

PRODUCTS & SERVICES
FROM FEINTOOL
SYSTEM PARTS



POWER FOR DRIVE TECHNOLOGY

Electro laminations and stacks
for your success



EXPANDING HORIZONS



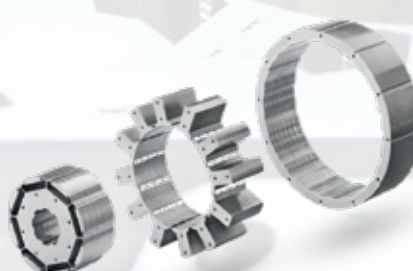
WELCOME TO THE FAST LANE

Quality and expertise from Feintool

We take your production to full speed. Feintool is your system partner along the entire process chain relating to electro laminations. We support you from the first laser-cut prototypes to the design and production of tools and jigs, through to series production manufacturing. Alongside individual components, we also provide you with windable assemblies in the form of plastic-insulated stacks. Our plants on three continents allow us to manufacture with identical processes and standards of quality around the world and across the board.

KEY TECHNOLOGIES FROM A SINGLE SOURCE

- ▶ Laser cutting and stamping
- ▶ Stacking (interlocking, welding, gluing, baking, riveting)
- ▶ Metal and plastic connections
- ▶ Engineering, prototyping
- ▶ Tools and jigs
- ▶ Project management



PRODUCTS. TOUGHNESS AS STANDARD

Built for peak performance



Product dimensions of 1 - 1,250 mm can be manufactured

We have the right solution for every output scenario: laser-cut laminations for prototypes and small series, combinations of laser-cutting, stamping as well as laminations and stacks punched in series for greater volumes. Our goal is to secure your needs each and every day, so that your products meet the requirements of your customers.

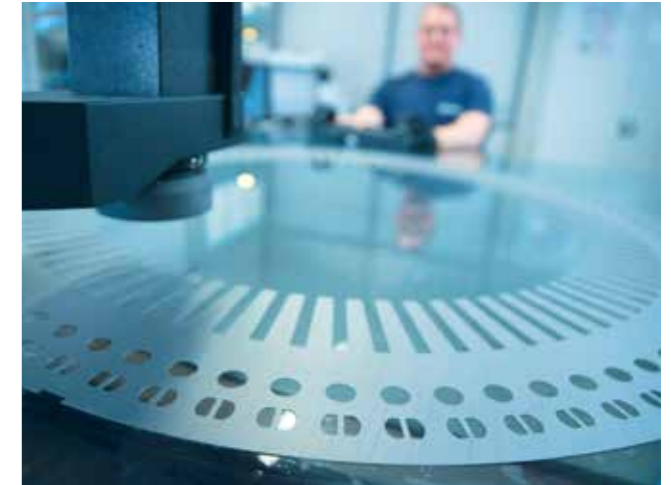
We build soft tools for you, ranging from the first stamped laminations to multi-stations tools made from tungsten carbide, used for high volume production requiring the utmost precision. Every year, our production plants execute several hundred million strokes as we process more than 20,000 tons of coil material. Our processes are certified according to IATF 16949:2016 and ISO 9001:2015.

Your benefits

- ▶ Slitting and cut-to-length parts: Material cutting in-house ensures short delivery times.
- ▶ Utmost precision and efficiency thanks to dual-head laser-cutters: We supply you with prototypes and small series in a short time and without tool building. We produce loose laminations baked, welded and glued stacks in all requested variations and outputs.
- ▶ Manually operated or automated: Single notching machines with press forces between 4 and 20 kN permit the production of laminations in medium outputs with all conceivable diameters.
- ▶ All tool sizes are welcome: High-speed blanking presses with press forces between 20 and 400kN and with clearances for any tool dimensions permit the production of various diameters.
- ▶ Quality-assurance measurements and inspections ensure the quality of your products.



Interlocked rotor and stator cores



Loose laminations, laser-cut or stamped

Our offering –

innovative and future-oriented

- ▶ In-tool stacks for rotors and stators
- ▶ In-tool stacked single- or multi-part sets
- ▶ Full circular blanks, segments, single poles, rod cores and linear stacks
- ▶ Stator grooves optionally with or without twist
- ▶ Optional sheet thickness compensation in core stacks by means of in-tool rotation

Stacks

- ▶ Welded
- ▶ Baked
- ▶ Riveted
- ▶ Glued
- ▶ From cookies or segment

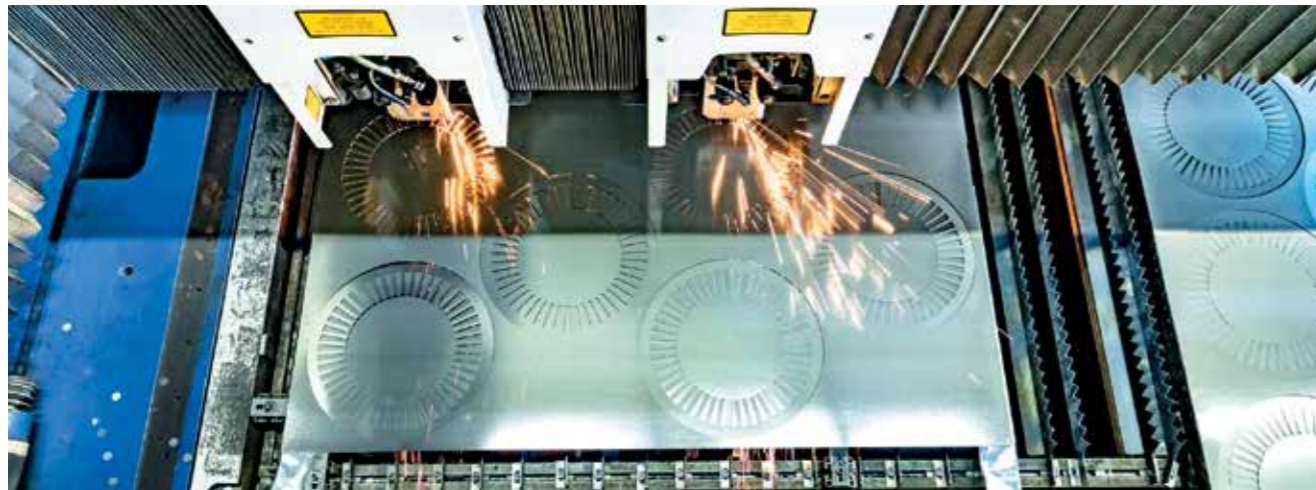
Loose laminations – laser-cut or stamped

- ▶ Rotor laminations
- ▶ Stator laminations
- ▶ Segmented laminations
- ▶ Pole laminations
- ▶ Strips laminations
- ▶ El standard laminations
- ▶ Special cuts
- ▶ Slit strips and plates

You can't find the product you need? Talk to us. We have the right solution for all your requirements.

TECHNOLOGIES. WE GET THE FUTURE MOVING.

Everything from a single source



Laser cutting: flexible manufacturing of prototypes and low volume series on modern laser cutting machines

You can rely on our expertise. We are competent in all processes related to manufacturing high-quality motor laminations. We keep our knowledge of joining technology thoroughly up to date and thus find advanced, economical solutions even for highly complex stacks.

Decades of experience as well as current research and development results give us the innovative power to rise above the crowd: An advantage that helps you as our customer to get ahead of the competition. We pay particular attention to the development of new technologies, materials, products and processes, as well as testing them.

Laser cutting: for prototypes and small- and medium-sized series

Developing prototypes without building a tool: Our laser-based production technologies are ideally suited for this. With a cutting accuracy of a few hundredths of a millimeter, we produce electro laminations in thicknesses ranging from 0.10 to 1.00 mm. We can also produce small- and medium-sized series for you in an economical way. With the utmost flexibility, the laser process provides convincing solutions to challenges arising from falling outputs and growing variation. Other areas of application include laminations for repair and upgrade of motors as well as implementing special contours.



Metal /plastic joining: ready-to-install interlocked stacks with plastic insulation.

Stamping and interlocking: for medium and large series.

The stamping of loose laminations is the basis for an almost unlimited variety of products. There are virtually no limits to the dimensions of your components – the possible applications range from the drive unit for dental drills to a torque motor. The maximum table length of our presses is 3,100 mm. Diameters up to 600 mm can be processed in progressive tooling. Interlocking of stacks – ready of the press is our core competency. We offer all kind of interlocking geometries. An indexing stacking device compensates for material thickness and burr variations.

Metal and plastic joining: for high-volume production

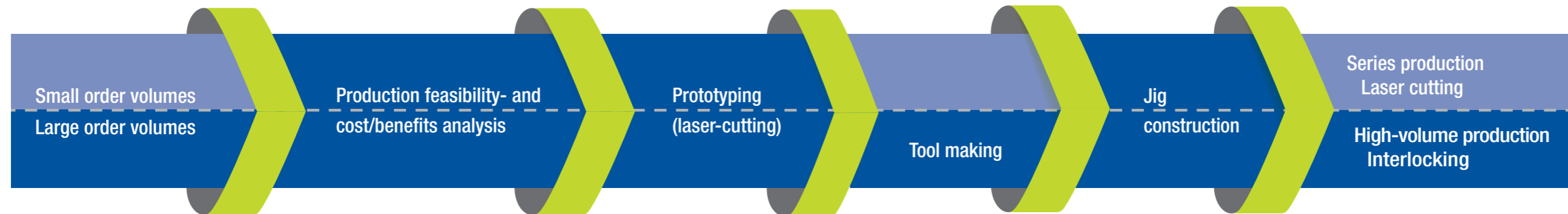
Injection-molded plastic slot insulators are a worthwhile alternative to conventional paper insulators for electric motor components. With this process we manufacture windable components for you. The utmost quality is guaranteed – because stamping and injection-molding take place under one roof and are perfectly coordinated with each other.

Welding, baking, gluing: for prototypes and high-volume production

Our extensive technology portfolio is completed off by baking, welding and gluing of stator and rotor stacks. The only way to increase productivity, ensure quality and reduce development times is through a holistic approach to the entire process chain.

SERVICES. IMPLEMENTING PLANS QUICKLY

Room to maneuver in any direction



Competence in all essential connection technologies: interlocking, riveting, welding, baking, plastic-stacking

Short development and economical production are key success factors in your market. We provide the lift to get your ideas off the ground. With every project step, you'll benefit from our expertise and get optimally suited precision tools.

We always view process chains from a holistic perspective. This way, we can identify potential for economical and ecological optimization as well as any risks in your plans early on.

Production feasibility analysis

You have exact requirements regarding the loose or stacked laminations you need. We check these requirements and, where necessary, develop feasible solutions in cooperation with you. Our shared aim is a product for which an optimally suited technology can be employed

and which can be manufactured reliably and with the best possible price-performance ratio.

Cost-benefit analysis

We evaluate the planned output scenario. You get a recommendation for the manufacturing process (stamping or laser-cutting, type of joining technology).

Prototyping

How can prototypes be used to gain reliable findings for the development of products suitable for series production? Laser-cutting is the ideal production process to manufacture these prototypes. No tools are required, which has a positive impact on costs, and the precision of the cut is close to series tolerances.

Design, tool and jigs manufacturing, maintenance

Experienced design engineers work on your behalf to develop tool concepts perfectly tailored to your requirements. The focus here is on process security, ease of maintenance, and high run times. We produce the precision tools made of steel and tungsten carbide and the corresponding jigs in our in-house tool construction department. In order to ensure maximum availability of production tools, we carefully maintain them.

Our range of tools:

- ▶ Pilot production tools and soft tools
- ▶ Progressive tools
- ▶ Interlocking tools
- ▶ Notching tools
- ▶ Baking and welding jigs
- ▶ Spare and wear tools

APPLICATIONS. PERSPECTIVE GUARANTEED

Lead in your market with Feintool

Electric motors of all sizes are playing an increasingly important role, and this trend is set to continue in future. In boom disciplines such as electromobility, renewable energies and robotics, manufacturers need to offer innovativeness, the utmost product quality, and optimized costs. With our products and services, you can put yourself in an excellent starting position within this highly dynamic environment.



Our products cover a broad range of applications. Thanks to our economical and high-precision production and our claim to the highest quality, we offer you the best opportunities in lucrative growth markets.



Sectors – where your potential lies

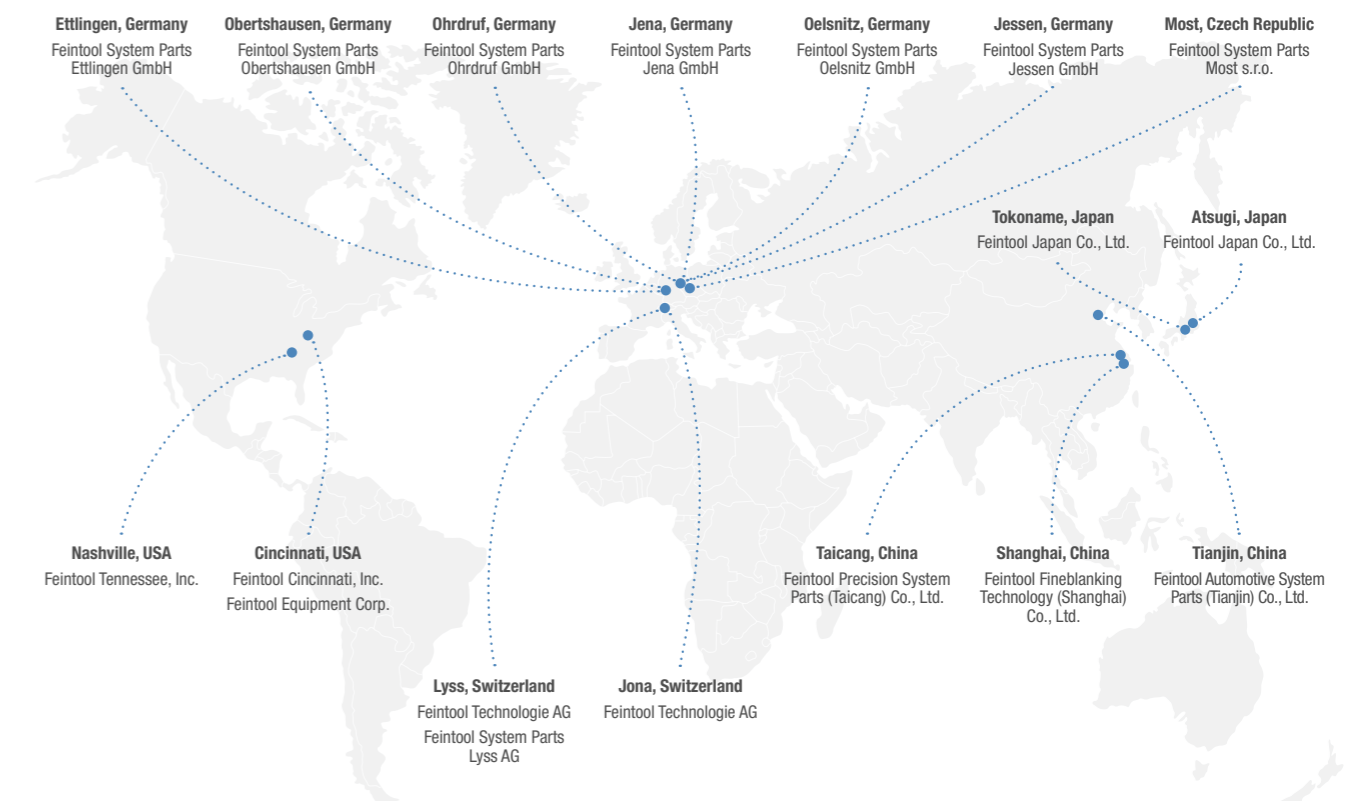
- ▶ Automotive applications (e.g. drive, water pump, heating, throttle valve controller, variable value timing, coolant pumps, ventilation, windshield wipers)
- ▶ Industrial drives, industrial applications
- ▶ Energy generation and distribution, renewable energies (wind, water, photovoltaics)
- ▶ Transport and robotics
- ▶ Pumps for building applications
- ▶ Generators
- ▶ Household appliances



Single parts that were designed as fineblanked and formed parts.

FEINTOOL. YOUR STRONG PARTNER

Global competence with local representation on three continents



Feintool is the world's leading technology and solution provider for fineblanking, forming and electro lamination stamping technology. We offer our customers a complete service and product portfolio covering electric motors, automotive drive and non-drive, industrial applications, transformers, energy and rail technology, and other industries.

Feintool's headquarters are in the Swiss town of Lyss. The company has its own production plants and technology centers in Europe, the US, China and Japan, and is thus never far from its customers. Since 2018 the Group has owned Feintool System Parts Jessen GmbH – a specialist in electro laminations and stacks.

This business is defined by its combination of stamping and plastic stacking, its extensive experience, its innovativeness, and its consistent customer focus.

By your side around the world

Feintool's approximately 2,700 employees are working worldwide on new solutions and providing Feintool customers with decisive advantages in their relevant markets. Thus you benefit, among other things, from a strong service and support network with a local presence in some of the world's most important economies.

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