



Kern Coils

Diversity in Technology and Dimension

Kern Coils - Diversity in Technology and Dimension

➤ *Individual needs – custom-tailored solutions*

Kern Antriebstechnik has specialised in precise drives in particular. Here we have more than 80 years of experience.

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

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



We discuss customer requirements in detail



Development using modern 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 optimised for its intended use. 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. Our strengths are the special models, adaptations and further developments of the existing range of products.

Single parts, small- and large-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 targeted lot size cannot be satisfied through high-volume production. This is why we have specialised in small-scale production, in combination with a high degree of development. Nevertheless, we are also optimally equipped to process large production volumes. Our products are always custom-built, are neither comparable with mass-produced items nor can they ever be regarded as such. We are also able to supply spare parts for uncommon machines.

Time-to-market – speed and flexibility win

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

Content

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Coreless coils

Coils that are then potted directly in drive units or housings are wound directly on a fixture without a bobbin.

By heating, the wire is baked and thereby stabilised.



Coils on bobbins

If coils are attached to add-on parts or if the required dimensions make this necessary, the coil is wound onto an L-type or U-type bobbin that provides the necessary stability.



Overmoulded coils

In a further processing step, the coils are also overmoulded in plastic.

With the closed plastic coating, the coil becomes a complete unit that is then installed in drive units either in-house or on the client's premises.



Coil winding technology

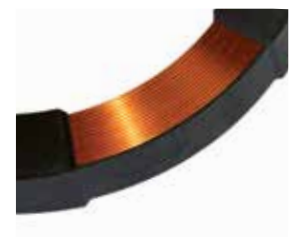
Ensuring the correct number of windings on a coil is just the first step in winding technology. Further aspects are correct dimensioning to within a fraction of a millimetre, professional handling of different materials and wires, and the experience required to produce coils with 100 perfectly wound layers.



Connections and bandaging

The ends of the wound coils are soldered, crimped or welded to strands or cables or are fitted with plugs.

Various bandaging and insulation materials complete the technology.



Coil Winding Technology

➤ *Wire winding is just one element*

The correct winding of the coils with the precisely specified number of windings is just one step in the production process. Beforehand, the coils must be correctly dimensioned, the appropriate material and inductance selected, the connections and plugs planned, winding equipment constructed, and the tools required for moulding the bobbins or overmoulding the coil manufactured.

The coil is equipped with cables and strands and connected to connections and plugs so that the coil is ready for further processing. Usually all steps in the production of a coil take place in-house via the shortest routes, using state-of-the-art equipment and based on vast experience so that there are just days or only a few weeks between the initial consultation and pilot production.





Production of a coil

- Calculation and design
- Fixture construction
- Injection-moulding toolmaking
- Moulding of bobbins
- Layered winding
- Bandaging
- Attachment to strands
- Insertion into housing
- Attachment of plugs
- Soldering
- Plastic overmoulding
- Quality control

Coils from Kern

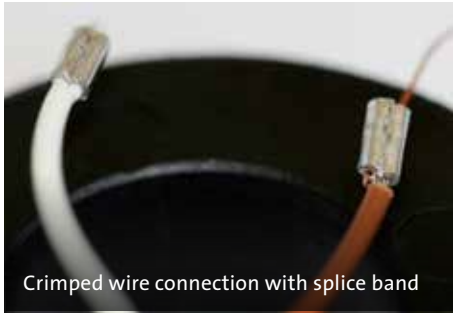
- Over 80 years of experience
- Over 1000 types produced to date
- Special materials possible
- Quantities of 10 to 50,000 units per year
- Wire thickness 0.08 to 1.6 mm
- Inner diameter 5 to 250 mm
- Outer diameter 12 to 300 mm
- 6 to 10,000 windings
- Over 100 layers in the case of layered winding
- 100% quality assurance with regard to continuity



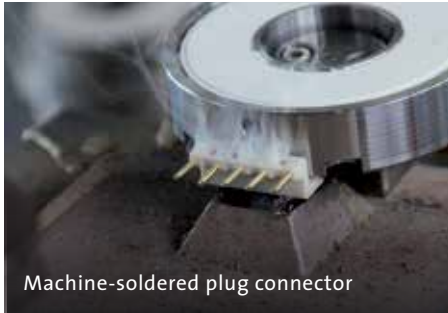
Connections and Bandaging

➤ *Various technical production options*

Connections and joints



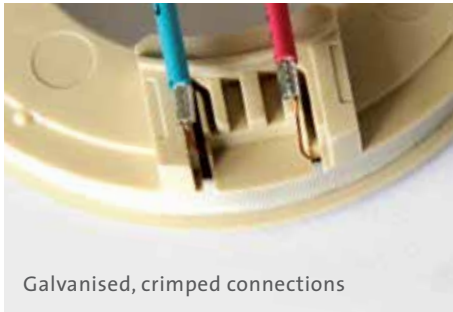
Crimped wire connection with splice band



Machine-soldered plug connector



Hand-soldered and spot-welded connector plug



Galvanised, crimped connections

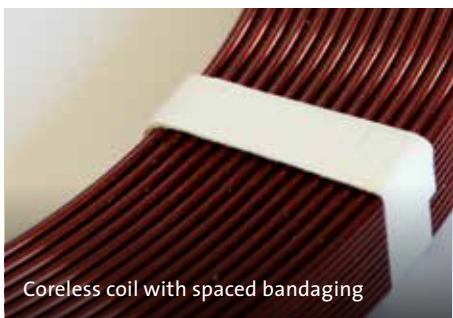


Plugs with integrated pins

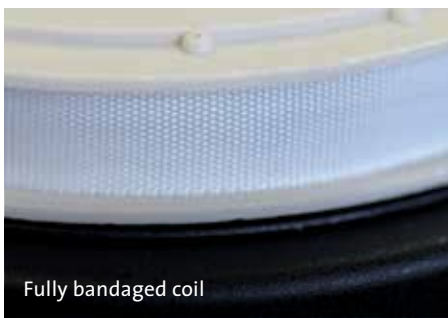
Further connection options

- Amplivar connectors
- Plugs with clamp connections
- Tape connections
- Pressed-in plugs

Bandaging



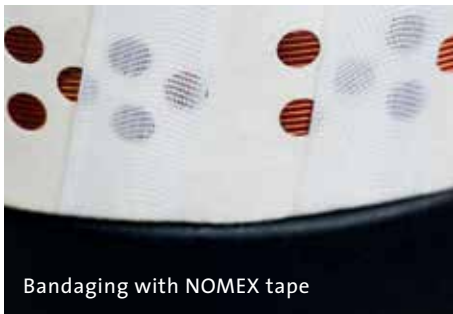
Coreless coil with spaced bandaging



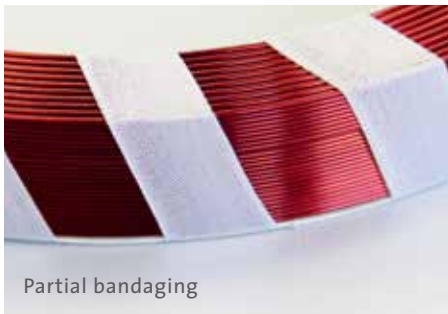
Fully bandaged coil



Bandaging with cotton tape



Bandaging with NOMEX tape



Partial bandaging

Other processing options

- Insertion into housing
- Potting with potting compound
- Partial overmoulding
- Full 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 and continues through production and delivery all the way 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. Ongoing quality control in the plant and tracking the function of the installed parts is another important part of our work. This leads to long-lasting customer relationships that we greatly value, some of which have been going strong for several decades.

The entire spectrum of drive technology

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



Careful production and assembly



Advanced manufacturing centres

Development – from the customer's wish to the prototype

Our customers expect us to provide drive system solutions from specific details right up to the complete system. Our strength lies in our ability to understand the needs of customers and to transform these into creative ideas. Regardless of whether in the form of a completely new design or an adaptation to a standard version. This can only be achieved through the use of technology that is always state-of-the-art, whether 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. Machining, 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 most core components are manufactured in-house, we produce within a seamless and integrated quality chain. Complete testing of motors and a brake test bench ensure that only products that are perfectly suited to their application leave our plants. The outgoing goods inspection facility with its strict quality control plan and long-standing logistics partners ensure that customers receive their drive components on time and without any hitches.

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