



Kern Coils

➤ **Diversity in Technology and Dimension**



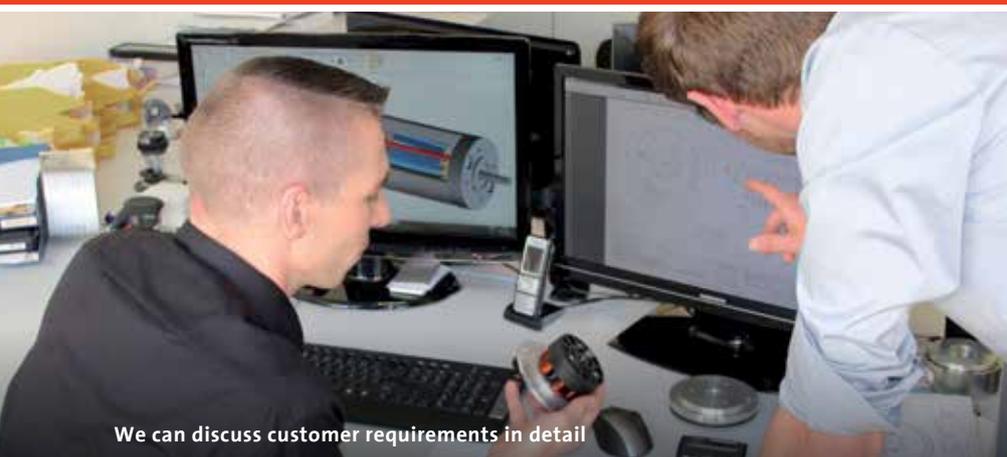
Coils by Kern – Competence through precision

➤ Individual needs – customer-tailored solutions

Kern Antriebstechnik has specialized in precision drive systems, where we have experience for over 75 years.

Our production programme comprises DC servomotors, brake clutch systems, electric friction brakes and clutches. In addition, we have also established ourselves as specialists in coil winding technology with special know-how.

As system integrators we offer our customers full-line service, from the design of drive components, development and design engineering during the development phase, the construction of in-house prototypes and samples right down to series production.



We can discuss customer requirements in detail



Engineering using cutting-edge tools

Special tasks involving drive systems call for creative ideas

At Kern Antriebstechnik each product is tailored to the customer's specific requirements and is thus perfectly optimized for its intended use on any given occasion. Installation dimensions, mounting flanges, seals or plugs: it makes no difference. We precisely adapt motors and brakes enabling all the drive components in the customer's application to function perfectly, reliably and precisely. This means that our strengths are special models, adaptations and further developments of the existing range of products.

Individual parts – or small-scale series – we produce what makes sense from a financial point of view

Since applications vary considerably and standard products do not always fulfil customer requirements, the lot size required cannot be satisfied through volume production. This is why we have specialized in small-scale production, in combination with a large degree of development and engineering. Our products are always custom-built, are neither comparable with mass-produced items nor can they ever be regarded as such. It may well be that the only spare part required for an uncommon machine is a single item.

Time-to-market – rapidity and flexibility

From an idea right down to the finished product – nowadays, the key to success is market readiness. This is why we have specialized in implementing customer wishes quickly and without losses. This can only be achieved through a streamlined organization, short decision paths and flexible employment. The basis for this is provided by modern development tools, pinpoint communication and employees who are willing to deliver orders on time and flawlessly.

Content

Kern magnetic coils

Diversity in Technology and Dimension

Coreless coils

Coils meant to be built in drive units or housings are often spooled direct on an installation without a bobbin. Coils are stabilized by heating, the so-called baking of the coil.



Coils on bobbins

In case that the coils are inserted into another module, or it is required by the necessary dimensions, the coils are wound direct on an L- or U-bobbin. This bobbin ensures the stability as well so that baking is not necessary in any case.



Extruded coils

In a further step the coils are extruded with plastic. With the closed casing the coil becomes a complete unit, that is inserted in the factory into other parts, or mounted in units in a customers machine.



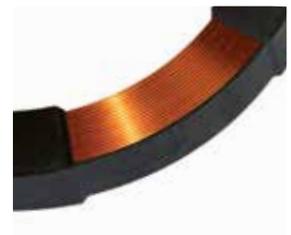
Coil winding technology

To bring the exact number of windings on the bobbins is only the base of the winding technology. Moreover the correct dimensioning on fractions of millimeters is necessary, the professional handling of the divers materials and wires, and the experience to be able to produce coils with more than 100 perfect wound layers.



Connections and bandaging

The raw coils are joint to strands or cables, and fastened to plugs and connections. A diversified bandaging and insulation completes the know-how.

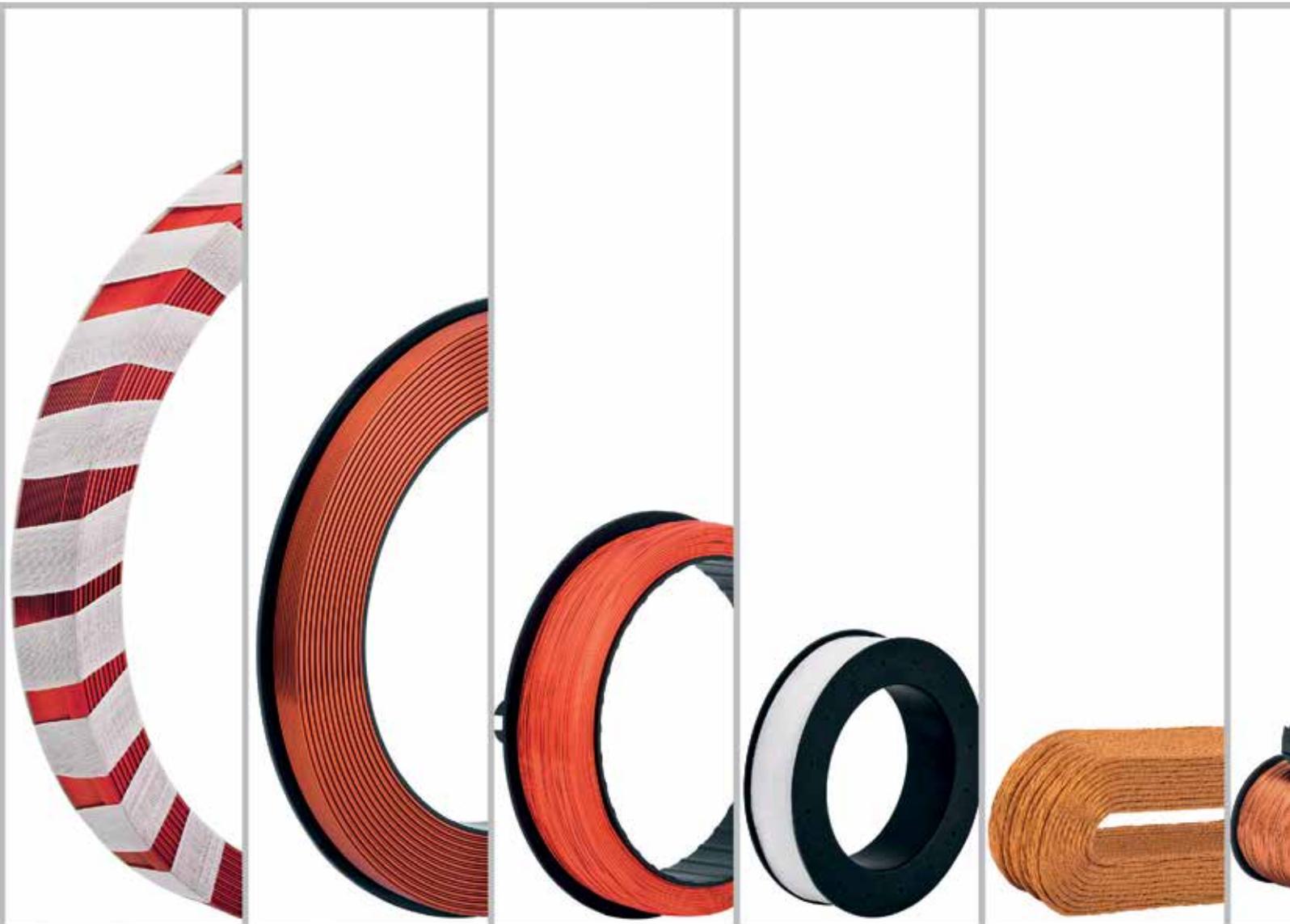


Coil winding technology

➤ One component is wire winding

The correct winding of the coils with the exact required number of windings is only one step in the manifold stages of production. Preceded is the computation in regards of dimension, material and inductivity, the planning of connections and plugs, the construction of the coiling installations as well as the tools for the extruding of the bobbins and the jacket.

The raw coil is equipped with cables and strands, connected with plugs and connectors so that the coil is prepared for further processing. Usually all the steps in the production of a coil are proceeded inhouse on the shortest ways, with modern equipment and a maximum of experience, so that from the first meeting to the pilot production sometimes only some days or few weeks are necessary.





Production of a coil

- Computation and engineering
- Construction of coiling installations
- Construction of extruding tools
- Manufacturing of the bobbins
- Layerwise winding of the coil
- Bandaging
- Connection of the strands
- Pressfitting into the housing
- Mounting of the plugs
- Soldering
- Extruding
- Quality control

Coils from Kern

- Over 75 years of experience
- Over 1000 different types produced
- Special material available
- Numbers of 10 – 50,000 pieces per year
- Wire thickness from 0.08 mm to 1.6 mm
- Inner diameter 5 mm – 250 mm
- Outer diameter 12 mm – 300 mm
- 6 – 10,000 windings
- Over 100 exact wound layers
- 100 % continuity test



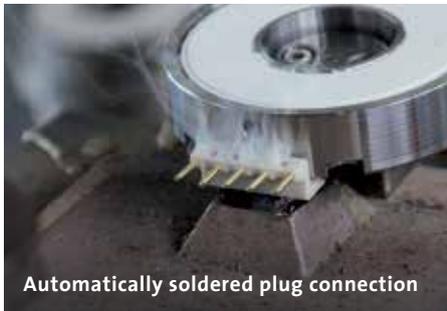
Connections and bandages

➤ Manyfold technical production possibilities

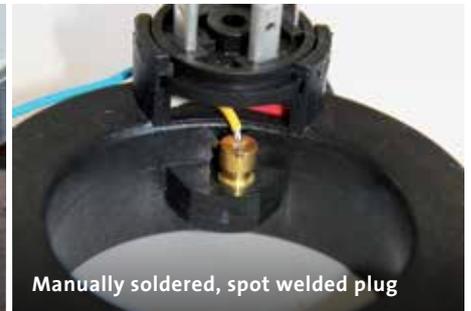
Connections and compounds



Crimped wire bonding with splice tape



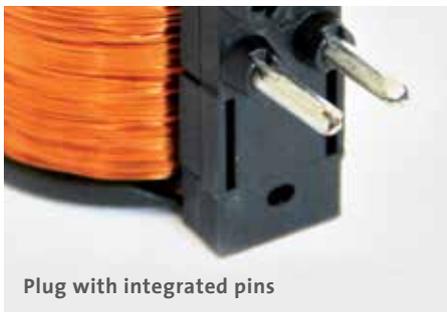
Automatically soldered plug connection



Manually soldered, spot welded plug



Zinc plated connections with Amplivar-tape



Plug with integrated pins

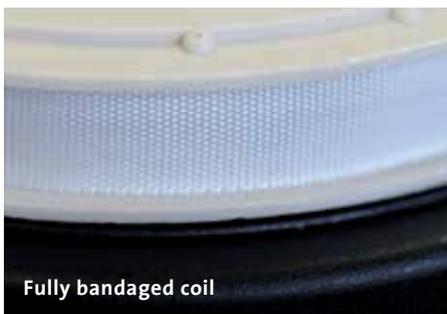
Additional connections:

- Amplivar Connectors
- Plugs with clamping connections
- Tape-connections
- Pressing of plugs

Bandages



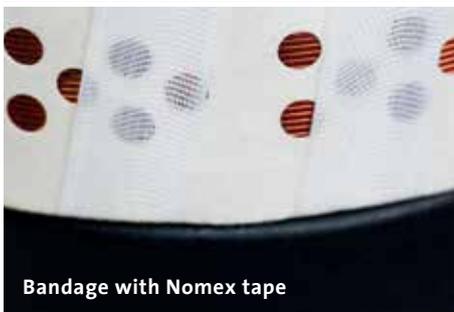
Coreless coil with single bandaging



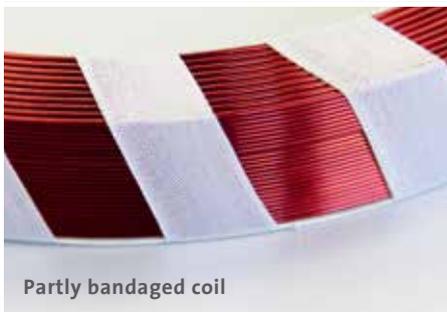
Fully bandaged coil



Bandage with cotton tape



Bandage with Nomex tape



Partly bandaged coil

Additional processing options

- Pressing in housings
- Casting with sealing compounds
- Partly extrusion coating
- Complete overmoulding

Full-Line-Service from Kern – ➔ Understanding customer relationships as a process

Manufacturing tailor-made products goes far beyond the actual production process. It involves an entire process that extends from the first meeting with the customer, through production and delivery right down to the end of the service life of the application.

Accompanying the customer along this path from the beginning, recording and implementing the questions that arise, adapting products to take into account changes in requirements and monitoring the quality of the parts inhouse and installed is another important part of our work. This leads to lifelong customer relationships that we greatly appreciate. Some of which have been going strong for several decades.

The entire spectrum of drive technology

The individual components that make up drive technology, modules or complete drive systems; the complexity of the products also varies greatly. Magnetic coils are for example required as individual parts, fitted to electric brakes, combined as brake motors or in combination with fitted gear units, tachogenerators or control units.



Careful production and fitting



Advanced manufacturing centers

Engineering – from the customer's wish to the prototype

Our customers expect us to provide drive system solutions from the specific details right up to the complete system. Our strength lies in our ability to understand the needs of customers and transform them into creative ideas. Regardless of whether this takes the form of a completely new design or an adaptation starting out from a standard version. This can only be achieved through the use of technology that is always state-of-the-art, whether this concerns the software used to design the motors or a 3D printer for rapid prototyping.

Production – flexibility and production depth

Since the tasks set by the customer may vary considerably, flexibility and a high degree of production depth are the basis of our success. Chip removal and injection moulding, coil winding machines and assembly centres, everything is performed at our own plants enabling us to react quickly and accurately. Our very own tool shop adds to our know-how.

Quality – testing and experience

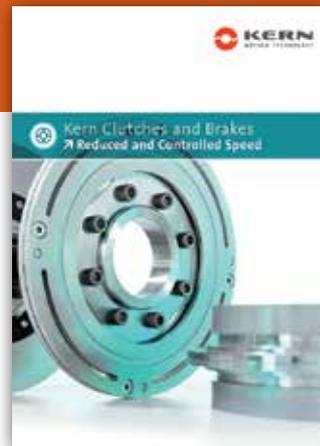
Since the manufacture of most core components takes place at our own plants, we produce within a seamless and integrated quality chain. Complete testing of motors and a brake test facility ensure, that only products capable of fulfilling your specifications leave our plants. The outgoing goods inspection facility with its strict quality control plan and long-standing logistics partners both take care that customers receive their drive components on time and without any hitches.



Motion technology
Competence in precision



Kern Motors
Precision and Quality



Kern Clutches and Brakes
Reduced and Controlled Speed



Kern Color Warmer
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