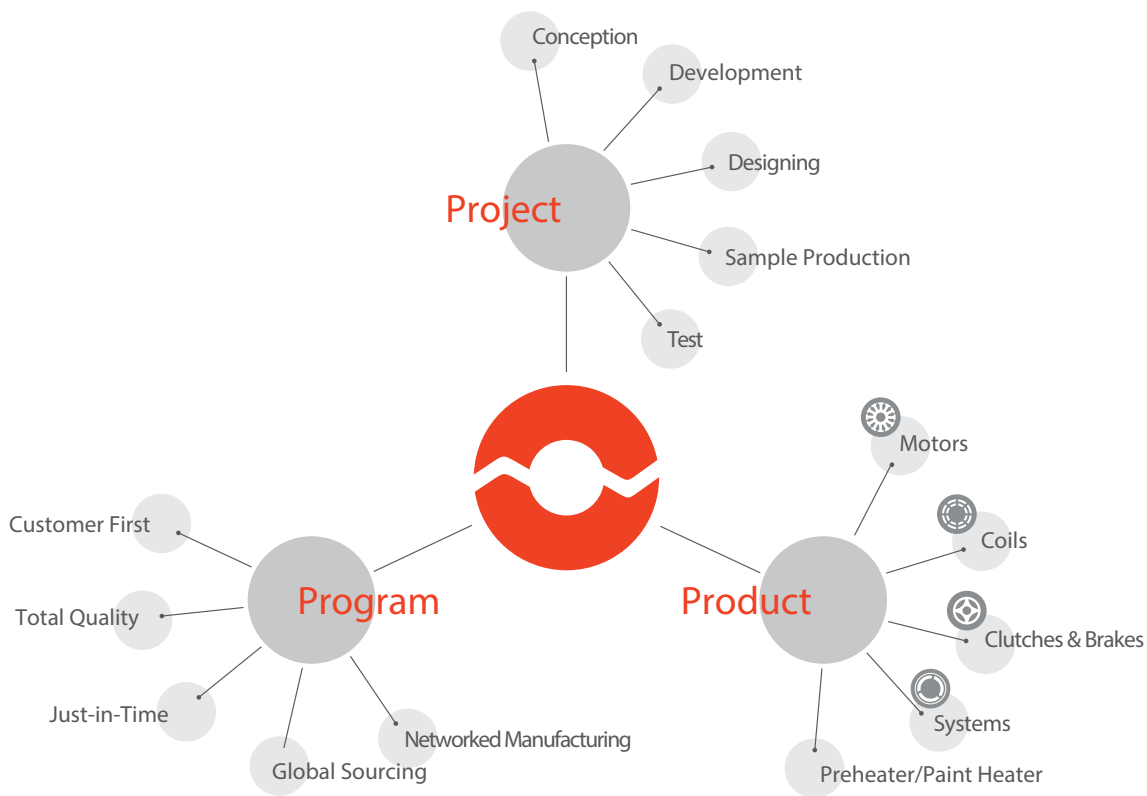




Kern Antriebstechnik

Competence in Precision



Your contact partner in all matters concerning motors, brakes, clutches, coils and systems

Ralf Knittel, Managing Director



Kern's Guiding Principle

➤ *What drives us*

**Our focus is always on our clients. We devote all our attention to them.
The desire to give our best every day is the driving force behind our activities.**

We are a fair partner. We are reliable, loyal and target-orientated. As a system supplier, we work in compliance with the highest quality and safety standards and integrate seamlessly into our clients' processes. We work as a team, practise interdisciplinary thinking and, as a learning organization, we grow and evolve through consistent encouragement and motivation.

We are aware of our social and ecological responsibility as a company. We therefore use our resources carefully, value our cooperative corporate culture that is based on respect and trust, and avoid wastage of any kind.

Kern Antriebstechnik

➤ *Who we are. What we do.*

Kern Antriebstechnik GmbH is a system supplier for drive components and OEM product solutions.

We focus on the development and production of high-precision electric motors, permanently and separately excited electromagnetic clutches and brakes as well as professional coil winding technology.

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 just-in-time series delivery.

As an ATEX and ISO 9001:2015 certified production company, we have nearly all relevant manufacturing technologies in-house. We are also part of a large, well-established network of partner companies, which allows us to react to the changing requirements of our clients quickly and flexibly.

We look forward to working closely with our clients and contributing to their success by providing optimum solutions.

Kern Antriebstechnik

➤ *Think globally – Act locally*

Kern Antriebstechnik GmbH has been based in Friedrichshafen on the shores of Lake Constance for over 80 years.

Mechanical and plant engineering or high-tech products – as a system supplier, Kern delivers with dedication and expertise exactly the solutions that our demanding, international clientele expects.

We are always there where our clients need us. Special drives for measuring devices from Germany, clutch-brake combinations for automatic textile equipment from Switzerland, brakes for China, motors for Australia and the entire world – Kern products are valued and installed wherever high precision and quality are paramount.

As a medium-sized company, we are proud to be able to count a number of well-known global brands among our satisfied clients. At Kern, "Think globally – Act locally" poses a new challenge every day, which we address readily.

The Kern Principle

➤ *Simple solutions for better drives*

Simplicity as a principle

Today's drive solutions are becoming more and more complex in the overall system of an application. We therefore believe in designing the solutions at component level to be as simple and thus controllable as possible. Right from the start, Kern products are designed according to this principle without losing sight of the demand for precision, quality and durability. Our clients can thus concentrate on their actual tasks.

The solution in the foreground

Products that simply do what they are supposed to do. No ifs, no buts. This is the objective of our product philosophy. Growing with our clients' demands and using our extensive experience to provide solutions for drive tasks – this is our interpretation of a solution-orientated partnership.



Optimal true running

Design and development

From the initial concept to a practicable product. The foundation stone of a successful solution is laid in the development phase.

Designing

State-of-the-art hardware is used to convert an idea into a product. Simulations support implementation.

Search for the best

There is not always just one solution for the task in hand. Together with the client, our specialists look for the best possible custom solution. This requires all of our experience, combining solutions from a wide variety of applications and carefully listening to and implementing the needs of our clients.

Concentration on drives

We make drives – that's our core business. Over the years, concentrating on what we know best has made us a strong and reliable partner for our clients. We consider it a special duty – to ourselves and to our clients – to honour this tradition.



BLDC motor – client-specific special application



Stator kit

Prototype and sample production

In our in-house prototyping department, we manufacture testing and functional prototypes for series trials.

Series supply

We accompany a product from initial delivery over its entire service life.

Kern Motors

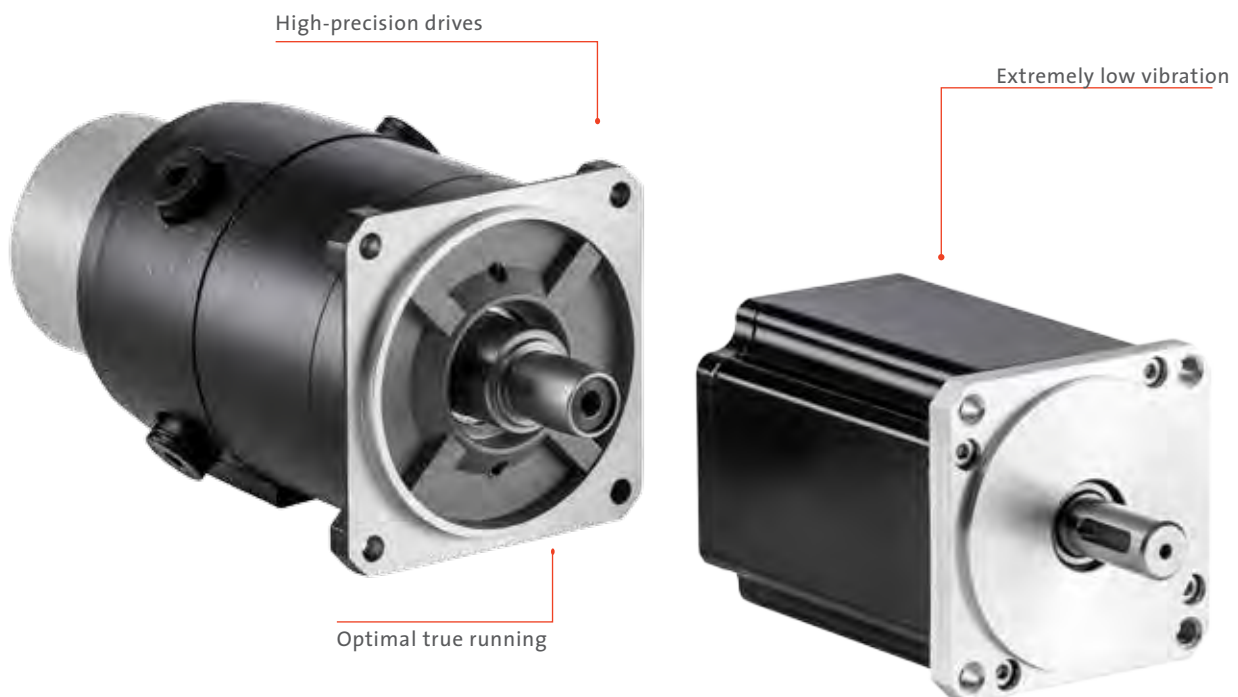
➔ Precision and Quality

Kern has been involved in the production of electric motors for over 80 years. During this time, we have specialised on precision drives in particular.

Brush-operated or brushless drives – a Kern motor is always designed for exceptionally smooth running and meets the highest requirements with regard to synchronization, energy efficiency and low vibration. Consistently developed to be durable and resilient, they are used wherever these qualities are of the utmost importance.

Their impressive control characteristics make seamless integration possible even in sensitive control applications and allow quick adaptation of the overall design.

Manufacturing according to the most demanding criteria, attention to the smallest details and a product philosophy that leaves nothing to chance have made our motors what they are today – cutting-edge technology for drive tasks far beyond the usual.



• Further technical data upon request



From lot size 1 to series production. Every motor leaves the plant only after 100% testing.



Overview of motor technology

- DC motors from 40 to 1000 watt
- Motor controllers and control units
- Tachogenerators, encoders, resolvers
- Special drive technology

Kern Brakes and Clutches

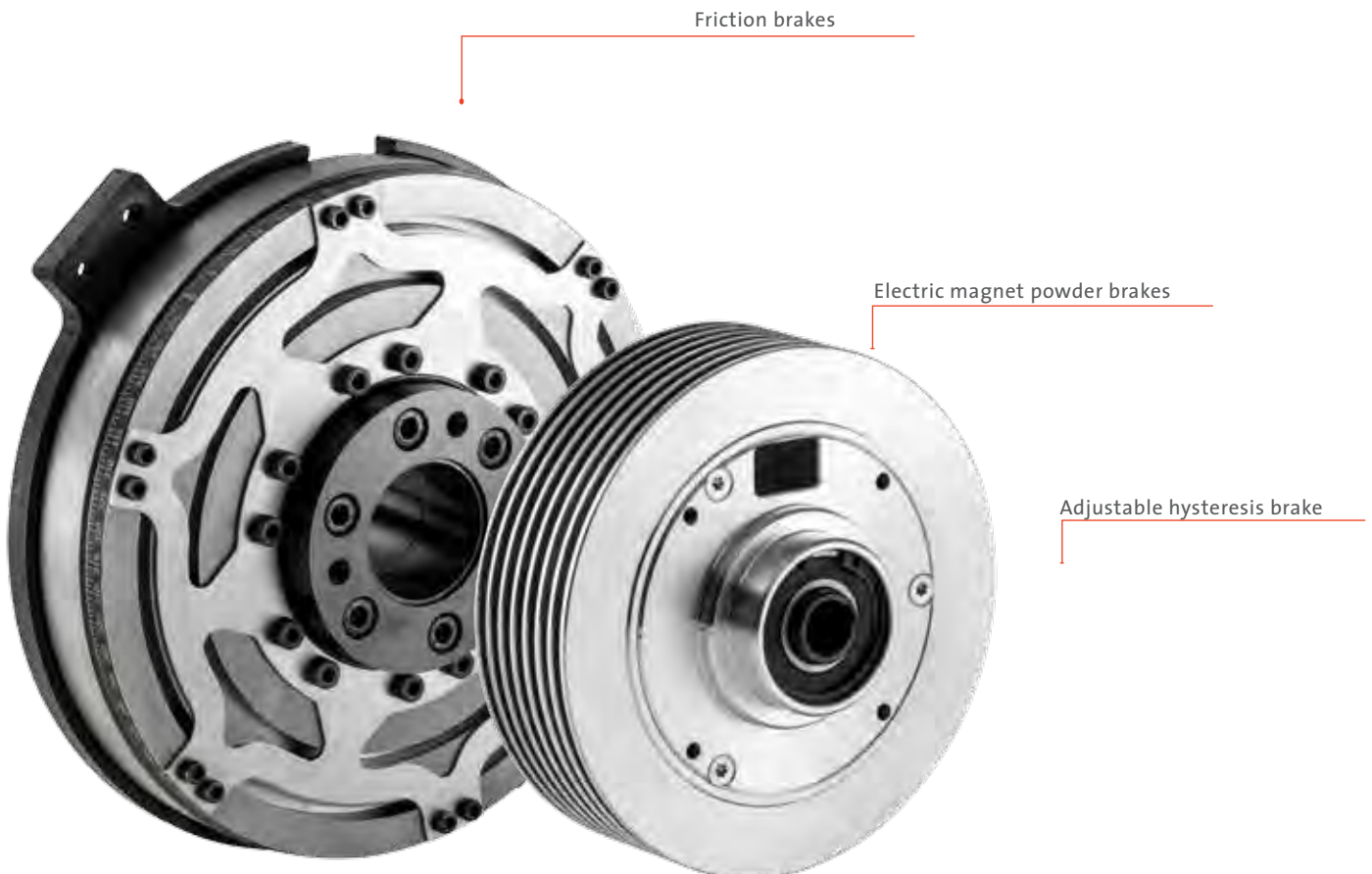
➤ *Controlled Speed Reduction*

For the safe and efficient transmission of torques, we develop and supply a broad range of clutches and brakes for an extremely wide variety of operating conditions.

Wear-free hysteresis brakes – Hysteresis brakes are recommended where maintenance-free operation is an important consideration, particularly in the case of applications where access and maintenance are difficult. With their braking torque that remains constant over a wide speed range, they are an ideal solution for all drive tasks that require a constant retention torque.

Magnet powder brakes and clutches – Thanks to their special design, magnet powder brakes and clutches provide a very high braking torque while at the same time being extremely compact. The magnet powder in the air gap of these products is electrically excited and thereby forms long particle chains which determine the braking effect of the device.

Separately excited electromagnetic clutches and brakes – As a counterpart to the permanently excited clutch and brake units, separately excited electromagnetic clutches and brakes are an ideal solution for all applications in which the braking torque must be switchable.



• Further technical data upon request

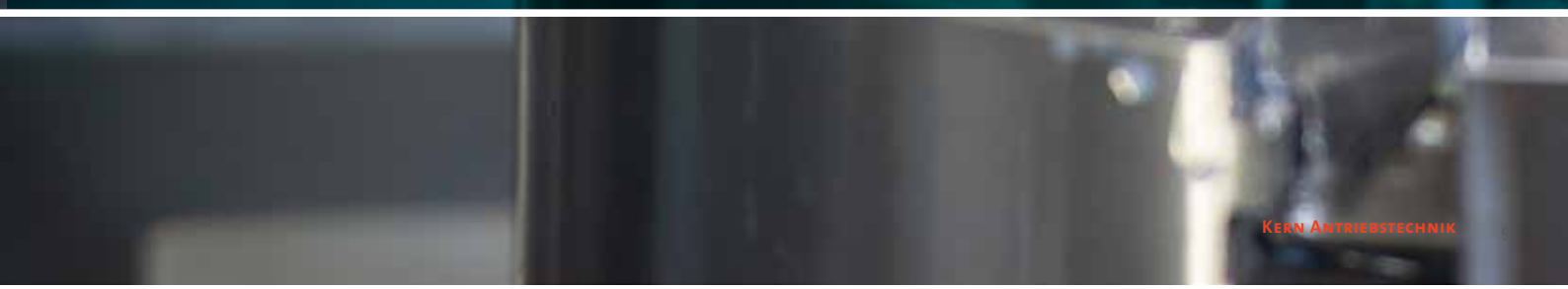


In-house cutting operations.



Overview of clutch/brake technology

- Hysteresis technology – permanently and separately excited
- Magnet powder technology – compact design, high torque
- Clutch-brake combinations
- Friction lining clutches and brakes
- Special solutions



Kern Coils

➤ *Diversity in Technology and Dimension*

Right from the beginning, coil winding technology has been one of our key activities. We have consistently combined traditional manufacturing technologies with the very latest developments in industrial production.

As a result, Kern Antriebstechnik GmbH is able to respond to the requirements of clients flexibly and to implement them economically. Lot size 1 is as much a part of our day-to-day business as serial supply with special materials in Kanban and just-in-time production.

Magnetic coils

Magnetic coils used in machines and systems perform a wide variety of tasks. Brake magnet or clutch coil – magnetic coils are always the first choice when it comes to transmitting and controlling torques safely and reliably.

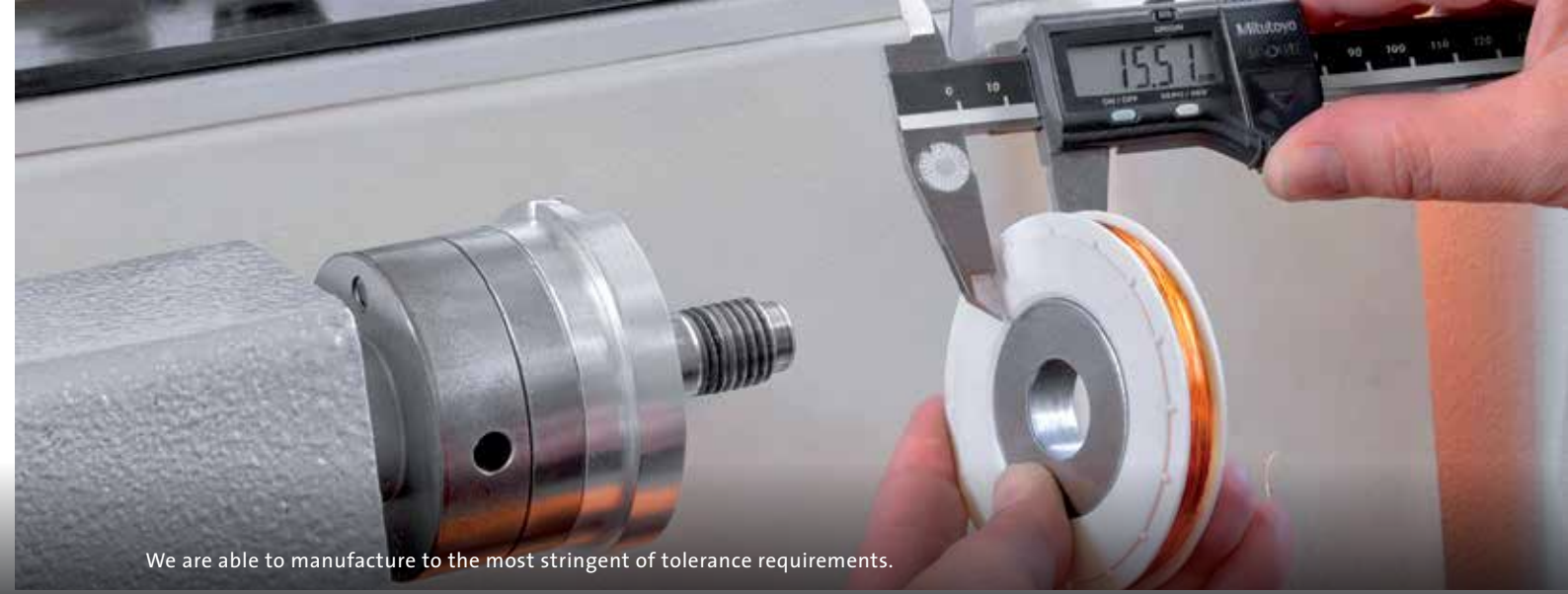
Inductances

As the electronic counterpart to the magnetic coil, inductances provide power storage and smoothing capacitances when supplying electrically demanding switching elements. Here too, Kern coils find wide usage thanks to their extremely low-loss winding technology and cover a broad range of applications.

Standard or special material – Kern coils are unmistakable.



• Further technical data upon request



We are able to manufacture to the most stringent of tolerance requirements.



Overview of coil technology

- Wire diameters from 0.05 to 1.6 mm
- Coreless or on bobbins
- Layer winding technology
- Different sensors can be provided for monitoring the coil
- Bandaging in plastic or cotton
- Partial or full overmoulding of coils with plastic
- Integrated plug contacts
- Multi-component processing

Kern Precision

➤ *Precision in Design and Manufacturing*

High-precision drive solutions are our strength.

Kern Antriebstechnik GmbH has been an ISO 9001 certified manufacturer of small motors since 2002. And since 2003 we have been an ATEX-certified production plant for manufacturing products intended for potentially explosive operating conditions.

We understand quality as a process that concerns all business activities and that is implemented by humans. We therefore attach great importance to motivated, dedicated and well-trained employees who consider and embrace the quality of our products as an expression of our respect towards our clients.



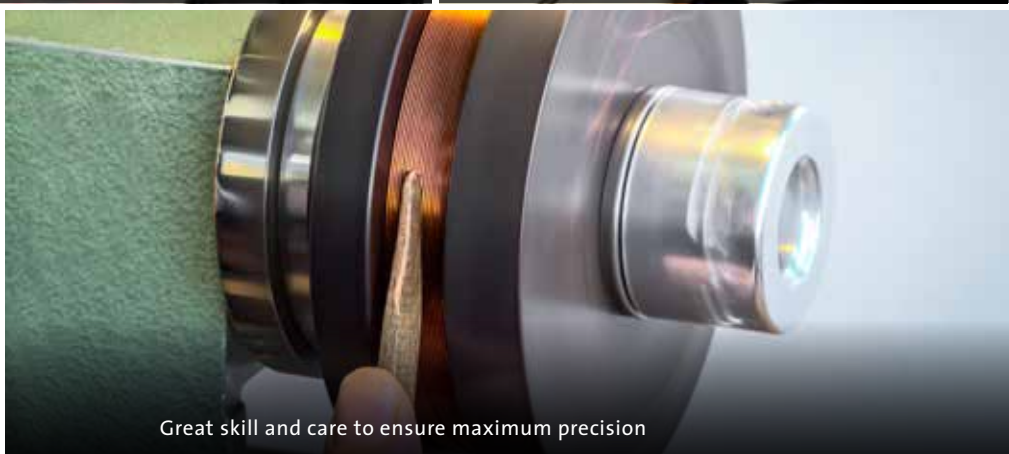
We discuss customer requirements in detail



Development using modern tools



Continuous quality control using state-of-the-art methods



Great skill and care to ensure maximum precision

➤ Continuous optimisation of the manufacturing process is the key to improving a little more every day.

We build on three pillars:

Design – All our products are carefully custom-made solutions for our clients' applications. There are no "standard solutions" at Kern. And we are proud of this – it is one of our unique selling points.

Precision – We manufacture in compliance with the most stringent quality, safety and tolerance requirements. Our products are neither comparable with mass-produced items nor can they ever be regarded as such. Custom-made solutions that meet the exact requirements of the individual client are our strength.

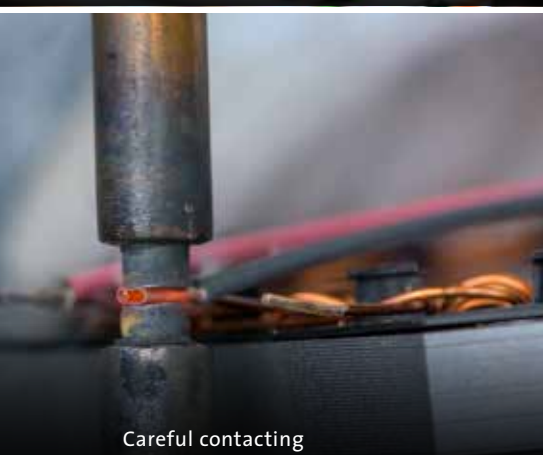
Manufacture – We manufacture all key components in-house. We guarantee an integrated and fully cohesive quality process. For individual handmade pieces or for just-in-time series assembly – a Kern product is always as individual as its field of application.



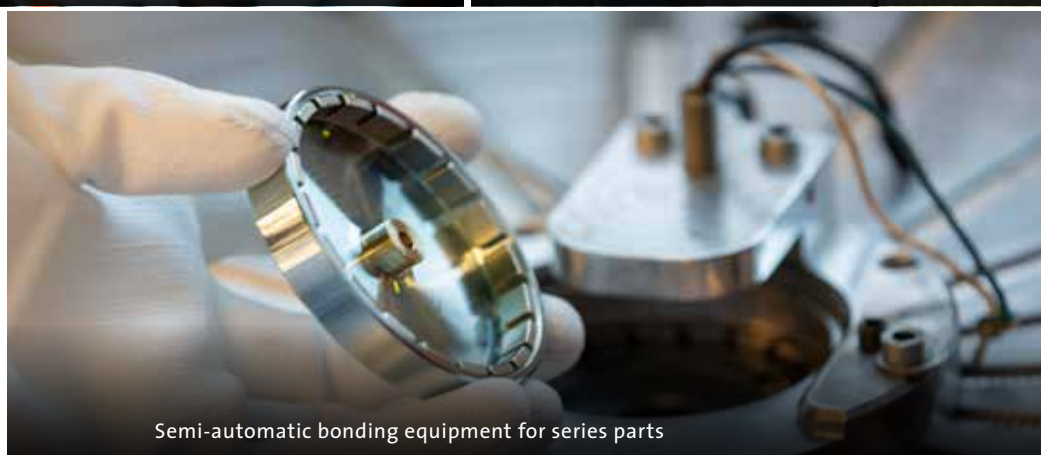
Traceable quality standards



Advanced manufacturing centres



Careful contacting



Semi-automatic bonding equipment for series parts

➤ **CTQ – Critical to Quality:** Consultation with the client is of great importance at Kern. This is why we manufacture all strategic components of our products in-house, thereby ensuring a seamless and integrated quality chain.

Kern Antriebstechnik

International

We are there where our clients need us – wherever they may be.

To meet this requirement, we maintain a wide network of procurement and partner structures, which allow us to react to changing market requirements flexibly and quickly. In this way, we safeguard our long-term efficiency and the success of our products.

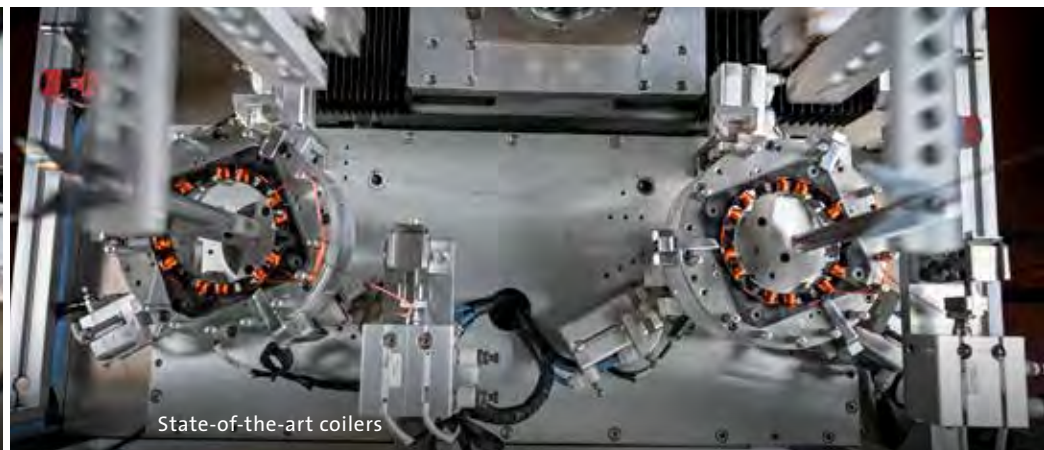
This is also part of our philosophy of being a reliable and stable partner for our clients.



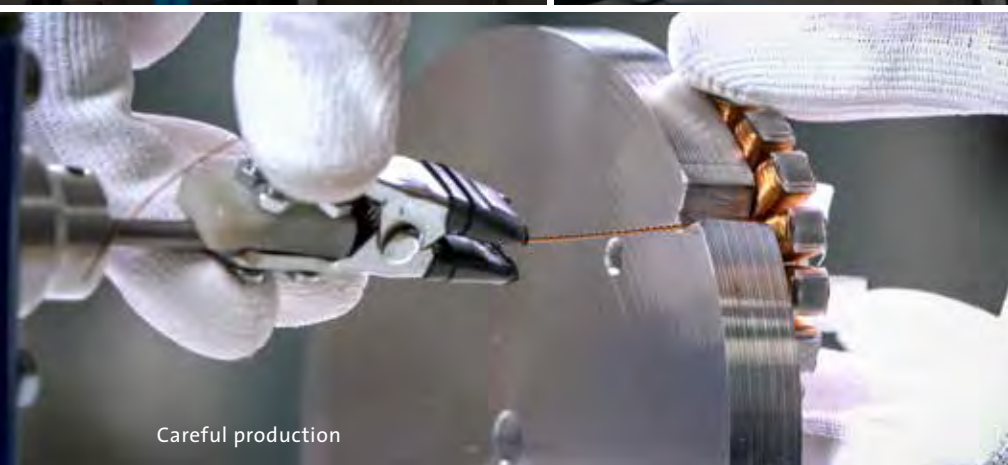
- Clients
- Business partners and suppliers



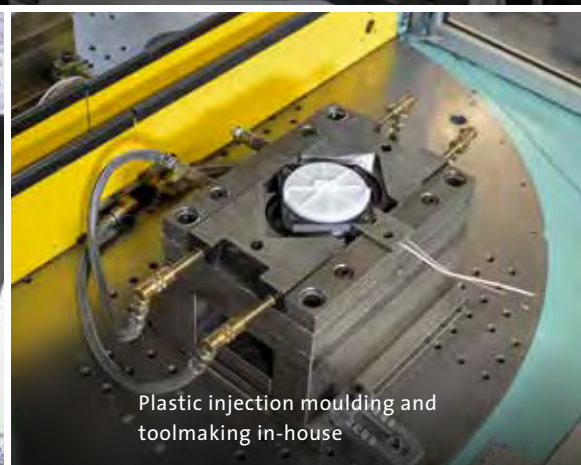
Flyer winding technologies



State-of-the-art coils



Careful production



Plastic injection moulding and toolmaking in-house



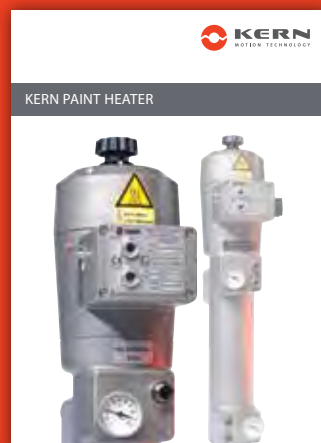
Kern Motors
Precision and Quality



Kern Brakes and Clutches
Controlled Speed Reduction



Kern Coils
Diversity in Technology and Dimension



Kern Preheaters / Paint Heaters
For Better Economic Efficiency when Painting



Kern Antriebstechnik GmbH

Gutenbergstraße 11
88046 Friedrichshafen (Germany)

Phone +49 (0)7541/5016-0

Fax +49 (0)7541/5016-28

info@kern-motion.com

www.kern-motion.com