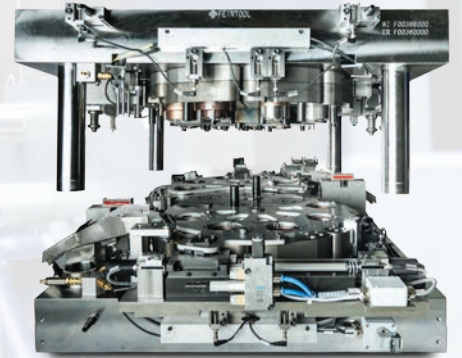


PRODUCTS & SERVICES
FROM FEINTOOL

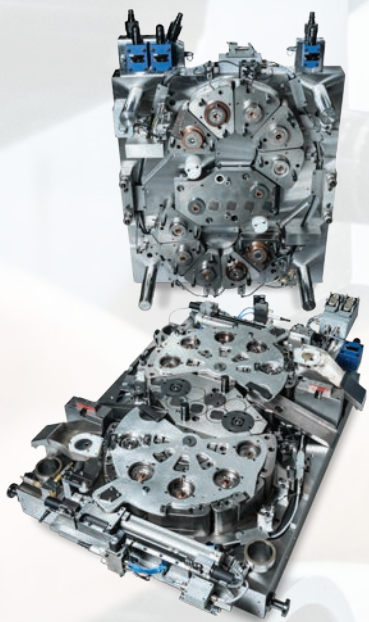


THE TOOL

Basis for the best fineblanked parts

 FEINTOOL

EXPANDING HORIZONS



OUR TOOLS – YOUR ADVANTAGES:

- ▶ Highest efficiency: Complex parts at top speed
- ▶ Custom solutions: We develop the perfect tool for all requirements
- ▶ All-around service: We support you through the entire process from parts drawing to approval, production and maintenance

SUCCESS FACTOR TOOL

Improved quality, decreased costs –
the tool makes it possible

Increasing complexity

Light-weight design, lower energy consumption: The trend towards light-weight construction is increasing in numerous industries – especially in the automotive sector. CO₂ emissions are being reduced and electric mobility is being promoted.

The result: Ever-increasing demands on the components for automobiles, machines, etc. They have to be smaller and lighter – and at the same time more stable in order to transmit more force. These two opposing requirements call for complex design – a challenge for any designer.

Increased cost awareness

Achieving the best quality at the lowest price is more important than ever due to international competition. This requires the highest level of efficiency. Meeting the ever-increasing demands on component design requires innovative production methods.

Feintool has the solution

The decisive factor for keeping up with the two trends of added complexity and increasing cost awareness: The tool. The more complex the component, the more production steps required. Feintool's innovative approaches allow it to integrate as many processes as possible into the tool, including embossing, deburring and forming. This ensures faster production and higher overall plant efficiency.

THE IDEAL FINEBLANKED COMPONENT

starts with the right tool design

Fineblanked component

Tool

..... **1. ENGINEERING**

Parts drawing

Tool concept
Strip layout
Risk assessment

..... **2. SIMULATION**

Feasibility reviews
3-D printing

Stress analysis
Durability reviews

..... **3. PROTOTYPING**

Production of the component using
a tool prototype
under real conditions.

Design and
production of
tool prototypes.

..... **4. TOOL DESIGN**

3D and 2D design form the basis
for tool production.

..... **5. TOOL PRODUCTION**

Manufacturing
Assembly

6. START OF PRODUCTION

Tool testing
Setting into operation
Training
Ramp-up

..... **7. MAINTENANCE**

Protection against wear
Servicing
Adjusting
Spare parts service

**The perfect
fineblanked
component...**

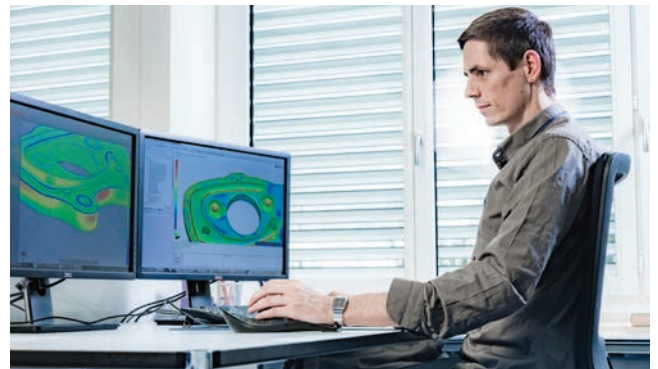
**... thanks to
the optimal
tool.**

ALL-AROUND SERVICE

throughout the entire process



Engineering using state-of-the-art design software and hardware.



Simulation: Designing the perfect component for fineblanking and forming.

Feintool provides its customers more than just a tool, but a partnership in development and production. The goal: Our customers should get exactly the tool they want – for the best price. Feintool ensures this in all of its production steps: From parts drawing to production start and maintenance.

ENGINEERING

Parts drawing

Feintool's standard: Production-oriented design. Fineblanking experts ensure that the precision component incorporates all desired aspects and can be manufactured easily, efficiently and cost-effectively. To ensure this, Feintool becomes involved in development as early as possible to contribute its expertise to part drawing.

Tool concept

Feintool uses parts drawing to design the tool specially for the press that it will later be used on.

Strip layout

An important lever for efficiency: Material savings. This depends among other things on the way the component is set in the strip and which sequence it has for subsequent tools. All of this is determined by the fineblanking experts in the strip layout.

Risk assessment

Feintool is aware of all the challenges, from the complexity of the component, its tolerances or potential errors. Considering and assessing these challenges allows engineers to react adequately and eliminate these risks as much as possible.

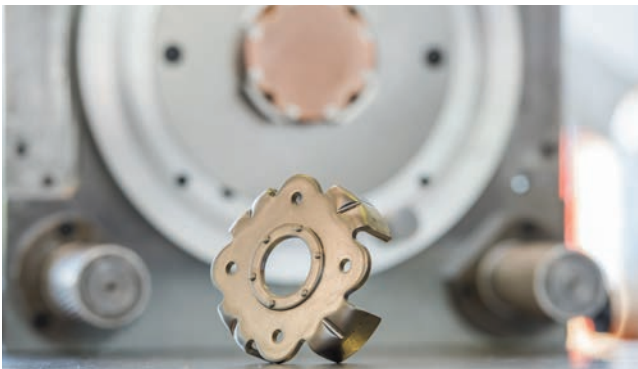
SIMULATION

Feasibility studies

Can the component actually be manufactured with all of its planned characteristics? To answer this question, Feintool uses state-of-the-art simulation software that visualizes the tools and the resulting parts on the computer.

3D printing

The 3D printer creates a plastic sample that gives a taste of what the actual product will be like.



Prototyping: Testing under real conditions.



Learn from the best with Feintool training.

Stress analysis

Stress created during the fineblanking process can affect the service life of punches and dies. They must be correctly designed in the tool in order to ensure the longest possible service life. Computerized stress analysis helps to identify stress peaks.

Durability reviews

All of these simulations help to assess the durability of the active elements – and help to ensure a particularly long service life.

PROTOTYPING

Feintool builds prototype tools that are subsequently tested on a press under real conditions. The customer can test the resulting parts right away in their products and components.

TOOL DESIGN

The tool concept is followed by a concrete tool design in 3D and 2D. On the basis of this design, the tool production department manufactures the tool elements and combines them into a tool.

TOOL PRODUCTION

Manufacturing

Feintool manufactures all tool components in-house using state-of-the-art equipment and facilities: from hydraulics and sensors, cutting punches and dies up to hardening.

Assembly

Our experts assemble the tools using the latest lean- and shop-floor principles.

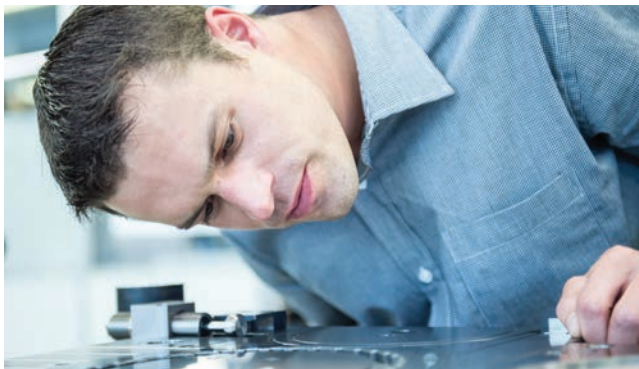
START OF PRODUCTION

Tool testing

Before delivery, the new series tool must be tested: Are the tolerances correct? Do the straight cut part and the fineblanked surface conicity match? Only when all of the part characteristics correspond with the parts drawing does the tool make its way to the customer.

Setting into operation

Feintool ensures that everything runs smoothly for the customer. Fineblanking experts assist on-site in installing the tool in the press and beginning operation.



Tool precision at the highest level.



Spare parts for safe production.

Training

The experts from Feintool are happy to provide the customer's employees with on-site training in learning the new tool.

Ramp-up

The final obstacle: After testing and initial operation, the tool must prove itself in daily use, i.e. large quantities and long maintenance intervals. For this reason, Feintool also provides support to its customers during production ramp-up.

MAINTENANCE

Protection against wear

High speeds without heavy wear: Feintool offers the FEINal coating. It can increase the service life of punches by up to 50 percent because unlike regular protection against wear, it is not composed of just one layer such as titanium carbon nitride or aluminum chromium nitride. FEINal is composed of 20 layers, each of which are only 20 nanometers in thickness and feature various properties, including high thermal insulation or high hardness.

Servicing

Feintool's tools are modularly designed, making them easy to service. They consist of several units that function independently. In case of a fault, only the element in question needs to be exchanged and then it's business as usual.

Adjusting

Worn active elements must be removed from the tool, processes, and then re-installed. Feintool is happy to assist its customers here as well.

Spare parts service

Even with excellent tool materials, top production and state-of-the-art coating, at some point the active tool elements will reach their limits during production and replacement parts will be required. These elements can be easily exchanged thanks to the tool's modular design. Feintool is able to manufacture and supply replacement elements for all of the tools that it produces.

INNOVATION FOR YOUR SUCCESS

State-of-the-art tools

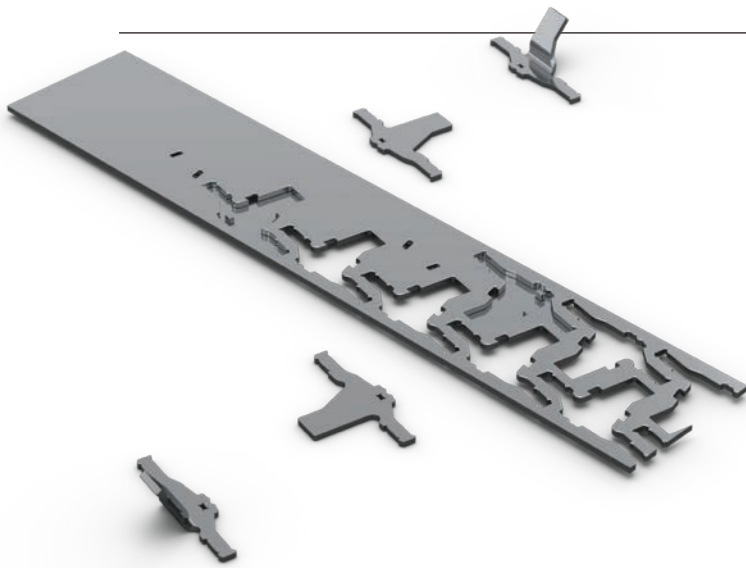


Stip layout from Speed fineblanking tool with patented parts.

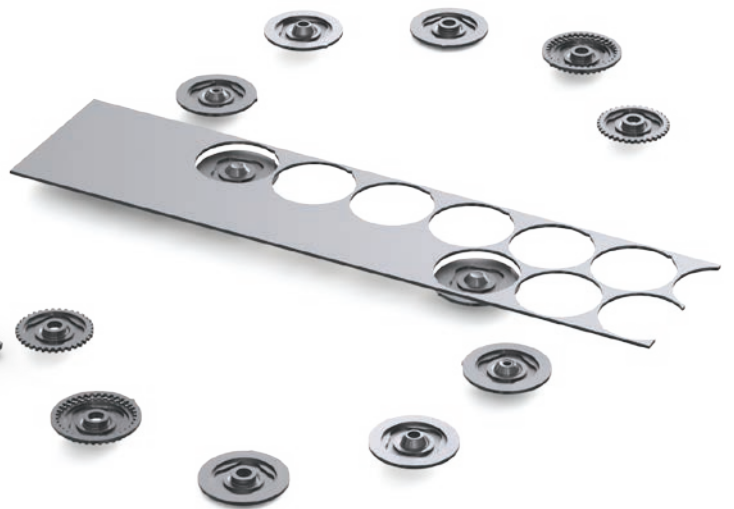
High speed: Speed tools

The barrier has already been broken. Feintool's XFT presses reach up to 200 strokes per minute – and through R&D even more output will be possible in the future. The tools have to handle ever-increasing speeds. For this purpose, Feintool has developed its patented speed tool concept.

The special feature: Rather than being completely cut out of the strips, the component remains connected at a few points. It can then be transported with the strip, pressed out in the next step and removed from the tool with a conveyor belt. This ensures that the parts do not land in the tool space where they would have to be blown or cleared out. Customers gain one thing above all: Time.



Cross transfer



Rotary transfer

High complexity: "Out of strip" post processing

Demands are increasing on both fineblanked components and production. The more complex the fineblanking part, the more production steps required. In order to continue providing high speeds and low costs, Feintool is integrating as many as it can into its tool – deburring and forming for example. This happens "out of strip", that is, outside of the strip.

Two exactly identical parts are cut out on a strip, which are transferred to the left and right to the next process step. There, the exact same operation takes place simultaneously on both sides. Due to the symmetry and the synchronism of the actions, the forces cancel each other out and breakdown torque is avoided.

Feintool employs this principle for two types of tools: the cross transfer tool and the rotary transfer tool. In the case of the cross transfer tools, the parts move in a linear fashion to the left and right of the strip. This is ideal for two to three successive processing steps. For the rotary transfer tool, the successive operations are arranged in a circular fashion to the left and right of the strip. This allows up to six process steps to be integrated into the tool. Here too, all operations run synchronously and symmetrically opposite one another to avoid breakdown torque. This allows customers to manufacture complex components with a high level of efficiency.

KNOWLEDGE IS POWER

Guarantee for the optimal tool



Our expertise makes us a global leader.



We develop solutions together.

60 years of experience

Feintool's expertise in fineblanking is unique worldwide, making the Swiss company the top address for optimal tool solutions. Feintool made its commitment to technology in 1959 and has been innovating ever since. Since then, almost all innovations in fineblanking can be traced back to Feintool.

Proven knowledge

Our most valuable possession: The inexhaustible amount of knowledge we have acquired over the years, and which we continue to preserve and cultivate: Our sophisticated system of knowledge management ensures that this know-how is documented and easily accessible.

Always state-of-the-art

We create room for new ideas: In regular innovation meetings, colleagues from press production and tool making discuss the current challenges, consider common solutions, and initiate new innovations.

This ensures that you not only get a tool that is tailored to your requirements, but also uses state-of-the-art technology.

FEINTOOL. GLOBAL PARTNER

Present in major automobile markets



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 for over 55 years.

Strong global presence

With Technology Centres on three continents, Feintool is your ideal partner.

EUROPE

Feintool Technologie AG

Industriering 3
3250 Lyss, Switzerland
Phone +41 32 387 51 11
Fax +41 32 387 57 80
feintool-ftl@feintool.com

USA

Feintool Equipment Corp.

6833 Creek Road
Cincinnati, OH 45242, USA
Phone +1 513 791 00 66
Fax +1 513 791 15 89
feintool-ftu@feintool.com

ASIA

Feintool Japan Co., Ltd.

260-53, Hase, Atsugi City
Kanagawa Prefecture,
243-0036 Japan
Phone +81 46 247 74 51
Fax +81 46 247 20 08
feintool-ftj@feintool.com

**Feintool Fineblanking Technology
(Shanghai) Co., Ltd.**

Bld.No. 27, No.1525 Minqiang Road
Shentian High-Tech Park
Songjiang District
201612, Shanghai, P.R.China
Phone +86 21 6760 1518
Fax +86 21 5778 6656
feintool-ftc@feintool.com