

THE POWER OF
ELECTRIFYING IDEAS

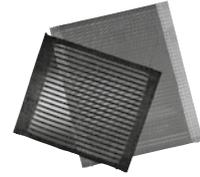




ELECTRIC RESISTOR TECHNOLOGY

In the product area **electric resistor technology** we develop and manufacture customised high power and high voltage resistors for various applications include filtering and damping circuits in HVDC and FACTS systems and can look back on a high number of successful projects worldwide.

Our specially designed testing and charging resistors are often used in test fields and accredited testing institutes such as PTB, KEMA, IREQ, CERN, Max Planck, etc. trust in our knowledge and experience.



CSN® Schniewindt-Grid

CSN® Resistor Web consist of resistor wire wound meander shaped building grid together with temperature resistant insulating thread. They are the ideal for high voltage and power resistor applications in test fields and high voltage resistors.



CSN® Filter- and Damping Resistors

CSN® type filter and damping resistors are used in HVDC transmission plants, in compensation equipment (SVC, MSCDN, STATCOM) and for the damping of capacitors and reactors. CSN filter and damping resistors are designed for high continuous power and ultra low space requirements along with low inductance.

CSN® Testing and Load Resistors

CSN® Testing and load resistors are used for testing and loading of generators, emergency generators and dc systems or capacity testing of accumulators.



CSN® Brake Resistors MV

CSN® Braking Resistors are used for the controlled braking of every kind of electric drives. Braking resistors convert the kinetic energy of drives into thermal energy which will be released to the corresponding cooling medium.

CSN® Neutral Earthing and Discharge Resistors

CSN Neutral Earthing Resistors are used at Power distribution systems for the star point earthing of generators or transformer windings.

CSN® Discharge Resistors are used for discharge of Capacitors, reactors and superconducting magnetic field coils. They are characterized by a high dielectric strength and energy absorption capacity.



CSN® High Voltage Resistors

CSN® High Voltage Resistors are used as Pre-Insertion resistors for limitation of transients during energisation process of transformers and HVDC VSC converter applications. They are also used as Damping Resistors for the damping and the compensation of capacities and inductance.

CSN® High Voltage Resistors are designed and manufactured individually to customer requirements and specific application.



ENERGY TRANSMISSION

In the product area **energy transmission technology** we offer solutions for voltage and/or current measurement based on well proven sensor technology.

On customer request we can additionally provide an optical-digital data transfer system for use in future-oriented, digitally automated substations.

Our product range is completed by technical solutions for merging and digitalization of analogue signals provided by conventional current and voltage transformers according to standard IEC61850-9-2LE.

CSN® RC-Voltage Dividers

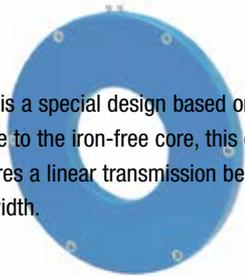
CSN® type RC-Voltage Dividers are used for voltage measurement for control and protection systems in HVDC links and research institutes.

The CSN® type RC-Voltage Dividers consist of a proven reliable and high accuracy resistive-capacitive voltage divider and is designed according to customer requirements.



CSN® Air-Coil

The CSN® Air-Coil is a special design based on the physical construction of a Rogowski Coil. Due to the iron-free core, this coil does not have any saturation. This way, the coil ensures a linear transmission behavior over a wide range combined with a high bandwidth.



CSN® Current Sensors

CSN® Current Sensors are used for current measurement in control and protection systems in power transmission links (AC and DC applications).

The CSN® type Current Sensors are based on high-accuracy resistive sensors respectively iron free cores (CSN® Air-Coil) and designed to customer requirements.



CSN® HECT, HEVT and HECT/VT

CSN® type HECT, HEVT and HECT/VT combine proven sensor technology for voltage and / or current measurement and optical-digital data transfer according to the new standard IEC 61850-9-2LE creating future orientated solutions in digital automated High Voltage AC substations.

CSN® Stand Alone Merging Unit (SAMU)

The IEC 61850 Stand Alone Merging Unit is the optimal solution for Process Bus interfacing. The SAMU collects data from conventional instrument transformers and converts the analog signals into a digital protocol defined by IEC61850-9-2LE.



CSN® SV-Viewer

The SV Viewer (Sampled Values) is our solution for visualizing and recording the digital IEC61850-9-2LE Protocol. This software allows a user-friendly visualization of the current and voltage values of different Merging Units.

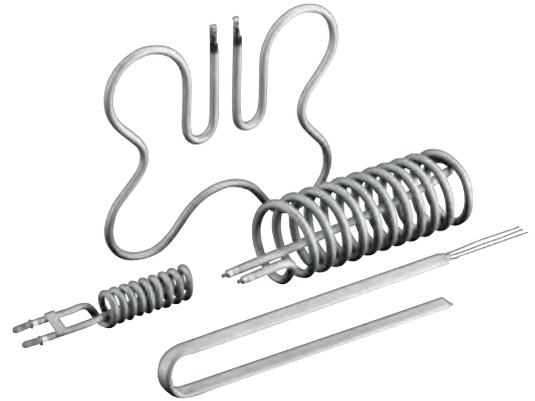


HEATING TECHNOLOGY

Schniewindt **heating technology** includes the development, production and sale of heaters for heating gases, liquids and solids. Also in areas exposed to explosion hazard and firedamp, these devices reflect our knowledge. With complete systems including electronic controls and pumps, we offer process-optimised and energy-efficient solutions from a single source.

CSN® Tubular heating elements

Tubular heating elements are available in 6.5 / 8.5 / 11.5 und 16 mm diameter. By using different materials, various forming possibilities and total lengths up to 7 m, these elements represent the optimal solution for your application.



CSN® Screw plug immersion heaters

Screw-plug immersion heaters used for heating liquid and gaseous media. Several thread sizes, different voltages, immersion lengths up to 3.5 m and a wide choice of materials make this threaded heater to an universal solution.

CSN® Flanged immersion heaters

Flanged immersion heaters for process heat. For heating liquid and gaseous media, flanged immersion heaters are designed according to customer's specifications with a variety of materials, voltages and flange shapes. Wattages up to 1 MW and immersion lengths up to 3.5 m can be achieved.





CSN® Air heaters

CSN® Air heaters or heating batteries are used for heating air and gases operating under low pressure (<0.3 bar). These heaters are used to support chemical processes. Requirements for these heaters: High operational safety and reliability, as well as good corrosion resistance of the materials.

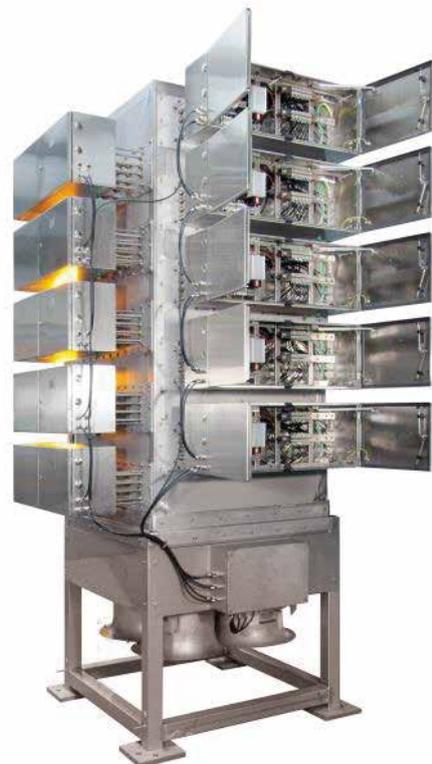


CSN® Circulation heaters

CSN® circulation or in-line heaters are used to heat the gaseous media and work under very severe operating conditions. The heaters are used to assist chemical processes. Requirements for these heaters: High operational safety and reliability, as well as good corrosion resistance of the materials.

CSN® Braking Resistors LV

CSN Braking Resistors are used for the controlled braking of every kind of electric drives. Braking resistors convert the kinetic energy of drives into heat energy which will be released to cooling medium.



CSN® Control units

For all CSN® heaters and heating systems we manufacture perfectly matching process controllers.

Our services range from consulting, designing and manufacturing up to commissioning of electrical control and regulation systems.

CSN® cartridge type heaters

CSN® cartridge type heaters are perfectly suited for direct heating of liquids. The heater consists of a protective metal tube with a replaceable ceramic or vibration-resistant heating element. The heating element can be replaced without draining the tank.



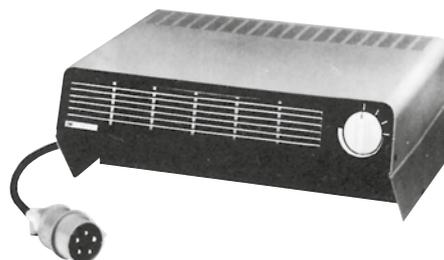
CSN® Space heaters

CSN® Space heaters are rugged heaters for industrial operating conditions and can also be used under most difficult operating conditions. Depending on customer requirements, the heaters can be produced with various surfaces (painted steel, galvanized / painted steel, stainless steel) and can be equipped with temperature controller, temperature limiter and a protection grid.



CSN® Electrical air-heaters

CSN® Electrical air-heaters consisting of electrical heating elements, which are installed in a housing or on a panel. The design of the heating elements is according to the customer-specific operating conditions. We manufacture the heaters in various steel or stainless steel versions, with or without a fan.



CSN® High Density Cartridge Heaters

CSN® High Density Cartridge Heaters for the most demanding operating conditions. These high performance heating cartridges are produced by a special manufacturing process that allows very high surface loads (high Watt densities) with sheath temperatures up to 700 °C.



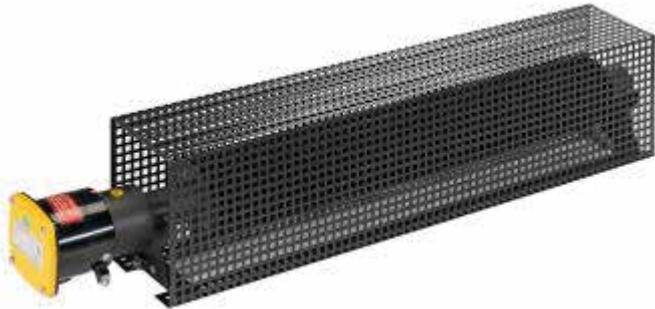
CSN® Ring-, Flat-, Diskheater

CSN® Ring-, Flat-, Diskheater for heating of tools, machine tools, pressed forms, extruders and more.

CSN® connecting-wires

CSN® connecting-wires are available for use in temperature ranges from 200 °C to 800 °C. These are used for the internal wiring of electrical household appliances, cartridge heaters, tubular heaters, ceramic glass panels or grills. We manufacture these single core cables in cross sections up to 10 mm².





CSN® Explosion-proof space heaters

CSN® Explosion-proof space heaters are installed wherever hazardous environments of the zone 1 and 2 may occur and are used to heat still air. Heaters of temperature classes T1 - T5 can be produced in various surface finishes and – on customer request – be equipped with a built-in thermostat and a protective grid.

CSN® Explosion proof cartridge heaters

CSN® Explosion proof cartridge heaters are perfectly suited as direct heaters for liquids and gases in hazardous areas.

These units are equipped with a heating bundle or a replaceable ceramic heating element.

For temperature control these heaters are available with an integrated temperature monitoring system. These devices are available in various material grades.



CSN® Explosion-proof screw plug or flanged immersion heaters

CSN® Explosion-proof screw plug or flanged immersion heaters (Ex) are perfectly suited for direct heating of liquids or gas / air mixtures in hazardous areas. The devices are available with attached or integrated temperature monitoring systems. For these heaters various high quality stainless steel grades are available.

CSN® Explosion Proof Gas Pre-Heaters

CSN® Explosion Proof Gas Pre-Heaters are used to heat up fuel gas in hazardous areas.

These units consist of gas tubes and a CSN® Flanged Immersion Heater (Ex) cast into an aluminum block.



Customer audits:

- Q1 Deutsche Bahn AG
- ABB Power Systems
- Liebherr-Aerospace
- Siemens
- Bosch Rexroth
- Voith

Certifications/approvals:

- RW TÜV
- CSA & ANSI & UL
- PTB, Physikalisch Technische Bundesanstalt
- Lloyd's Register of shipping
- GOST
- RTN/KTN
- DIN 2303GSI SLV
- DIN EN 15085-2GSI SLV
- 97/23/EG Modul H
- DGRL HPO



HEATING
TECHNOLOGY



ELECTRIC RESISTOR
TECHNOLOGY



ENERGY
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