



TECH POWER
ELECTRONICS GROUP



PRODUCT OVERVIEW

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OUR EXPERTISE GIVES YOU A COMPETITIVE ADVANTAGE.

Helping you to succeed is what inspires us every day. We work hard, passionately and with complete commitment so that you can reach your goals. Your needs and requirements are both motivation and incentive to us – no matter what size order or budget.



DESIGN

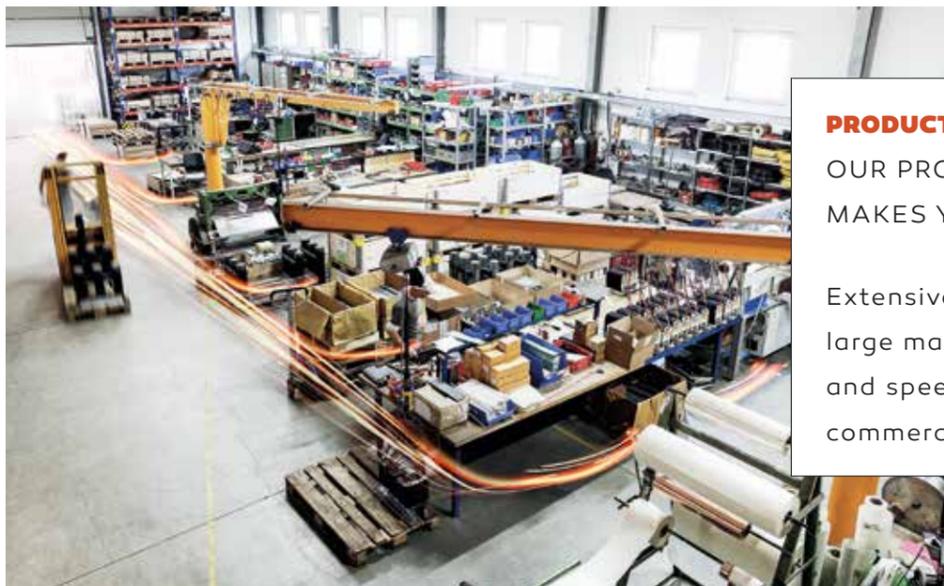
OUR DESIGN LEADS TO YOUR SUCCESS.

Individualised products and solutions based on our own research and development remain competitive and be at the cutting-edge of the technology.

PROACTIVE

OUR PROACTIVE APPROACH MAKES YOU SMARTER.

We are aware of your needs and think ahead. Active marketing is for us the basis for proactive cooperation.



PRODUCTION

OUR PRODUCTION MAKES YOU FASTER.

Extensive production expertise, large manufacturing capacities and speed guarantee your commercial success.

LOCAL

OUR LOCAL PRESENCE ENHANCES YOUR FLEXIBILITY.

We stay close to our customers. Not only geographically but also technically so that we can respond flexibly to their needs and requirements.





MARKETS

CHALLENGES FROM THE REAL WORLD

Nothing is tougher than the routine of daily life. The quality of products soon becomes evident here. A functioning industrial society is based on a relentless demand for electronic and electrical components and products. We therefore consider it our duty to deliver quality, to work in partnership using lean structures, and to follow a strategy of long-term growth for the entire group.

INFLUENCE

Our high performing products and components connect people, enable communication, and play an essential role in technological progress. This is true both for commercial and private applications. The multitude of opportunities that inductance offers has now reached every sphere of life. Inductance has become an indispensable element in a functioning society.

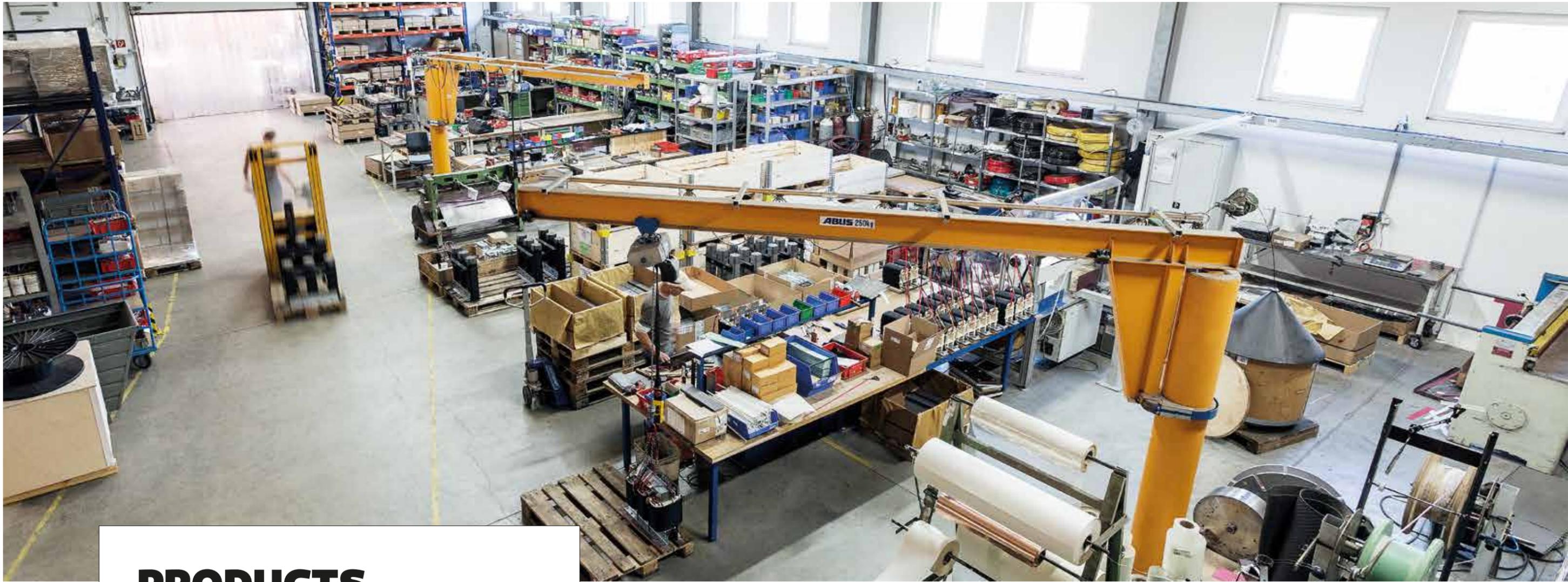
AREAS OF APPLICATION

Major technological progress is based on processes which function down to the tiniest detail. It is therefore of no surprise that our products are being used in key areas of activity in our society. Industrial companies, energy suppliers, and the booming automation sector all place their trust in our quality and ability to deliver, as do the marine, automotive and rail industries.

BENEFIT FROM OUR EXPERTISE.

We are a partner who delivers solutions for its customers. We apply our full expertise in the production of inductive components and systems. We see ourselves as an integral element within the complex manufacturing processes of our customers.





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CONVERTERS

Low power conversion is now a key point for electronic designs. We develop ultra-compact solutions for both AC/DC converters and DC/DC converters that comply with the highest requirements.

The following are examples of a multitude of other available converters.

AC/DC CONVERTERS



We offer a full range of "compact" AC/DC converters with our own brand "switchy®" from 2 to 20 W in ultra compact designs. We customize products for severe applications. Products comply with international standards.

DC/DC CONVERTERS

Low power conversion is now a key point for electronic designs. We develop ultra-compact solutions for both AC/DC converters and DC/DC converters that comply with the highest requirements.



POWER SUPPLIES

Power supplies represent the delicate link between electrical devices and mains power supplies. We develop and manufacture specific power supplies – filtered, regulated, stabilised and rated (primary and secondary) – in different power ranges.

Output voltages and currents can be portrayed digitally to enable ease of use. Major features in our power supplies include current limiting and short circuit resistance. If cooling by natural convection is required, fan-free design is available.

The following are examples of a multitude of other available power supplies.

SWITCH MODE POWER SUPPLIES (SMPS)



Power supplies with regulating capabilities are known as switch mode power supply units. These convert direct (including non-regulated) voltage into regulated direct voltage with electronic circuits switching between input voltages and electrical earths at high frequencies (e.g. 50 kHz). A connected inductor and capacitor filter the rectangular wave voltage and direct voltage emerges at the output. A control circuit ensures that the duty cycle is set to produce the required output voltage.

CHARGE CONTROLLERS



We develop and manufacture high quality charge controllers which comply to all current standards and use the latest power electronics, microprocessors and a special charger IC. To control charging, we use, for example, parameters which determine temperature, voltage, capacitance, time, and charging current.



COILS

Coils are used in electrical engineering to generate or detect magnetic fields. Coils are electronic components – comprised of windings or wound products – or parts of units such as transformers and relays. Most coils are constructed of at least one winding of an electrical conductor. Wire is generally used in addition to silver-plated copper wire, high-frequency litz, flat wire and copper foil. The wire is wound around a coil form which has a magnetic core. The inductance value results from specific parameters such as winding arrangement, shape, wire diameter as well as the wound and core materials used.

We manufacture coils to specific customer requirements.

The following are examples of a multitude of other available coils.

AIR-CORE COILS



Air-core coils are inductive components without a ferromagnetic core and therefore have relatively low inductance. The magnetisation curve is linear. Air-core coils feature no magnetic saturation compared to coils with magnetic cores. Without a core, magnetic paths cannot be guided resulting in a high level of magnetic flux leakage.

FLAT-WIRE COILS



We use modern processes to produce flat and upright wire coils. The fill factor in flat-wire coils is higher than for standard round-wire coils. The full range of coil geometries is possible.

Advantages: shorter winding radii, lower copper losses, no voltage distortions. These coils can also be manufactured with aluminium wire.

SELF-BOND ENAMELLED WIRE COILS

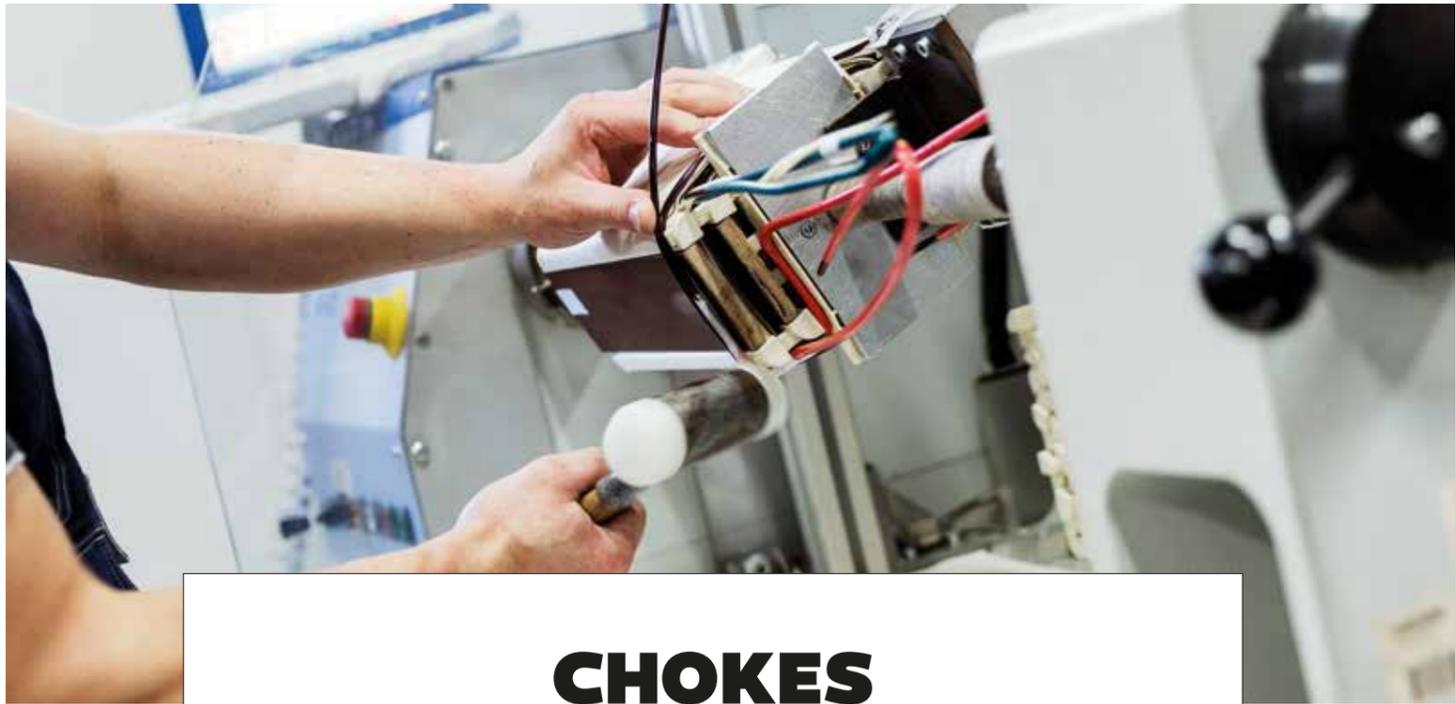


A special version of enamelled wire is self-bond enamelled wire. Its adhesive properties are activated thermally or by a solvent. After activation, the individual windings bond into a self-sustaining coil. The use of self-bond enamelled wire gives a range of cost and manufacturing benefits due to the savings made on coil forms, adhesive tape, casting compounds and impregnation. We are able to manufacture these coils in a range of different sizes and shapes.

FOIL COILS



Copper foil coils are special constructions. In comparison to standard air-core coils, inductors or transformers, foil coils are made from thin, insulated copper sheet of foil.



CHOKES

Choke inductors are coils for blocking electrical currents. They can buffer energy, modify impedance and filter.

Chokes are used in electrical and electronic device power supplies as well as in high and low frequency technology and power electronics. In contrast to transformers or resonant circuit inductors, chokes are often connected in series to other components or electrical loads.

We are keen to design and manufacture complex chokes. As core materials we use ferrite, powder and amorphous solids. When required, we can incorporate production preferences such as vacuum casting or impregnation as well as special casings.

The following are examples of a multitude of other available choke products.

MAINS CHOKES



Mains chokes minimise system interference produced by rectifiers. Mains interference from inverter drives is also suppressed in compliance to EN 61558. Top quality is guaranteed through precision processing and the use of high quality materials, e.g. insulation material compliant with the B and F UL-insulation systems.

OUTPUT CHOKES



Output chokes are connected in front of inverters to minimise their negative effects. Voltage spikes from in-line motors are reduced to increase motor service life by diminishing insulation loads.

Features: compact construction, 3-phase versions up to 1,500 A, simple installation.

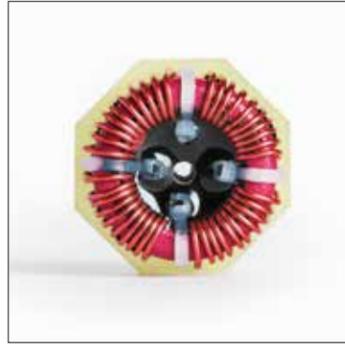
50 HZ LINE CHOKES



Line chokes are usually series connected to an electrical load. Single and three phase versions are available. They are intended to provide the following important protective functions:

- Suppression of harmonic currents resulting from frequency-dependent inductive resistance
- Soft start for electrical loads for reduced component stress, e.g. in rectifier circuits
- Guaranteed short circuit voltage of 4% of the mains voltage ($u_k = 4\%$) as generally required from power supplier companies

COMMON MODE CHOKES



A large range of toroidal common mode chokes is available, all type of material are used and especially nanocrystalline material which allow a standard range from 0.3 A up to 50 A and far more on custom designed products. All mountings are available: vertical, horizontal, bare coil, and a new range of SMD chokes.

PFC CHOKES



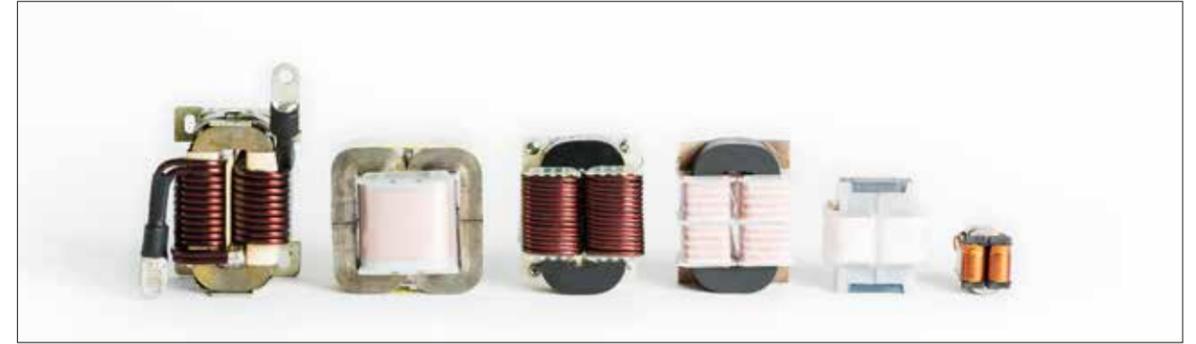
PFC (power factor correction) chokes are used to significantly reduce mains harmonic distortions – generally in line with the mains supply in SMPS components. They function either passively for mains frequency on a laminated transformer core or as a storage choke with a powder core in an active PFC switch mode of 10 to 100 kHz.

STORAGE CHOKES



We have solutions for your DC current filtering with our storage chokes. Our standard range goes from 0.3 A to 6.3 A and our customized solutions to several hundreds of amperes. Vertical, horizontal, bare, in case mountings are available.

POWER CHOKES WITH UPRIGHT COILS



Power chokes are required for a range of applications e.g. as smoothing chokes for oscillating power supplies, as filter chokes for IGBT rectifiers (sinusoidal filtering), as commutating chokes for mains inverters, as smoothing chokes for intermediate circuits as well as for many other circuit designs. We can also supply upright coiled flat-wire power chokes according to specific customer needs.

POT CORE CHOKES



Our pot core designs are based on a range of different magnetic powder composites. We cooperate with leading core manufacturers who guarantee us reliable quality and supplies. We are able to manufacture pot cores in different standard core sizes or according to specific needs.

Technical features:

- Less material required
- Higher switching frequencies through low-loss materials
- Q factor setting with no thermal load on the choke
- Higher clock frequencies possible
- Specific inductance settings
- Lower EMC costs
- Very compact and lightweight construction
- A range of powder materials, iron powder mixes, SiFe powders and sendust

SWITCH MODE TRANSFORMERS

We design transformers for all kind of switch mode power supplies for every configuration, forward, flyback, push-pull, buck, etc. and for all type of frequencies.

The following are examples of a multitude of other available transmitter products.

SMPS



Intelligent SMPS are an economic alternative to linear power supplies. Their main advantages are their compact dimensions and their light weight. SMPS transmitters are also highly efficient and can be used around the world due to the certification of universal input voltages.

FLYBACK



Flyback transmitters are also known in the branch as flyback converters. They are a special form of direct current converter for converting electrical energy between galvanically isolated direct voltages in inputs and outputs.

FORWARD



A forward transmitter or converter is a type of galvanically isolated direct current converter. A significant feature of forward transmitters concerns the transfer of energy which takes place only in the conducting phase of the individual switching components. Forward transmitters are used, for example, in SMPS.

In contrast to flyback transmitters – which are particularly suited for low powers – forward transmitters are used in ranges from 100 W to 500 W. In these applications, they are able to achieve a higher level of efficiency. When higher power throughputs are required, then so-called push-pull converters are generally used.

PUSH-PULL



In contrast to forward converters, push-pull converters can convert direct voltages into other electrical direct voltages. The voltage conversion mainly takes place using a high-frequency transformer in the push-pull converter. Output voltages can be of virtually any value and unrestricted due to the converter topology.



TRANSFORMERS

Transformers are among the key components for electrical engineering. Their task is to transform alternating input voltages into alternating output voltages.

The construction generally comprises of two windings on one, two or three coils. The coils are wound with copper or aluminium wire or tape. The wound coils are mounted onto metal or ferrite cores. The ratio between input and output voltages corresponds to the ratio of the number of windings on each coil.

The following are examples of a multitude of available transformer products.

CONTROL TRANSFORMERS



Through their additional $\pm 5\%$ tapings, control transformers equalise mains undervoltages and overvoltages and are able to suppress short circuit in case of malfunction to permit auxiliary circuits to function unearthed. A control transformer has two separate coils. Version sizes range from single-phased up to 25 kVA and multi-phased up to 40 kVA. Coil types are available in solder plug, clamp and bracket versions.

SAFETY TRANSFORMERS



Safety transformers output secondary low voltages for SEL and PELV circuits. A safety transformer has 2 separate coils which may not hold in excess of 50 VAC and 120 VDC when idling. Version sizes range from single-phase to 10 kVA and multi-phase up to 16 kVA. Coil types are available in solder plug, clamp and bracket versions.

MAINS AND ISOLATING TRANSFORMERS



Mains transformers have the task of transforming input voltages to the required output voltages. A mains transformer has two separate coils. Version sizes range from single-phase to 1 kVA and multi-phase up to 5 kVA. Coil types are available in solder plug, clamp and bracket versions.

Isolating transformers transform mains voltages at 1 : 1 and perform, through their two coils, electrical separation, separating the earthing potential from the primary coil to the secondary coil. Version sizes range from single-phase to 25 kVA and multi-phase up to 40 kVA. Coil types are available in solder plug, clamp and bracket versions.

SINGLE-PHASE AND THREE-PHASE TRANSFORMERS



Powerful three-phase transformers have a similar construction to single phase transformers but their primary and secondary sides are comprised of three separate coils placed on a soft magnetic iron core. We produce transformers up to 1 MW.

IGNITION TRANSFORMERS



We manufacture magnetic ignition transformers for oil and gas burners for domestic and industrial uses. Transformers are technically geared for reliable starting.

- For high voltage up to 14,000 volt
- Encapsulated

TRANSFORMERS FOR WET LOCATIONS



For aquariums, ponds, swimming pools, and outdoor applications: Germfree water and reliable illumination.

Encapsulated transformers

- For highest requirements
- Power output 4–2,000 VA
- Protection class I and II
- For protection category up to IP68

SPECIAL APPLICATIONS



We provide individual solutions, for example for the design of modules for special industrial demands.

- High performance spools with metallic bobbin (at load of 20 K cycles in 24 hours)
- Ignitors for special lamps for material testing devices (up to 15 kV at 25 A with continuous load)

FILTERS

Increased digitalisation also means an increase in the importance for electromagnetic compatibility – i.e. the capability of technical equipment not to interfere electromagnetically with other devices or environments. Against a background of statutory requirements and the far-reaching demands for unhindered functioning, EMC design is vital in any equipment.

Our experienced application engineers are available to support you in meeting this challenging task. Thanks to their extensive experience, they can provide solutions for specific customer needs and are happy to give practical advice.

When required, we are able to quickly develop filters for specific requirements and manufacture them as series products for our customers.

The following are examples of a multitude of other available filter products.

LINE FILTERS



Line filters are effective in limiting electromagnetic interference produced, for example, by inverter drives. They are located in the electrical supply and therefore minimise low-frequency interference while smoothing out current flows. Special components then filter out high-frequency components.

Features: design according to requirements, size up to 500 A, EMC-optimised construction, easy to install compared to versions using line chokes and radio interference filters.

RADIO INTERFERENCE FILTERS



Electromagnetic interference from components such as inverter drives can be effectively limited using radio interference filters – ideally installed at the supply input. The use of high-performing components enables compact and low-cost solutions to be achieved.

Features: design according to requirements, size up to 500 A, EMC-optimised construction, technically more powerful and less expensive than similar standard filters.

OUTPUT FILTERS



Powerful output filters – positioned at inverter outputs – enable voltages approximating mains quality. Using precision coordinated magnetic materials enable a compact and cost-effective construction while also achieving excellent mains quality.

Features: design according to requirements, size up to 1,000 A, significantly increased service life of motors.



PRODUCTS FOR SPECIFIC CUSTOMER REQUIREMENTS

Our innovative approach and capability as a service provider make us a reliable and preferred partner to customers. This applies especially to designs and layouts with special requirements.

Based on our renowned expertise in development and manufacture, we have demonstrated that we are capable of manufacturing inductive components to meet specific needs. Whatever your requirement for specialist generators, stators, power chokes or any other inductive components, we are happy to support your projects and deliver high quality products and services.

In the construction of prototypes, series production or special format products, we are able to fully meet customer requirements which makes us your first port of call when you need specialist inductive components.

The following are examples from a range of many other available specialist products.

TRANSFORMERS AND CHOKES FOR RAIL APPLICATIONS



Electrotechnical components for rail applications must be constructed to a specific standard. The required calculations, production and inspection present no problems to our specialists. In addition to a need for compact designs, we also include lightness and effectiveness in the construction of the required components.

AIR AND WATER COOLED FIELD COILS

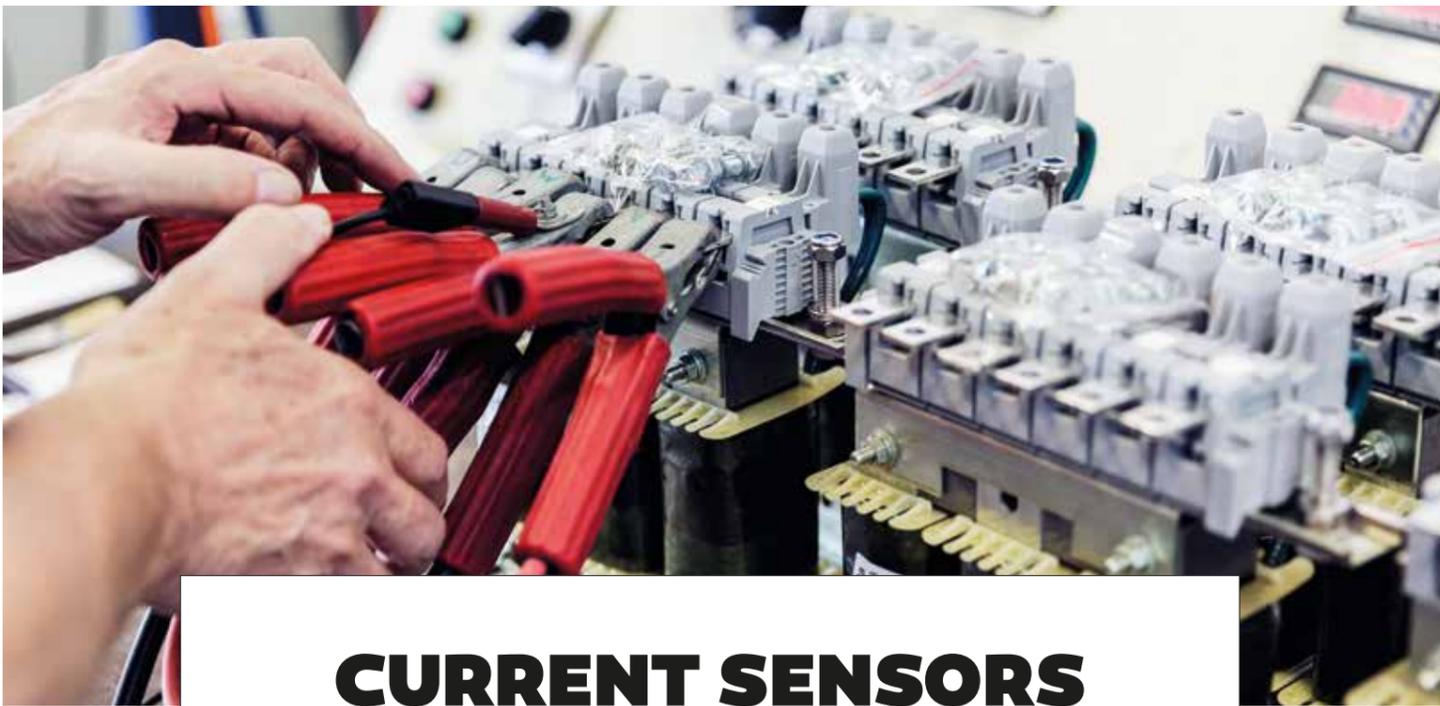


A field coil is an energised wire coil for electric motors and generators. The coils are wound on special devices. The wires are bonded and formed into the required shape. Cooling takes place either via natural convection or using water cooled wires.

MOTOR WINDING



On customers' request, we are able to wind ultracompact motors (rotors and stators) for aerospace applications.



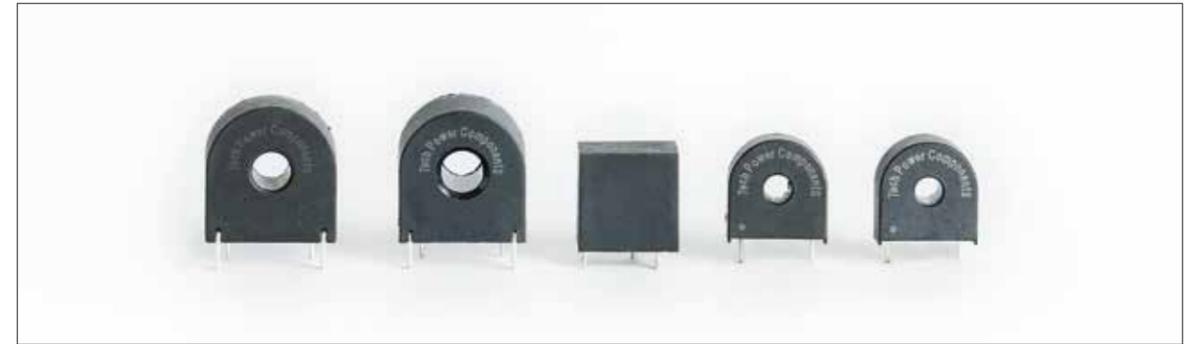
CURRENT SENSORS

Current sensors are electrical components capable of measuring current strength in cables and busbars, usually galvanically isolated (non-contact), by using the magnetic flux density generated by the electrical currents.

Sensors are differentiated between those for alternating current measurement, and those for both direct and alternating current measurement.

The following are examples from a range of many other available current sensor products.

HF SENSORS



20 A current sensors are specially designed for switch applications such as power supplies, motor controllers and electronic ballast units for lights.

Characteristics:

- Primary rated current: 20 A max
- Frequency range: 20–200 kHz
- Mid-tapped versions are available
- Fully encapsulated

50 HERTZ

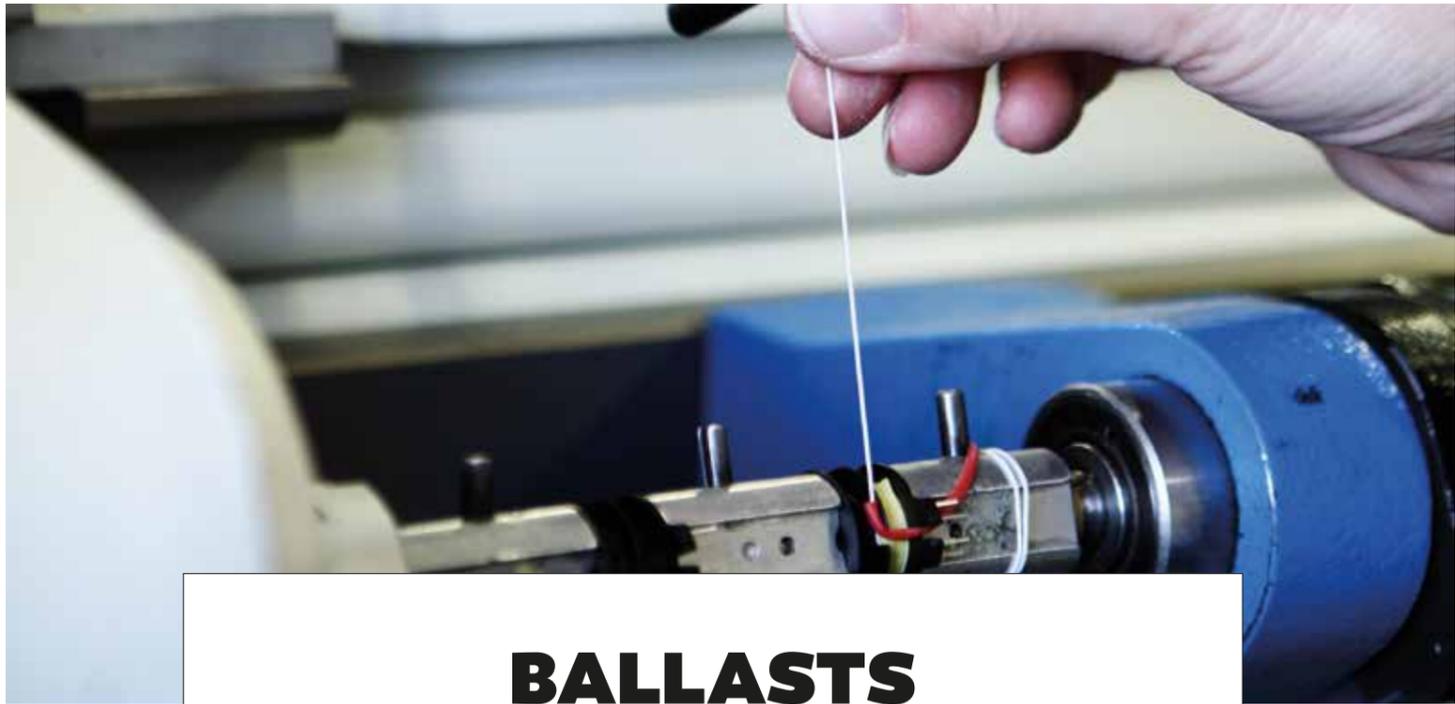


The TECH POWER ELECTRONICS GROUP are developing a new standard range of fully encapsulated current sensors with nanocrystalline cores. They are intended for power electronic applications which require high precision current measurement. In comparison to other soft magnetic materials, nanocrystalline alloys have proven themselves as better material for current transformers. Their use in toroidal cores guarantees low core loss due to a high permeability.

HALL EFFECT SENSORS



We use our know-how to produce current sensors with the Hall effect at different sizes and with different powers. Current sensors equipped with the Hall effect are generally sensitive to temperatures making temperature compensation necessary. Very high currents – including short-term high input surge currents – can lead to the core material becoming magnetised. Measurement errors and/or zero offsets then result due to remanence.



BALLASTS

Whether at home, in factories or in sport arenas, indoor and outdoor ballasts provide efficient and reliable illumination.

- Ballasts from 4-2,000 W
- DC voltage sources for LED lighting
 - IPOO to IP68
 - Protection class I and II
 - Design with lamination or toroid core
 - Built-in or individual devices

BALLASTS

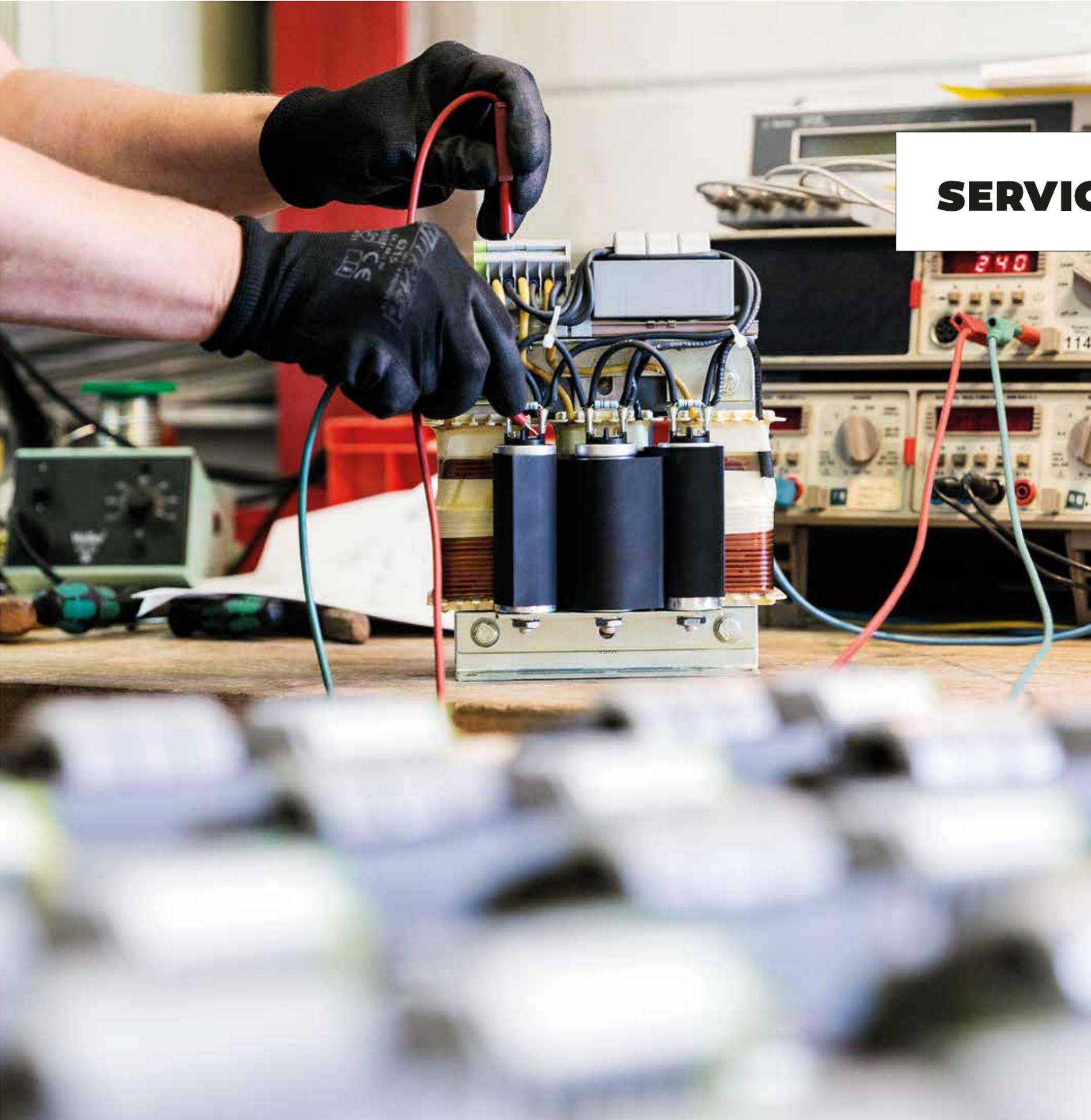


- Open frame
- Encapsulated
- Protection class I and II
- Protection category IPOO to IP68

POWER SUPPLY UNITS



- Optimized for installation
- Low losses
- Protection category IP65
- Optional with fuse



SERVICES

PRODUCT INSPECTION

- 100% testing
- ISO 9001 certification
- UL (E237579)
- QM department
- Latest inspection equipment
- Regular calibration of all inspection equipment
- Reference components for measurement comparisons

PERSONALISATION

- Tape & reel
- Packaging and labelling according to customer requirements

LOGISTICS

We offer all standard logistic systems such as:

- Kanban
- Security warehousing
- Dispatch warehousing
- VMI



**FURTHER INFORMATION IS
AVAILABLE FROM THE WEB**

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● Development & manufacture
○ Production



TECH POWER
ELECTRONICS GROUP

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