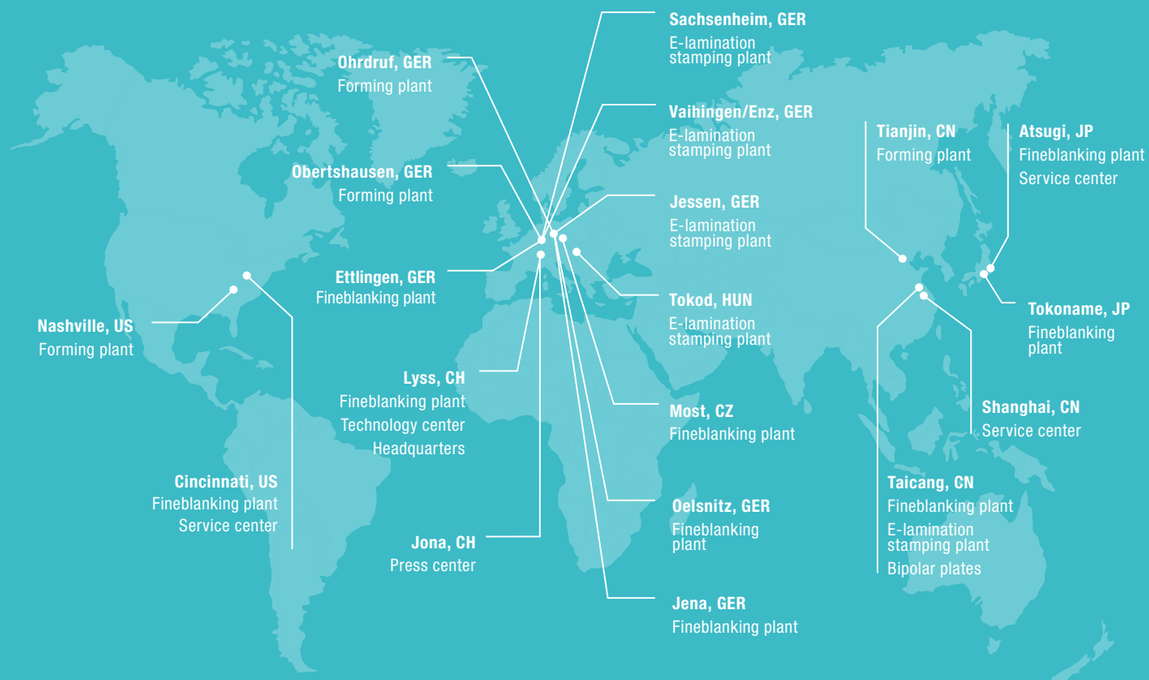
TECHNOLOGIES FOR THE ELECTRIC-POWERED FUTURE

Innovative and cost-effective solutions for a new generation of vehicles

FEINTOOL
Expanding Horizons.

GLOBAL COMPETENCE – LOCAL PRESENCE



As a partner to global automotive manufacturers, we maintain a presence in all relevant markets.

We are a global technology company operating in the fields of fineblanking, forming, and e-sheet stamping with proven expertise. As innovation drivers, we continuously expand technological horizons and develop intelligent solutions for our customers – fineblanking systems with innovative tools on the one hand and complete processes for high-precision fineblanked, formed, and electrolamination components in large quantities for demanding automotive and industrial applications on the other.

Feintool was founded in Switzerland in 1959 and today, with 19 locations on three continents and approximately 3500 employees, is always close to its customers.

SHAPE THE FUTURE WITH US

At Feintool we master the technologies needed to manufacture electric drive systems – be they battery or hydrogen-powered. We develop and produce components that will be used in the next generation of vehicles.

Feintool is a highly regarded partner for state-of-the-art solutions and cost-effective innovations. Our core competencies include fineblanking and forming as well as the engineering and manufacturing of high-precision rotor and stator stacks and bipolar plates. Our products are used in a wide range of industries including transportation, electromobility, industrial technology, power generation, and robotics.

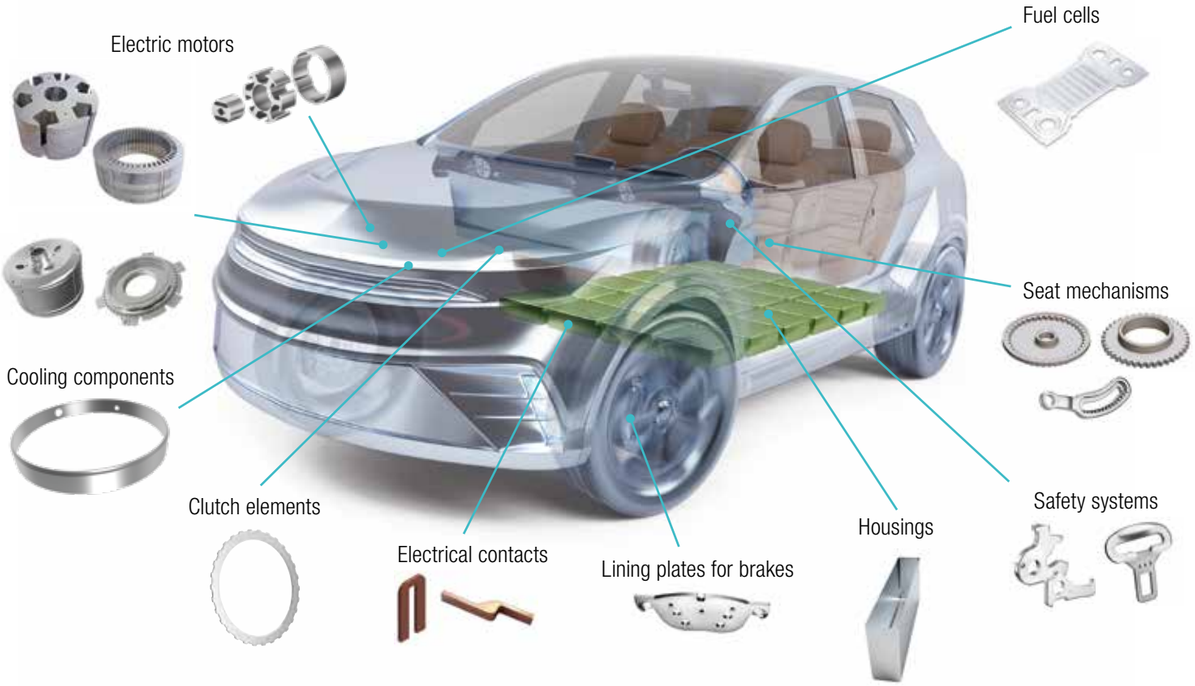
We aim to shape the transformation towards a new era of mobility with our core technologies. As an experienced and reliable supplier, we at Feintool support and guide our customers to ensure that this transformation will be successful. We know how to apply our innovative capabilities to the challenges that lie ahead – in a cost-effective, precise, and timely manner.

We always stay one decisive step ahead – take this step with us.

PRECISION PARTS FOR THE NEXT GENERATION OF VEHICLES

E-mobility is placing both new and stringent demands on materials and technologies. Our products are the key to your success. They are built for maximum competitiveness and cover a wide range of applications. We offer the right solution no matter the quantity. In combination with our services along the entire value chain, we give our customers that crucial competitive edge.

BEV/FCEV WITH FEINTOOL



Overview of Feintool's e-mobility product range

	HEV	BEV	FCEV
Electrolamination stamping	▸ Rotor/stator for electric drives ▸ Rotor/stator for auxiliary units	▸ Rotor/stator for electric drives ▸ Rotor/stator for auxiliary units ▸ Magnetic core for C-poles	▸ Rotor/stator for electric drives ▸ Rotor/stator for auxiliary units
Fineblanking	▸ Seat elements ▸ Lining plate for brakes ▸ Seat belt buckles	▸ Seat elements ▸ Lining plate for brakes ▸ Seat belt buckles ▸ Electrical contacts	▸ Seat elements ▸ Lining plate for brakes ▸ Seat belt buckles ▸ Electrical contacts
Forming/FEINforming	▸ Plate carriers ▸ Planetary carriers ▸ Pulleys ▸ Encoder discs	▸ Planetary carriers ▸ Housings	▸ Planetary carriers ▸ Housings ▸ Bipolar plates

THE CHANGING FACE OF DRIVE TECHNOLOGY

We offer superior technologies

Our key technologies enable a variety of drive systems – for those being installed in vehicles today and for those ten years from now and beyond. Over the past few years, we have solidified and expanded our market leadership through the technological development of our products. Feintool maintains a presence in every market in which our expertise is demanded.

ELECTROLAMINATION STAMPING

The core of an electric motor: **stator and rotor stack**, layered from hundreds of high-precision electrolaminations, either in-tool mechanically interlocked, baked, welded, or glued.

FEINFORMING

A **stack**'s most important design elements consist of the bipolar plate and the MEA. Together, these two components significantly determine the stack's performance.

FINEBLANKING

A large number of fineblanked parts are installed in battery-electric cars, including **power rails** which, as high-voltage copper electrical contacts, have to meet extremely high standards.

FORMING

When lightweight design and stability count. **Formed parts** in an electric motor include a component for the cooling jacket (top) and a sheet metal rotor arm and support flange (bottom).

«The punching process in high-volume production is a complex and high-precision mission that has a direct impact on the efficiency of an electric motor. Through our comprehensive range of products and services, we support our customers from their first contact with our company all the way through to delivery.»

Cutting-edge high-speed blanking presses ensure that production at the plant in Vaihingen, GER, is cost-effective.

ELECTROLAMINATION STAMPING

Technology for the drive technology of tomorrow

Feintool is the ideal partner for highly efficient electric motors and generators. We support our customers with a one-of-a-kind range of products and services along the entire value chain – from slitting electrical steel and stamping stator and rotor laminations to casting rotors, from tool design to gluing magnets in rotor pockets and even press-fitting shafts.

Through our advanced technologies such as aluminum die-casting, baking stacks, or bonding stacks, we can significantly improve the efficiency of your machine.

As a specialist in manufacturing components for electric motors and generators, we guide our customers from the initial idea to profitable series production, be it for smaller volumes or demand-driven large-scale production.

- Cost-benefit analyses
- Engineering
- Prototype manufacturing
- Product development
- Tool making
- High-volume production

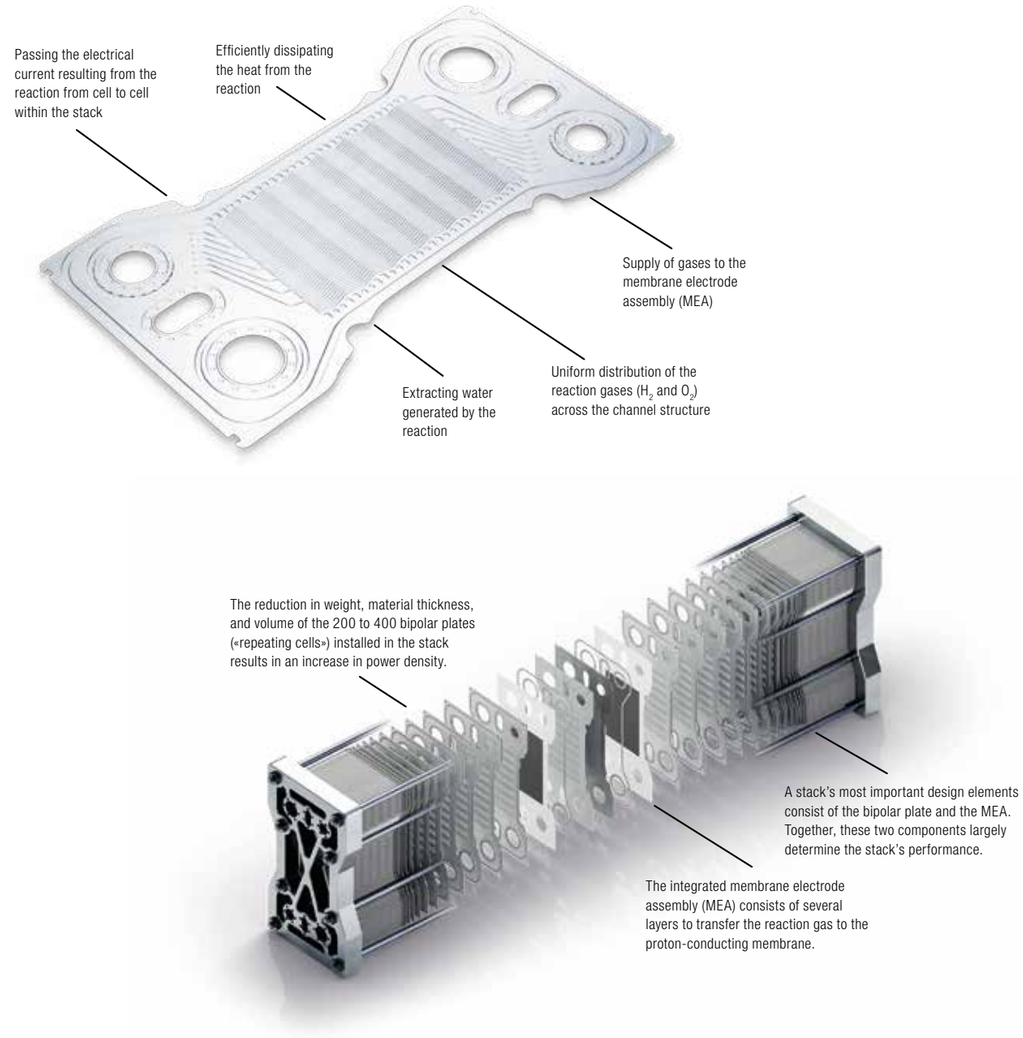
Our perfectly coordinated processes meet the most stringent requirements and guarantee optimal results – with zero tolerance for errors. Feintool's culture of innovation creates the conditions, that enable the company to cost-effectively manufacture highly complex stacks.

«A deep understanding of bipolar plate requirements coupled with extensive system engineering and tool making expertise: This is our recipe for success in achieving a new level of fuel cell drive efficiency.»

FEINFORMING

Key technology for the production of bipolar plates

The bipolar plate is the core of the fuel cell. Where other manufacturing processes reach their limits, our key technology of «FEINforming» lays the foundation for a new level of fuel cell drive efficiency. High-precision machining of extremely thin materials enables the production of low-volume, low-weight bipolar plates. This results in increased power density in the cell stack for long-range, compact vehicle drive systems. «FEINforming» – a combination of our core competencies of fineblanking and forming – delivers all the properties that are of key importance to the future viability of the bipolar plate. This is how we are supporting the transformation to sustainable e-mobility with cutting-edge press and process expertise.



Depending on the car performance, a fuel cell stack can consist of several hundred bipolar plates.

The FB one has taken hydraulics, design, control, and connectivity to a new level.

FB ONE – MADE FOR E-MOBILITY

A new dimension of fineblanking and FEINforming

The electrification of mobility means that production systems have to meet new requirements.The FB one series from Feintool marks a quantum leap in fineblanking technology. This generation of press sets new standards in terms of performance, energy efficiency, speed, and repeat accuracy. It cuts more precisely, while using less energy. The FB one series is Feintool's technological answer to the challenges of the future.

Long-lasting cutting-edge technology for the production of sophisticated components:

1. Modular, flexible design allows it to be configured specifically for the production of bipolar plates
2. Dedicated tooling concept
3. Implementation of extremely small radii and minimal component tolerances
4. Perfect compatibility of tool and press
5. Comprehensive performance enhancement
6. Long tool life
7. Up to 30 percent less energy consumption
8. Unmatched precision and rigidity
9. Significantly lower production costs

Feintool International Holding AG
Industriering 8
3250 Lyss
Switzerland
+41-32-387-5111
feintool-fih@feintool.com
feintool.com

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