

PRODUCTS & SERVICES
FROM FEINTOOL
FINEBLANKING TECHNOLOGY



ACHIEVING SUCCESS WITH FINEBLANKING

Maximum cost-efficiency
with systems and services
from a single source

 FEINTOOL

EXPANDING HORIZONS



FINEBLANKING TECHNOLOGY

For cost-efficient high volume production

Greater cost-efficiency, better quality, improved productivity: fineblanking is the recipe for success for companies that set themselves ambitious parts production goals. And Feintool is the perfect partner to help you doing so. We aim to work with you to expand your horizons, supporting you with our world-leading technology and our compelling solutions for every requirement: presses, peripherals and tool systems. And we will accompany you on your road to sustainable success by providing analyses, consulting, engineering, training and reliable servicing.

BECAUSE RELIABILITY PUTS YOU IN THE LEAD

- ▶ Complete technical solutions
- ▶ Partner for parts design, simulation, prototyping and toolmaking
- ▶ Mechanical and hydraulic fineblanking presses with the latest technology
- ▶ State of the art peripherals, such as feeding lines and parts handling
- ▶ First-class service and maintenance throughout the world



THE FASCINATION OF FINEBLANKING

The principle behind this successful technology

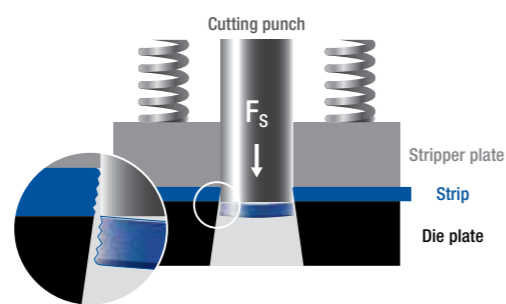
Only at first glance is fineblanking comparable with conventional blanking or other processes. In contrast to conventional blanking, the fineblanking process involves three forces that produce a high percentage of clean cut surfaces. The intelligent interaction between fineblanking press and tool makes it possible to combine fineblanking with forming processes.

Fineblanking produces clean, right-angled, crack- and tear-free blanked surfaces; the part itself is straight and, because of the way it is clamped, perfectly flat. Parts can be manufactured fully-formed and ready for immediate use, generally without the need for contour finishing. As a result, fineblanking provides the option of combining cutting and forming processes in progressive tools and of producing, on a single press, parts that can be used straight from the tool. This allows cost-efficient high volume production of technically highly-complex multi-functional parts.

Fineblanked parts

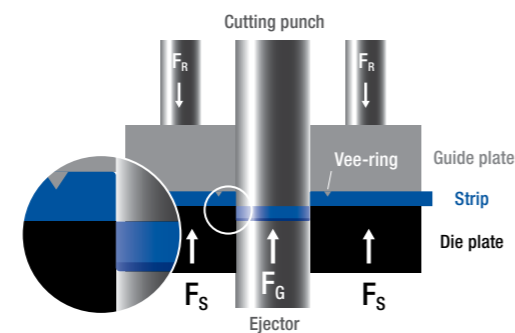
- ▶ Precision, thanks to smooth, crack- and tear-free cut surfaces
- ▶ Maximum flatness
- ▶ Forming and deburring in the same process
- ▶ Hardly any finishing required
- ▶ High cost-efficiency

Conventional blanking



Conventionally blanked components have sheared surfaces with a cut portion and a fractured portion. The flatness of the components is limited.

Fineblanking: Three forces



The vee-ring force F_R and counterforce F_G clamp the material securely before the cutting force F_S is used. This results in clean, right-angled, even components, featuring the often desirable work hardening effect on the functional surfaces.



FEINTOOL LEADS THE MARKET

We set the trends in fineblanking



We support our customers from the very begin.



Innovation opens up new prospects for fineblanking.

Expertise for your fineblanking solution

Feintool's success, past and present, stems from the fact that we have specialized in fineblanking technology. As a driver of innovation, we have developed fineblanking into an industrial process. Today, Feintool can claim to be the world knowledge, market and technology leader in fineblanking.

We provide our customers with fineblanking presses and a full range of fineblanking systems, combining blanking and forming processes in progressive tools and producing ready-to-install parts from a single press at attractive individual investment costs. Top-quality servicing and maintenance complete the picture.

Innovation opens up new prospects for fineblanking.

Innovation is Feintool's way of rolling back the frontiers of fineblanking

Our goal of continuing to develop fineblanking technology is also our motivation. Innovation and smart ideas for developing presses, tools and tool materials or for designing blanking processes ensure that the scope of fineblanking is constantly expanded – and that you benefit from it:

Our key technology trends

- ▶ Increased complexity of parts
- ▶ Exponential increases in output
- ▶ Lower material consumption
- ▶ Processing new materials
- ▶ Integrating downstream finishing operations
- ▶ Reduced energy consumption rates
- ▶ Industry 4.0: preventive maintenance and better data

WHERE QUALITY AND LOW COST COUNT

Practical applications for fineblanked parts



Clutch disks



Brake lining carriers



Seat angle adjusters



Door locking mechanisms

Fineblanked parts are permanent features of our daily existence. Installed in vehicles, machinery, household devices and tools, they are responsible – often hidden in the background – for functionality, safety, comfort and long service life.

The automotive industry: Not a penny too much

The automotive industry is without question the key sector for fineblanking. There are up to 200 fineblanked components in every vehicle. It is here, in particular, that the benefits of the technology pay off because vehicle manufacturers demand cost-effectiveness, efficient production methods and quality. A few examples:

- ▶ **Drive trains:** The latest generations of transmissions are becoming ever more compact, lighter and more precise. Machined castings are being replaced by lightweight fineblanked and formed parts.
- ▶ **Braking systems:** Fineblanked brake lining carriers meet the needs of modern-day brake technologies.
- ▶ **Seat adjusters:** A precise seat adjustment mechanism delivers both safety and comfort.
- ▶ **Door locking mechanisms:** Safety, comfort and perfect acoustics are the hallmarks of modern, high-quality door locks.



A drill component



Tool with fineblanked parts

Tools for domestic use: Making everyday life easier

Fineblanked and simultaneously formed sheet metal parts perform a large number of functions in a wide range of everyday consumer goods, including, for example, drills or garden shears. Another example: the thousands of pocket knives that come off the production lines every day at manufacturers such as Victorinox, Wenger and Leatherman. With individual parts manufactured using Feintool technologies, consistently high quality is guaranteed. It is the high-quality of the mechanical functional parts and components in your household and leisure products that helps them run better and for longer.



Electrical components

Electrical engineering: Fineblanking technology makes contacts

Three-dimensional copper contact levers are one successful example of a complex functional part for the electrical engineering industry. In addition to conventional steel alloys, this sector also uses non-ferrous and light metal alloys.



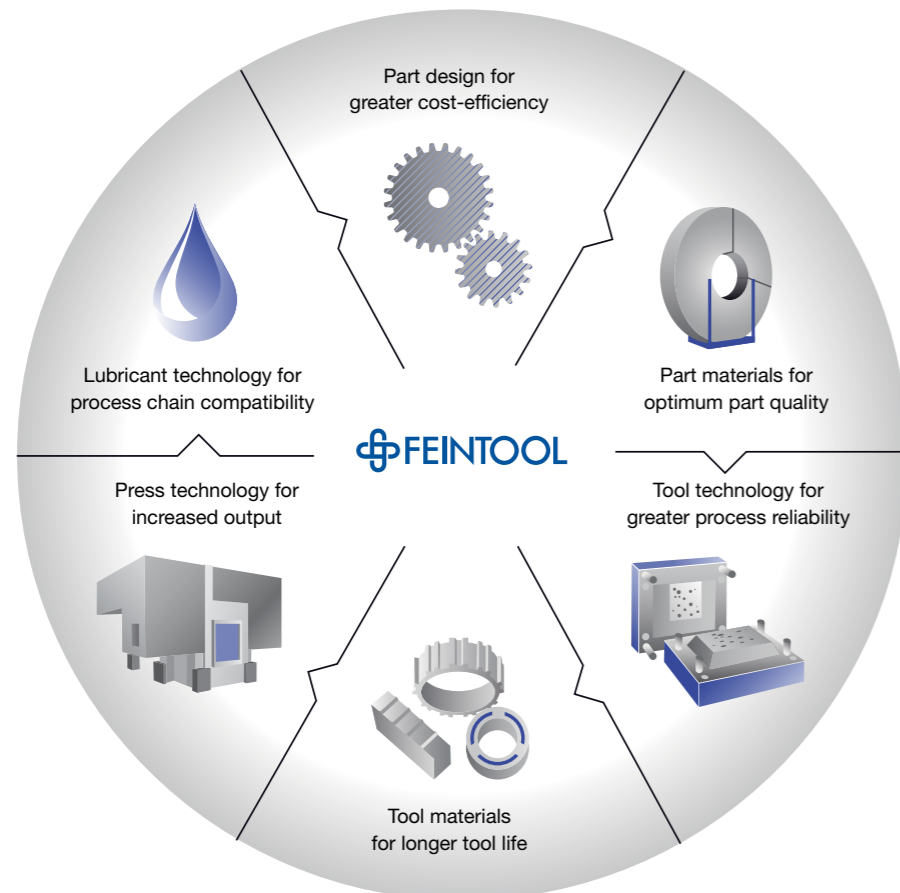
Surgical instruments

Medical technology: Zero tolerance of errors

Where human lives are concerned, there is no room for errors. Doctors need to have one hundred percent confidence in their instruments and devices. Accuracy and sterility requirements are high. Feintool provides the technology for producing equipment on which medical practitioners can rely.

THE PROCESS CHAIN. SEAMLESSLY SUPPORTED

Expertise at every single step



Consistently reliable production, unbroken press availability and long tool service lives? We know how you can achieve these goals – and will use our expertise to ensure every fineblanking technology parameter matches up.

With Feintool, you get state-of-the-art expertise and system engineering straight from a single source. Our experts will support you along the entire process chain and can offer you a full fineblanking package to ensure your success.

From part and tool design, through materials for tools and parts, all the way to lubricants. We will also be glad to offer you advice on process optimization, Internet-based production monitoring, press operation and the preventive maintenance and servicing of your systems. Set us a challenge!

FINEBLANKING PRESSES FROM FEINTOOL

A secure investment and maximum performance



Flexible, reliable, productive – with fineblanking press systems from Feintool you will be laying the foundation of your commercial success. Worldwide, over 2 000 Feintool fineblanking systems are successfully in service – mechanical and hydraulic presses with overall forces of between 1 500 and 15 500 kN. And we have the right press for your needs too.

These fineblanking systems are developed by our own engineers and produced either at our own sites or by our skilled partners. Feintool will produce tailor-made solutions to meet your requirements. Benefit from our many years of comprehensive systems engineering experience and our unique know-how in implementing manufacturing systems.

Nothing is impossible!

Feintool uses an intelligent combination of speed, flexibility, precision and cost-efficiency to provide a broad range of fineblanking systems. We regard ourselves a solutions provider, and work with you to open up new applications for fineblanking.

The benefits to you

- ▶ Mechanical and hydraulic fineblanking presses for every requirements profile
- ▶ Maximum productivity, flexibility and cost-efficiency
- ▶ Complete systems for maximum output
- ▶ A secure investment from the market leader

PRESS AND PRODUCTION COMPETENCE IN JONA

Technology Made in Switzerland



In Jona, servomechanical and hydraulic presses are developed on two production lines.

Tailor-made presses from the Competence Center

The Press Competence Center in Jona has been upgraded so it now boasts state-of-the-art technology for the production of servomechanical and hydraulic fineblanking presses for our customers. The presses are constructed on two production lines according to the principle of lean production. Assembly takes place in multiple cycles and process stages, which makes it possible to apply standardized processes of press construction on the one hand, while also offering the flexibility to take into account customer preferences. This way, customers get reliable information on the progress of their presses with regard to processing time.

Up to 48 presses can be produced in Jona every year. This high level of capacity utilization is possible because all the specialists at

this Feintool site work under one roof according to lean principles: Automation technicians, mechanical engineers, electrical engineers, software developers and CAD experts are constantly seeking solutions and optimizations. Thanks to the employees' initiative, Feintool customers benefit from the utmost quality and individuality if there are particular specifications for their presses. Many years of experience in press construction, a strong team, and a good network of local partners enable us to provide advice and products for commercial success.

Your benefits

- ▶ 50 years of experience in press construction
- ▶ Expertise bundled in one location
- ▶ Press construction with consideration of your preferences
- ▶ Reliable information on the processing time of press construction



Pipework for the press with subsequent assembly of the infeed and outfeed



Positioning of the press according to customer layout

All the knowledge under one roof

Press construction from beginning to end – when it comes to parts production as well as tool and press construction, the employees in Jona have unique expertise in fineblanking. Customers also benefit from the concentration of this knowledge in one location: The short communication channels increase flexibility and permit rapid reactions.

More structured, faster and more transparent thanks to the flow line

In the pre-assembly and assembly stages, the corresponding assemblies are put together by specialists. Standard tasks are carried out with the utmost efficiency and quality, while for special models or special developments, the greatest care is taken to ensure the customers get the added value they are seeking. If required, when it comes to setting into operation, the press is tested with the customer tool for greater certainty. Our knowledge is expanded

with every press we build – and you as a customer benefit from that!

Your benefits

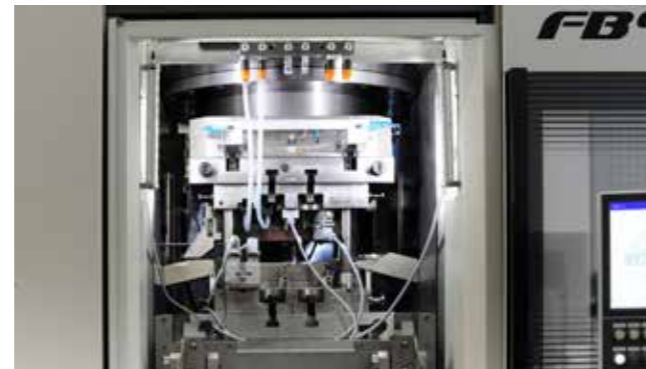
- ▶ Time-saving thanks to short reaction times
- ▶ Reliability and high quality
- ▶ Implementations of special developments
- ▶ Tool testing when setting into operation

FULLY MATCHED END-TO-END SOLUTIONS

We provide the appropriate environment



Integral feeding lines increase process reliability and availability.



Short tool change times keep production moving.

Overall performance is determined by the weakest link. A fineblanking press can only perform to its full potential in the right environment and when matched to the appropriate peripherals.

Feintool can supply you with complete sets of peripherals for your fineblanking presses: systems that keep pace with the presses' high productivity rates.

Feeding lines

Merging the feeding line and fineblanking press into a single system significantly increases both process reliability and system availability. We can provide the optimum solution for every separate task.

Tool changing

Feintool supplies various types of manual and fully automatic tool changer for short tool change times during series production.

Parts and slug handling

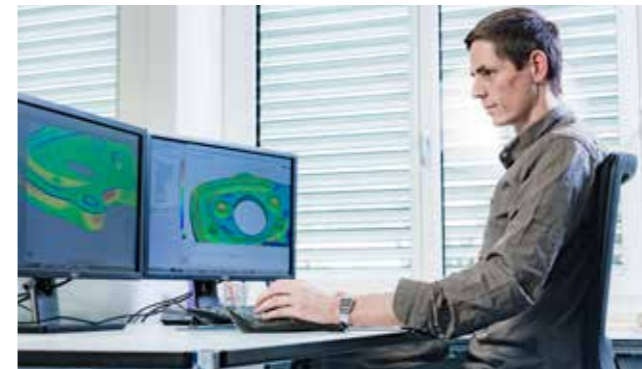
The evacuation systems developed specially for the fineblanking and forming process optimize parts handling and guarantee, that parts are removed without being damaged even at high stroke rates.

Parts finishing

Feintool has the perfect solutions for these tasks as well: we can develop, design and build fully automated systems and production lines with integral deburring, part washing and grinding systems especially for you.

SERVICES. A SUCCESSFUL START

Preparation is everything



Simulation: creating a part design that is perfect for fineblanking and forming.



Prototyping: testing under real-life conditions.

Simulation – one step ahead

Avoid costly and time-consuming trial and error loops: our feasibility studies and simulations will quickly provide a fineblanking-friendly part design without the need for expensive tools. They are essential in ensuring low unit costs. Our experts will simulate your ideas and improve them until we achieve optimum results for the tool and parts. You can therefore be confident that the process concept – regardless of whether it is prepared by you or by us – is perfectly sound before you move on to the next step.

The benefits to you

- ▶ From initial idea to first production part in the shortest possible time
- ▶ Facilitates new applications
- ▶ Fewer trial-and-error loops, lower costs for defective parts

Prototyping – for perfect parts design

It makes good sense to produce prototype parts in the early stages of project development. Methodical testing under real-life conditions quickly uncovers any potential weak points. They can then be resolved before retesting in the next step. Our efficient prototyping service lets you refine the design and functions of your parts quickly and inexpensively. To ensure that production can commence quickly, only accurate prototypes and pre-production samples are used.

The benefits to you

- ▶ Efficient part design perfecting
- ▶ Time and cost savings
- ▶ Near-series parts, validated processes

SERVICES. PLANNING AND DEVELOPMENT

What we can take care of for you



Engineering: the basis of any optimized product design.



Toolmaking: precision to satisfy the most exacting requirements.

Tool engineering – for successful production

Achieve the best possible results by drawing on synergies between component design, materials and tool design. Feintool's engineers will provide you with solutions. With their ability to see the whole picture and identify interdependencies, our engineers can prepare a tool concept that will get the best out of your resources and raw materials. Our knowledge database containing over 10,000 solutions to particular problems will ensure that your production concept is developed with maximum efficiency.

The benefits to you

- ▶ Planning certainty
- ▶ "Strip optimizer" for efficient material usage
- ▶ Knowledge database for efficient problem-solving
- ▶ Concept studies
- ▶ Complete tool design engineering

Toolmaking – for lasting added value

Every year, Feintool produces over one hundred tools for fineblanking presses at its Lyss site alone. Every day, we expand our unique expertise and add detailed knowledge to it. Your order is in good hands with Feintool's specialists. Using state-of-the-art machinery and our own hardening shop, we produce tools that satisfy the most exacting requirements. Our tools are characterized by outstanding wear resistance, diversity and maximum precision, even in their most complex form.

The benefits to you

- ▶ Maximum wear resistance
- ▶ Maximum precision
- ▶ Tools, spare elements and individual components from a single source

SERVICES. BUILDING AND TESTING

The tool in focus



Reliable and ready for use: tested, process-capable tools.



Spare elements for reliable production.

Tool testing – for successful cold starts

Feintool is the world's only supplier to subject its fineblanking tools to real-world testing under tough operating conditions. You can be confident that you will be able to employ the tool straightaway in your production process. And because no time-consuming adjustments or corrections are needed, you can use your presses' productivity to the full.

You can also call on our assistance when first commissioning tools: Our specialists will assist you at your location or in our technology centre right through to the start of series production. Having professional help to get you started ensures that you achieve a high level of process reliability in a very short time.

The benefits to you

- ▶ Tools immediately ready to use
- ▶ No interruptions to production
- ▶ Start-up assistance for maximum process reliability

Tool spare elements – for reliable production

Being able to obtain the right spare elements quickly is an important factor in ensuring reliable, cost-efficient production. This is an area where Feintool offers customers an excellent service. Using proven software solutions that provide information on details such as residual life and stock quantities Feintool can supply the spare parts you need in good time. There are clear benefits to using only original Feintool spare elements: you save yourself unprofitable adaptation time and ensure the consistently high quality of your processes.

The benefits to you

- ▶ Easy to order
- ▶ Short delivery times
- ▶ Attractive discount arrangements
- ▶ Efficient blank management
- ▶ e-shop for tool spare elements

CONSULTING. LEARN FROM THE BEST

Everything for successful operation

Feintool has always invested systematically in research and development. And what we learn we pass on to you in the form of advice and training courses. This creates the best possible foundation for successful production with your Feintool fineblanking systems.

Press technology

To ensure that Feintool fineblanking presses are being operated in line with production needs, press operators should understand how the press is constructed and how it works. Feintool can provide this knowledge as well as useful information on how to maintain and repair presses correctly.

Tool material and coating technology

Tool material quality and the active element coating are becoming an increasingly important factor. Consequently, this is a main focus of development for Feintool's experts.

Production materials

In order to reduce weight and material consumption, production processes are turning to ever more versatile materials, such as alloyed or high-tensile steels. Feintool cooperates closely with a variety of suppliers in developing optimum, production-friendly materials.

Lubricants

Choosing the right lubricant is an important factor in the process chain. Feintool develops suitable environmentally compatible fineblanking oils in conjunction with its partners.



Learn from the best on Feintool training courses

Take a Feintool training course and become a fineblanking expert

You will only get the most from your production system if you have the skills to use it properly. Completing the range of services offered by Feintool, the numerous modules in our training programme cater for every relevant employee group and cover every step in the fineblanking process chain.

We work closely with leading international universities and colleges on research and development. The outcomes of these partnerships are directly incorporated into the training courses.

The benefits to you

- ▶ A training programme that covers the entire process chain
- ▶ Comprehensive knowledge transfer
- ▶ Modules can be selected according to your needs
- ▶ On-site training at your request
- ▶ Skilled employees who optimize processes

SUPPORT. ONE FOR ALL

First-class customer care anywhere, anytime

Regular inspection and servicing of your press system by Feintool will ensure maximum availability. Experienced service engineers provide high-quality technical service anywhere in the world.

FEINmonitoring: Identifying faults before they become a problem

With FEINmonitoring, we have developed an intelligent online system to monitor fineblanking presses. Built-in sensors capture all the necessary parameters of the machine: from power consumption to temperature and pressure and even particles in the oil. The data is transmitted via a secure cellular connection to the FEINmonitoring database, where it is recorded, analyzed and evaluated. If the measured values reach a critical level, the user gets a notification via SMS or e-mail and can see immediately where there is a need for action. FEINmonitoring is not only a warning system, but takes effect wherever it needs to: Based on deviations and changes from the ideal values, recommendations for maintenance are formulated – hence both press and production operations can be optimized. The data captured can be summarized and presented in dashboards for various target groups such as management or production planning.

Smart maintenance

Feintool assumes responsibility for the need-appropriate servicing or repair of presses. The costs are covered by an all-inclusive fee. Advantages: users incur no unexpected costs and can plan on the basis of a fixed budget.



FEINmonitoring identifies potential faults before they occur.

Inspection and maintenance service

Well-maintained presses and tools are essential for long-term production success. Feintool offers customized maintenance packages that guarantee service and optimization for your entire fineblanking infrastructure, ensure problem-free production and maintain the value of your system.

The benefits to you

- ▶ Permanent monitoring of important system parameters
- ▶ Minimum unplanned press outages and expensive consequential losses.
- ▶ A management dashboard to support the cost-efficient, process-consistent operation of your fineblanking press

SPARE PARTS. SUPER-FAST DELIVERY

Keeping the production wheels turning



Feintool provides worldwide support.



Order spare parts online.

A Feintool press will only achieve peak performance if it is fitted with original Feintool spare parts. This is why we hold them ready for immediate call-off by our customers worldwide.

Our skilled service engineers will do a professional job of installing genuine parts during servicing and repairs. Feintool operates a global spare parts service for this purpose. Wherever in the world your production facilities are located, you will receive the right materials and comprehensive support in good time.

Rapid delivery thanks to a central warehouse

In the new central warehouse in Stockstadt near Frankfurt am Main, approximately 6,000 Feintool articles are waiting to be put to use. The warehouse covers around 90 percent of the spare parts requested, so these are available immediately.

eShop – for an even faster response

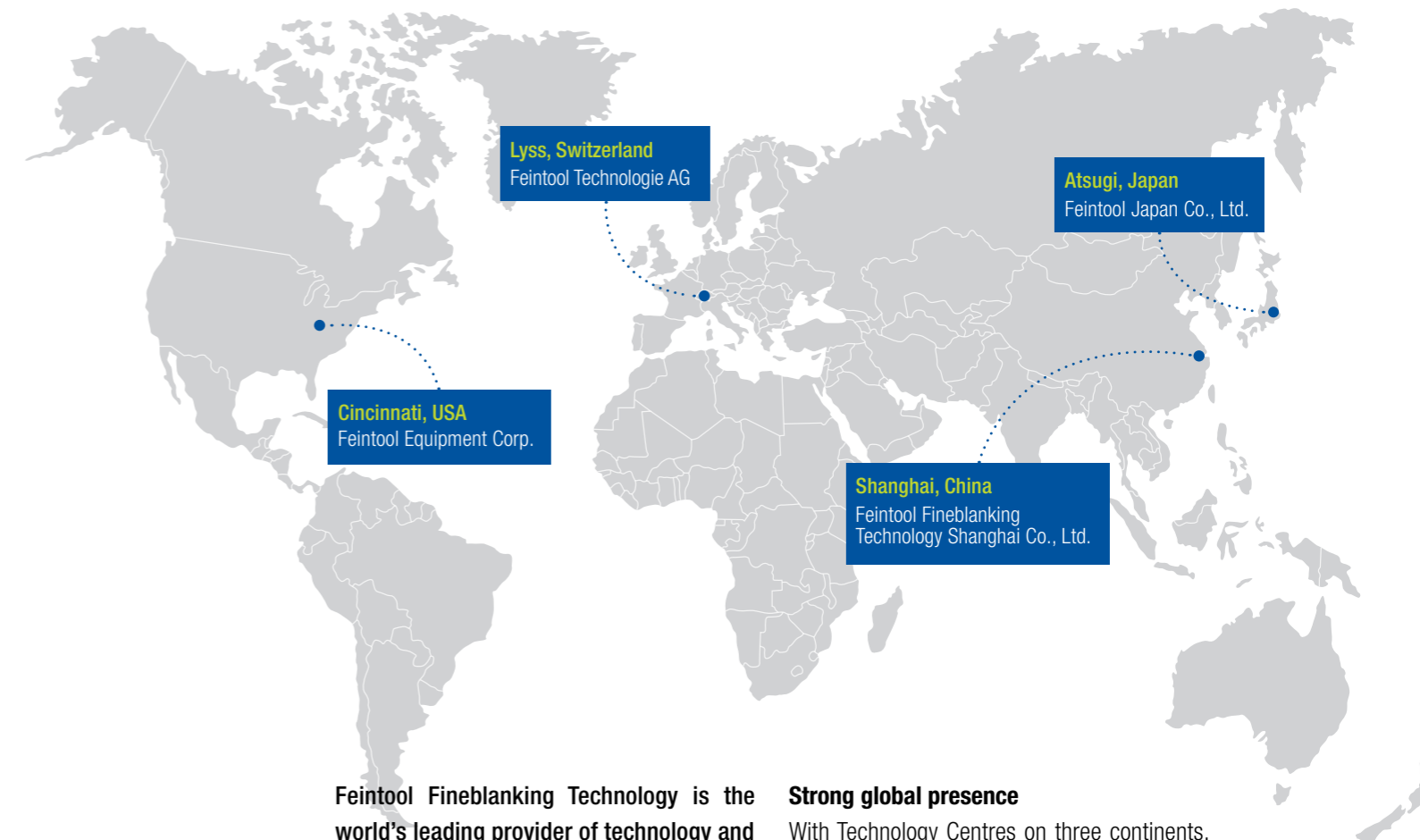
Original spare parts can be sourced even more quickly in the Feintool eShop. Our customers can order them via the internet anytime of the day or night, anywhere in the world. Ordering online speeds up both the quotation-issuing and order-handling processes. Speedy spare parts delivery means that your fineblanking system will quickly be running at maximum performance again.

The benefits to you

- ▶ Available 24/7
- ▶ Immediately transparent pricing and availability
- ▶ Simple handling: apply for a Feintool eShop account at www.feintool.com/eshop

FEINTOOL. A WORLD LEADER

Local expertise on three continents



Feintool Fineblanking Technology is the world's leading provider of technology and solutions for fineblanking and forming. The central focus of all our work is delivering cost-efficient engineering that provides the greatest possible benefit to our customers.

We pay particular attention to innovation. We secure competitive advantages for you with the very latest technologies. Investing in long-term capital assets such as fineblanking presses is a matter of trust. Place your trust in the market leader with a history of success going back 60 years.

Strong global presence

With Technology Centres on three continents, its own production sites and sales offices in Europe, the USA and Asia, and a network of professional representatives, Feintool is your ideal partner.

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