VPR-W

By using water-cooled resistors, the heat development that usually occurs at the location of use is prevented. During braking processes, the electrical drive energy is converted to heat energy. This heat energy is absorbed by the water and can be re-used. Whereas in smaller resistor systems the cooling water is routed directly through the resistor profile, heat exchangers are used in resistors with a power > 50 kW.



- Cascadable installation possible
- Performance range from 4 kW to approx. 500 kW
- Great application variety, including mining technology
- Clearly improved energy efficiency
- Various designs and systems
- No heat dissipation to the environment
- Application also in explosion-hazardous areas

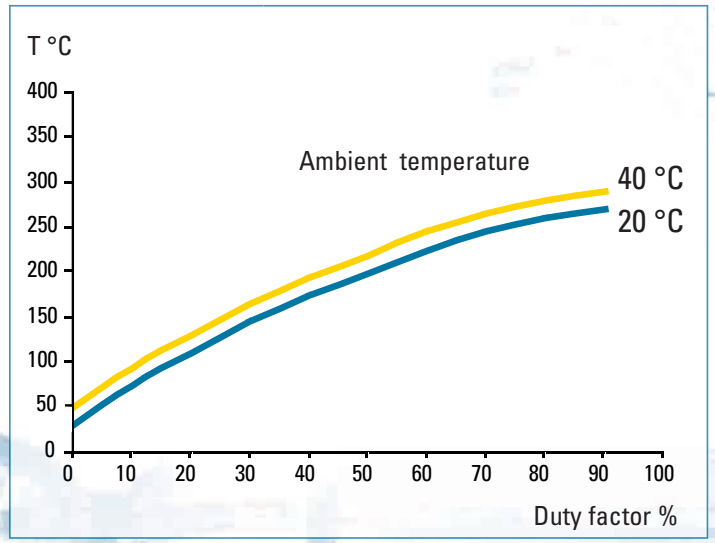
Information about optional

UL mark

Our enclosed VPR... resistor profiles are already UL-certified up to the size of VPR500... so that marking with the cUR mark according to our UL File E221095 is permitted. A number of housing combinations DEG... and special designs are likewise covered with the cUR certificate according to the UL File.

Surface temperature on housing of VPR

resistors



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