FEINTOOL

FEINTOOL MAGAZINE

TRENDS | TEAM | TECHNOLOGY

NORTH AMERICA EDITION

ISSUE 2012

THE WAY FORWARD

Excellence in seat recliner manufacturing

INTERVIEW

More with less

A NORTH AMERICAN FIRST

1600-ton servo forming press

DEAR READERS,

What turbulent times we face: a financial crisis, housing slump, cash for clunkers, euro debt crisis and a cool off in China. Remarkably, the U.S. automotive industry is resilient and shows signs of hope. Who would have thought three years ago that Chrysler would be helping Fiat financially in Europe and GM would be rolling out new models at a pace never seen before?

The world of the Internet, huge global platforms and local low-cost sourcing bring us ever closer together. But we also face big challenges: financial and economic crises spread in real time around the world. A cough in China, leads to flu in the U.S.

It is good to know that Feintool has positioned itself to be ready for a global business world with regional flavors. The company, majority owned by an industrialist and not a banker, is driven by long-term goals and not quarterly balance sheets. With a focused strategy on forming and fineblanking, a new plant close to Shanghai in Taicang, China, and massive investments in our North American production facilities, Feintool is adapting to the new world order. Overall, we never forget what enables us to excel: our global workforce of specialists. Feintool is currently training almost 100 apprentices worldwide. Since 1987, we have trained more than 35 tool-and-die makers at our technology center in Cincinnati, Ohio. The tool-and-die makers graduate with state-approved journeymen cards to work on advanced fineblanking tools. Two-thirds of the alumni are still with the company in various positions!

Please find more about Feintool's progress in this first North American customer magazine. Quality is our maxim and innovation our objective. – Enjoy the reading!

Yours,

Lars Reich
Vice President Sales & Marketing
Feintool U.S. Operations

Delighted with growth – Feintool CEO Heinz Loosli

Cincinnati – excellence in seat recliner manufacturing

Nashville – investing in the future! 1600-ton servo press for advanced drivetrain components

Pictures: Feintool (cover), Todd Joyce

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DUAL SYSTEM IN THE USA

Tool makers have been trained at the U.S. plant in Cincinnati since 1987, following the example of the Swiss vocational training system. As well as daily practical experience within the company, under the supervision of vocational trainers and supervisors, the four year apprenticeship includes the acquisition of theoretical knowledge at university evening classes. Feintool's good reputation and expertise in the U.S. enables it to attract the best graduates from this program. Two-thirds of the alumni remain employed within the company. The fact that other companies actually send their young employees for training at Feintool underlines the quality of this form of training, which is to date unique in the U.S.

Feintool is currently training 93 apprentices worldwide as multi-discipline mechanics, tool-makers, automation engineers and commercial clerks. Feintool apprentices regularly score among the best grades at the end of their training, not only in the U.S. but also at the plants in Germany and Switzerland.

LONG-TERM INVESTMENT

Michael Pieper: Commitment at Feintool

Feintool has a new majority shareholder: In April 2011, Swiss businessman Michael Pieper's Artemis Beteiligungen III AG bought more than two-thirds of the shares. The investor, who sees his involvement as a "multi-generation investment," as he puts it, has endorsed the path taken under the current Feintool management team for the long term. A top priority is the continuing focus by the company on the development of fineblanking presses, the associated tools and on the series production of parts. In addition to blanking technology particular attention will also be paid to the further development of forming technology.

Michael Pieper is CEO of the Swiss Franke-Artemis Group, a leading global provider of system solutions for kitchens, catering and the hygiene and sanitation sectors. In addition, the group has an extensive property portfolio (Franke Artemis Real Estate Group) and has various strategic holdings in Swiss companies listed on the stock exchange (Franke Artemis Asset Management Group).

Pictures: Feintool

TRAINING AT FEINTOOL

Well trained employees are integral to the productive operation of a fineblanking facility. For that reason, Feintool, which considers itself a partner to its customers, invests not only in the development of its presses but also in the skills of those operating them. All customers therefore have a training center at their disposal in the Feintool technology center in Lyss, Switzerland. Here, customer service employees obtain the necessary know how in order to safely operate the fineblanking facility. The training instructors draw upon decades of experience from Feintool's own production and tool-making plants, and in most cases have been successful customer advisers. There are basic training courses for beginners or professional courses for experienced technicians. They cover the entire process chain from parts design through materials and tool design to lubricants. Further courses address topics such as press optimization, machine operation or servicing and preventative maintenance.

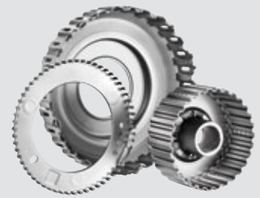
All the courses are offered in German, French, English and Italian, and can be carried out at the operator's premises if requested. Small training groups ensure an individual and intensive transfer of knowledge. Interested parties can find the individual courses and their content, as well as the training dates at **www.feintool.com › Menu item "Fineblanking/Forming" › Services › Training**

ACQUISITION

Feintool acquires the metal forming technology company Herzing + Schroth. Feintool has significantly strengthened its market position for sophisticated fineblanking and forming technology with the acquisition of Herzing + Schroth. This German group specializes in precision cold forming – a process which, like fineblanking, is used for high-volume production of lightweight components for efficient gearboxes. Feintool plans to globally expand this new technological potential.

"Herzing + Schroth is an excellent strategic fit with Feintool. The technical specialist knowledge in precision metal forming significantly strengthens our existing fineblanking expertise. Its integration into the Feintool Group makes us the sole global supplier to this future-oriented market."

Alexander von Witzleben, Chairman of the Board of Directors, Feintool



AT A GLANCE

- **Innovation and expertise in precision cold-metal forming**
- **A comprehensive offering, from ready-to-manufacture design through to ready-to-install components**
- **A complete process chain: the company's own state-of-the-art plant covers all required manufacturing processes**
- **For decades, Herzing + Schroth has been a leading name in the world of forming. The company employs approximately 500 people at its two production sites in Obertshausen (Hessen) and Ohrdruf (Thuringia), Germany. Herzing + Schroth has been a Feintool Group company since April 2012.**

Banking on innovation: Feintool CEO Heinz Loosli

“ACHIEVE MORE WITH LESS”

Heinz Loosli has been Chief Executive Officer of Feintool International Holding AG since 2009. In this interview, he explains where Feintool is at the moment and the challenges that face the market leader in the field of fineblanking. Keywords are efficiency, customer service and the will to change.

Interview: Michael E. Schmid **Photographs:** Benjamin Zurbriggen

> Mr. Loosli, you have been in office for a comparatively short time. What has changed for you personally?

Heinz Loosli: The office … no, joking aside. Needless to say, new areas of activity have been added and my focus has shifted. I was previously manager of the System Parts division, now I am responsible for the realization of growth and profit throughout Feintool. Thankfully I have very good colleagues who support me in this. In the new position, tasks such as external communication and the promotion of innovation and corporate culture play an important role. To sum up, you could say that the issues that have been added predominantly concern the future of Feintool.

How would you describe your management style?

Loosli: I aim for direct and open communication. In my opinion it is most useful for everyone involved to say things as they are. Especially when there is a difference of opinion. But it is important that it is handled in a civilized, conciliatory way. And when common goals are agreed, I think it is important that they are followed consistently by all those involved. This is necessary in order to react quickly in times of change and to get future-oriented changes under way.

Despite the strong Swiss Franc, Feintool has increased sales for the financial year 2010/2011 by almost seven percent compared to the previous year, and has left the years of crisis behind it. How did they manage that?

Loosli: First of all, we are delighted about the renewed rise. Of course we have benefited from the general economic recovery, which was virtually enforced globally with an unparalleled amount of money. But we have also played our own part in it – we brought new, innovative products to the market, we have played more to our strengths and in doing so achieved some great successes in the market. We have also improved our ability to compete by implementing measures to increase efficiency. It is important to appreciate that it is not a case of one-off actions but ongoing commitment that will ensure our company has a successful future. The motto is: achieve more with less. We are constantly working on this, so we also have a good formula at hand in view of the current financial turbulence, the final outcome of which nobody can predict.

Biography

HEINZ LOOSLI, 57, is an electronic engineer and graduate sales director. Born in Switzerland, he has been at Feintool for 15 years and was initially responsible for the “Presses and Equipment” department of Feintool AG, later the System Parts segment, until he took over leadership of the group as CEO in October 2009.

In his free time the married father of two children likes to listen to classical music, flies a light aircraft and keeps himself fit playing various sports.

In which business areas and markets is Feintool achieving the greatest growth?

Loosli: In the last twelve months predominantly in the area of capital equipment, i.e. fineblanking presses and assembly automation. This business comes late in the business cycle and has benefitted from a backlog of demand following the crisis. But we have also recorded growth in the area of series component manufacture. We have made considerable gains in Germany and the U.S. Meanwhile, demand in Japan is also rising again following the earthquake and tsunami catastrophe. Even so, this growth has not been too noticeable as a result of the strong Swiss franc.

In the past year Feintool has enacted Strategy 2015. What does that entail?

Loosli: The focusing of our business activity on areas in which we are >

strong and which offer prospects for global market leadership. These include 22 projects, including some new, innovative processes and products in customer service, new fineblanking presses, the setup of a System Parts manufacturing facility in China and the merging of the activities of the two press brands Feintool and Schmid. In the field of automation we have set ourselves the goal of achieving a significant market position as specialists in the manufacture of solar modules for power generation.

One of your core areas is automobile construction. Lightweight construction and alternative drive trains are key issues in that context. How does Feintool participate in this?

Loosli: At the moment we do not view the field of electric drive trains as a major market. Studies conducted by the big oil companies, among others show that purely electric vehicles will not occupy more than a niche in the market until 2030. Diesel and gas-powered automobiles in the form of hybrids are the realistic next step. The ultimate aim is the reduction of fuel consumption and weight in order to minimize overall carbon dioxide emissions. For example, heavy cast metal parts are increasingly being replaced with lightweight pressed sheet metal components. We support our customers in this with our technology and products. What I personally am particularly pleased about in this respect is the fact that leading companies like Mercedes and ZF have just recently granted us very large orders for the manufacture of important parts for new, smaller and more efficient gearboxes.

The fineblanking technology is in effect in competition with other processes. How does Feintool remain a convincing alternative?

Loosli: The fineblanking technology is so successful because it is more precise, more productive, and the bottom line for the user is that it is more economical. The future success of fineblanking is also linked to economic efficiency. The fact that we have significantly increased the output performance of our fineblanking presses in recent years, for example, allows us to offer this to our customers. An example of this is the new XFTspeed range of servo-mechanical power presses. You still need the flexibility to react to changes in the markets, in some cases even to anticipate them – products are changing ever more frequently and quickly. For feasibility studies and the design of new tools, we are aided by our extensive and exclusive know-how in the simulation of processes in the field of fineblanking, which makes the development process significantly shorter and more secure.

> "The fineblanking technology is so successful because it is more precise, more productive, and the bottom line for the user is that it is more economical."

How does Feintool ensure its ability to innovate?

Loosli: The biggest driving force for innovation is usually competition. But unfortunately, we do not have the "fortune" of being constantly challenged. Apart from one company in Japan, which is only active locally, we are essentially the only company in the field of fineblanking worldwide. For that reason we have to drive ourselves and so we have set ourselves targets to bring a new, innovative, reproducible product to the market at least every two years. Our technology centers in the various markets across the globe are an important support asset. They are in close contact with the customers, know the regional markets and let us know how local needs are developing.

An innovative company needs skilled employees. How does Feintool secure its up-and-coming talent?

Loosli: Our apprentice program, which currently has 93 trainees going through it, is an important source. Even in the U.S. where the dual education system is not known, Feintool has been training apprentices for many years. But the training of up-and-coming talent is one task; the other is to retain skilled and experienced employees in the company. This is most successful when the company is an attractive employer, remains innovative and therefore offers employees good prospects. In my view, Feintool doesn't perform badly as our employee turnover rate lies well below the average.

Feintool represents individual customer care and reliable service. What can customers expect in future?

Loosli: Yet more support through intelligent tools in order to reduce unscheduled stoppages of their fineblanking presses and a more attractive, quicker and more convenient spare parts service. In the not too distant future, it will be possible to detect imminent unscheduled stoppages in advance and to alleviate them. Another example is our e-shop, which allows customers across the world, regardless of their time zone, to obtain the spare parts they require in a quick and straightforward way. This rapid access to service tools was also the focus of the latest of our customer meetings, which we organize every two years. The interest was tremendous and for me one of the highlights in the past business year.

Last but not least: Feintool is involved in the global Carbon Disclosure Project. What does this involve?

Loosli: Obviously, it is about improving our carbon footprint. It is certainly not excessively high in comparison with other industries. Much more important to us though is the associated analysis of procedures and processes. The measures taken in that respect also have a very practical and commercial benefit. To give just a couple of examples, we have significantly reduced the use of fineblanking oil, we have switched from a large variety of chemical cleaning products to one ecologically harmless cleaning agent and we have reduced logistics and procurement costs. Our participation in the Carbon Disclosure Project goes one step further – we are enabling even more detailed measurement of our environmental performance than is required by the ISO 14001 standard, to which all our plants are certified. In other words we support the innovation strategy I mentioned earlier: achieve more with less.

Mr. Loosli, which characteristics and values are most important to you personally?

Loosli: I already mentioned them at the beginning: being clear and open in a respectful manner, so that mutual trust can develop. Courtesy and reliability. When something has been agreed, it must be adhered to, unless there are new findings or the circumstances change significantly. Doubts and concerns are of course allowed, but they should be expressed at the outset. And particularly important: It is not good enough just to see problems; all employees must also ask themselves, what can I contribute to the solution? <

Ron Stephens – Production Finishing Supervisor in front of several new advanced de-burring machines which are part of “The Way Forward” investment package.

THE WAY FORWARD

Excellence in Seat Recliner Manufacturing – Driving for higher productivity and dependability as well as consistent quality, Feintool Cincinnati Inc.dedicated itself to growth and leadership in automotive seat-adjustment parts manufacturing through new technology deployment. To date, the company has invested more than $17 million in innovative manufacturing machinery for its Cincinnati plant to support demanding applications, increase capacity and to improve parts production operations. And more new, advanced equipment is on the way, positioning Feintool for the future.

Text: Chuck Lohre **Photographs:** Feintool, Todd Joyce

> The seven-week-long Cash for Clunkers program in 2009 made headlines across the U.S. for good reason. Consumers purchased hundreds of thousands of new vehicles. In turn, that demand for new passenger cars and trucks meant the U.S. auto industry was on its way toward recovery as demand for new parts nearly tripled overnight.

That dramatic surge for auto parts surprised Feintool and gearing up to ship all the new orders to meet the increased demand from around the globe was a struggle. To improve both parts quality and quantity, the company embarked upon a multi-phase expansion program to invest in new machinery for the Cincinnati plant.

In order to focus on automotive seat-adjustment technology and support those customers’ need for higher production releases and critical tolerance demands, Feintool’s top management decided the Cincinnati plant would exit a handful of ancillary businesses. Feintool streamlined manufacturing and narrowed the number of parts produced by divesting its electrical, power tools and garden mowers parts businesses. The move meant Feintool could then >

700-ton speed presses for guide and toothplates installed in Cincinnati

focus exclusively on increased seat-part production through an improved manufacturing flow.

As part of the streamlined press operations in the Cincinnati facility, shipping and logistics were moved off site to a new logistic center to free up 30,000 square feet of space for four new presses. With tooling and engineering retained at the press location, the part production set up process sped up considerably.

THE STATE OF SEATING PARTS

Feintool capitalized on the industry trend toward light, complex three-dimensional fineblanked parts and a corresponding trend to lower cost per unit.

For the last decade, automotive seats began to change across the industry due to the prevalence of reconfigurable interiors. Fixed-back recliners were being replaced with a new advanced three-dimensional rotary style as manufacturers began to offer fully adjustable seats even for second- and third-row applications. Seats that could be folded flat into the floor were offered as a standard feature on new vehicles. With that, the industry was open to a standard mechanism and large global platform designs – a short time later, for example, the Toyota Camry would feature the same recliner type as a BMW.

Today's seating parts – also becoming lighter in weight in order to reduce carbon dioxide emissions, increase fuel efficiency, save raw material and cost – require the most advanced manufacturing processes and materials.

Now, auto manufacturers count on Feintool to deliver high performance and high volumes at an economical cost quickly, due in part to the new presses that have expanded capabilities, which eliminate additional manufacturing steps in some cases.

PEOPLE, PROCESSES, PRODUCTION

Drawing upon its Swiss-based manufacturing heritage, Feintool had the right technology in place to compete on the global stage. It looked to the U.S. to increase its opportunities.

Feintool began producing parts in the U.S. in 1971, with the Cincinnati plant coming online in 1978. Cincinnati's long history as an innovator in the machine tool industry made it a natural place to find qualified engineers and workers. And, Feintool's apprentice program continues both the American and Swiss tradition of training the next generation of workers to step into the manufacturing world. Globally, Feintool offers close to 100 trainee apprenticeships in general mechanics, design and engineering as well as management.

With a clear strategy to focus on automotive seating parts production in Cincinnati, Christoph Trachsler, CEO, Feintool U.S. Operations, said, "The purchase and installation of new presses, which started to arrive in March 2011 resulted in our operation being more efficient with both quality and logistics." Four new presses – two 700-ton Feintool HFA 700speed and two 320-ton HFA 320speed models – got us up and running in less than four weeks after the machines were delivered, Trachsler explained.

Trachsler continued, "Cincinnati was the first location to install the new Speed Presses in North America and the operation now enjoys improved quality and throughput, with less overtime. Now we have the capacity to produce the business we have today and in the future."

Designed specifically for advanced three-dimensional seating parts, these new machines provide capabilities not seen with previous technology. Feintool's new machines can create complex forms at different levels within tight tolerances. High-strength steel can be used, which reduces stress during forming and may eliminate the need for heat treatment. Another benefit is increased strength and reduced material thickness. The Feintool Speed Presses allow the company to produce deep semi-punches that create extreme dimples, nearly tripling the material's depth.

Just as important as the new machines are the processes that support quality and capacity. "We will have more capacity to serve our customers. We want to continue to be the competitive leader in making the parts for these strategically selected applications," explained Lars Reich, Vice President of Sales and Marketing, Feintool U.S. Operations. Several processes previously outsourced, like washing and deburing, have been brought in house. Four new Swiss-made belt sanders, with rotating planetary heads, were installed, along with a three-stage parts washer for degreasing parts and to apply rust preventives.

Feintool's new Speed Presses are equipped with up to seven hydraulic forces. The basic three are the main clamping force, the up-and-down force and thirdly the counterforce. The additional forces allow for deep throating, coining or semi-piercing. In a very small space, Feintool can form parts that on a conventional press would take seven or eight steps. The Speed Presses combine complex forming into three or four progressive steps. This reduces manufacturing time while maintaining high-quality products.

MANAGING FOR MAXIMUM PRODUCTION

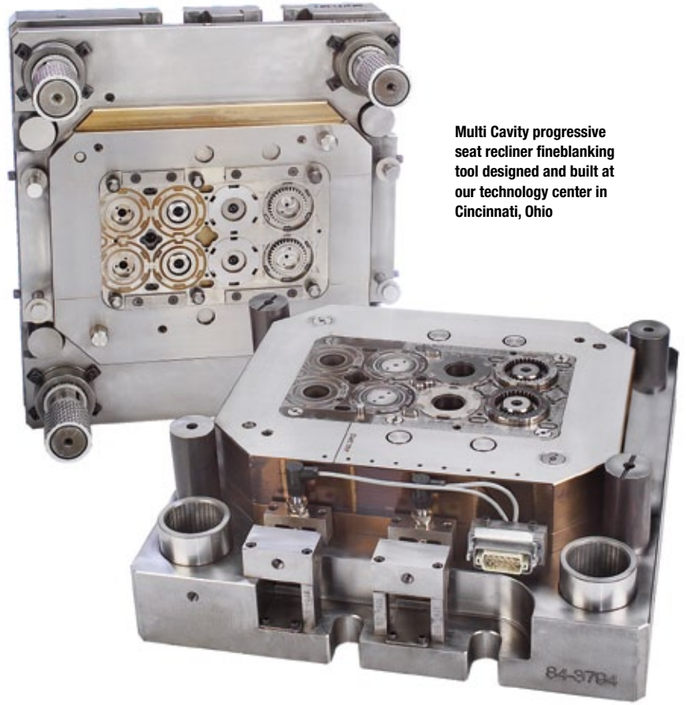
Having new state-of-art equipment is the first step to increase production. The second step is the ability to manage the fabrication process for maximum production.

Overall Equipment Effectiveness principles run through all parts of the Feintool manufacturing process and is a benchmark for each day's production goals. It documents the machine's operating hours at maximum production against the scheduled production rate. The OEE percentage is a constant topic of discussion in all parts of the plant. Every morning, for instance, department employees gather for the "shop floor" meeting by the production charts for their area. "They're able to discuss a variety of issues," explained Mark Stowe, Vice President Operations, Feintool U.S. Operations. "What was the number of defective parts? How well did the machine run? What went wrong when performance dropped off?" Actual parts are right there to inspect and to take corrective actions.

BREAKING PLANS

And more equipment is on the way including another 880-ton press. Additionally, three more belt sanders on order will help to position Feintool for the future.

With its significant investment in the latest and state-of-the-art machinery as well as its considerable experience in fineblanking and forming. Feintool is positioned well and ready for the great future of the North American automotive industry. <



Multi Cavity progressive seat recliner fineblanking tool designed and built at our technology center in Cincinnati, Ohio

"Now we have the capacity to produce the business we have today and in the future."

Christoph Trachsler, CEO, Feintool U.S. Operations

TRENDS IN SEATING APPLICATIONS

Small form factor (mini) designs with small diameters and/or thinner material for weight, material and ultimately cost savings

Tall formed chimney designs for center bore strength with minimal material usage

Maximum tooth height on pawls (toothlocks) and toothplates with minimal die roll conditions for added strength

High strength steel in certain applications to eliminate heat treatment

CLOSE TO THE CUSTOMER

Spring 2012, Feintool opened a new **high-tech production plant** in Taicang. Meaning that the Swiss company will be able to supply its international automotive customers in the growing market of China quickly and directly.

Text: Julia Groth **Photograph:** Feintool

> In the long term, China is one of the fastest growing countries in the world. Economists and companies across the globe would agree, which is why more firms are moving into the Middle Kingdom. Feintool has reacted to this development and in spring 2012, opened a new factory in Taicang, a city in eastern China. Initially, the Taicang facility primarily serves German, Japanese and US customers with branches in China. As a supplier to the automotive industry, it is part of Feintool's strategy to have a presence for its customers in the four largest markets, with its own production facilities.

Feintool has been active in the Chinese market for more than 25 years. The firm operates a marketing company to promote the advantages of fineblanking technology versus other methods and to sell equipment. Likewise, Feintool has an established relationship collaborating with the University in Shanghai, where students handle individual development assignments.

In the new Taicang production facility, there are four high-speed fineblanking presses in approximately 54,000 square feet, which will predominantly produce seat adjustment mechanisms and gearbox parts locally. The choice of location was dependent on the following factors: proximity to customers, proximity to steelworks or ports and the likelihood of finding well-qualified employees. The Shanghai area was the obvious location for Feintool. The eventual choice was Taicang, which is about an hour from the city. German firms are already present there, operating a training center in which Feintool will participate. A start will be made with a core team of approximately 15 employees will be trained in the sophisticated technology by experienced, expert colleagues. With the step-by-step build-up of production, the workforce will quickly increase. Currently, the team will continue to work intensively on acquiring orders and on sampling and release processes, which require extremely high quality and reliability.

"We have now implemented our strategy to have a presence in the four biggest car markets in the world, as an automotive supplier with our own production facilities," says CEO Heinz Loosli. "In Taicang, we have invested in the most modern fineblanking and forming technology and can provide our customers with equally outstanding service and equally high quality as that delivered in Europe, the U.S. and Japan. So, we talk the same language at all times in all the important markets with our globally active customers." <

Feintool in Taicang: located approximately 30 miles northwest of Shanghai.

THE EFFECTIVE PLANT

The degree of value added by the fineblanking machine plays a vital role in ensuring that high quality products remain competitive. In order to noticeably improve this, a strategy according to the principles of **Overall Equipment Effectiveness (OEE)** is advisable.

Text: Michael E. Schmid

> Overall Equipment Effectiveness is a manufacturing parameter that links data on machine availability, machine performance and the level of quality of the manufactured parts to create a meaningful basis for the evaluation of a plant. In simple terms it is about revealing resulting losses, recording them in concrete figures and reducing them with systematic counter-measures. Using the example of a fineblanking press, Feintool calculated that the systematic assessment and elimination of the causes of unscheduled stops increased the availability of this plant from 80 percent to 85 percent.

Essentially, it depends on plant availability, the first element in the assessment of the OEE factor. It states the relationship between the actual production time and the theoretically possible production time. Basically, there are two ways to increase the effectiveness or the availability of a complex system. On the one hand, ideally a system is purchased that already offers the optimum prospects in terms of reliability, in new condition. On the other hand, the aging of the system can be influenced by means of regular and optimum maintenance.

Secondly, Overall Equipment Effectiveness enhances the performance factor of the machine. It indicates the degree of capacity utilization, in that it compares the number of parts actually produced in a particular time period with the technically possible number of parts. The reason for a poor performance factor is usually an unscheduled reduction in speed of the machine. The most common reasons for this are the inadequate state of repair of the machine or the tools. But suboptimal stock or blanking oil can also result in a reduction in speed. The third component is the quality factor, which states the ratio of premium quality parts produced to all parts produced. The use of high-quality tool elements in combination with quality management is advisable in order to achieve positive results in this respect.

In addition to outstanding equipment, the extensive monitoring of productivity in conjunction with a continuous improvement process is the key to success. The Overall Equipment Effectiveness parameter and the processes necessary to calculate it are an integrated tool for not only measuring and monitoring productivity but also for responding quickly and effectively in the event of losses. <

THE BENEFITS OF OEE IN DETAIL

CREATING TRANSPARENCY

› **A method according to the principles of the OEE leads to genuine and meaningful data about the productivity of the machine. The acquisition of the data is time-consuming but this is limited to the initial period.**

IDENTIFYING SOURCES OF LOSS

› **Once the data acquisition process is implemented, the registration and identification of all kinds of losses become possible.**

IDENTIFYING SOURCES OF LOSS

› **When sources of loss have been identified and analyzed, counter-measures can be systematically initiated. Thanks to the constant availability of machine data it is possible to control efficiency precisely.**

HOLISTIC APPROACH

› **OEE processes require and encourage the inter-departmental cooperation of the employees. For example, the logisticians ensure that raw materials are available at the right time. Maintenance is responsible for the smooth running of the plant and quality management for faultless products. They work together when it comes to researching the cause of losses and the subsequent problem-solving.**

Pictures: Feintool

GROWTH IN ASIA

Mankind will require 35 percent more energy in the year 2030. This is forecasted by the study, **“The Outlook for Energy: A View to 2030”** from ExxonMobil. The reason is continuing economic growth, especially in the booming Asia-Pacific region. Significant growth is also predicted for the automotive sector, which is important for fineblanking applications.

Text: Michael E. Schmid

> Actually, the energy consumed in 2030 will be twice as much as in 2005. The fact that the increase remains limited to a little more than a third is down to measures to improve energy efficiency, which have an increasingly significant effect. The countries with developed national economies, such as those grouped together in the Organization for Economic Cooperation and Development (OECD), are pioneers in terms of sustainability. Despite economic growth, their demand for energy will increase only slightly up to the year 2030.

At the same time, they are managing to reduce carbon dioxide emissions by means of political measures and the increasingly efficient generation of energy. According to the study, by 2030, they should have reached the level of 1980. As a result, global carbon dioxide emissions will increase by no more than 25 percent, despite energy requirements going up by 35 percent. The total generation of energy in 2030 will still consist of 80 percent fossil fuels such as oil, coal and gas, with the remaining 20 percent divided between nuclear power and renewable energy sources.

MORE INDIVIDUAL TRAFFIC

A dramatic increase in demand for energy is predicted for the non-OECD countries. According to the study, the 70 percent increase in demand in comparison with today will mainly come from the Asia-Pacific region, with China and India leading the way. The further increase of the huge populations – by 2030 there are expected to be 7.9 billion people living in the world – as well as continuous growth in the economy and increased prosperity lead to more individual traffic and significantly higher electricity consumption. By 2030, the energy requirements of the non-OECD countries will exceed those of the OECD region by 75 percent. Direct and indirect per-capita consumption will remain disproportionate. In the non-OECD countries, energy requirements will still be far below that of the OECD region in 2030. Even in China, it will only be half as high.

Transport and movement by land, sea, rail and air, together with electricity generation, which is increasing by more than 80 percent worldwide, is the demand sector with the second-highest energy growth rate in the world. It will amount to around 40 percent. The reason is the continuous growth of the economy and prosperity, especially in the Asia-Pacific region. The number of vehicles will increase in all regions of the world, particularly in those countries that have a lot of catching up to do in terms of individual vehicle ownership. Of the approximately 400 million new cars that the study forecasts by 2030, 75 percent are accounted for by non-OECD countries; around a third will be on China’s roads alone. As a result, the demand for fuel in the Asia-Pacific region will increase by 80 percent, while it will decrease by 20 percent in North America and 30 percent in Europe – for the first time in the history of the automobile. Saturated markets are the reason for this, and as a result, the expansion of fuel-efficient drivetrain technologies can have a relatively greater impact.

1.2 BILLION PRIVATE VEHICLES

In the year 2030, hybrid vehicles and other cars with advanced drivetrain technologies will make up 25 percent of global new car sales and almost 15 percent of all cars in use. The growth will primarily be focused on fully hybrid vehicles. By 2030, the difference in price compared with vehicles with conventional drivetrains will have decreased considerably.

Other drivetrain types such as plug-in hybrids, purely electric vehicles or liquefied petroleum gas (LPG), on the other hand, will grow only slightly because of continuing unfavorable cost structures. The proportion of vehicles with conventional drivetrains will fall from today’s 99 percent to 85 percent. It is worth noting that fuel consumption will decrease further due to more energy-efficient drivetrain and gearbox solutions, as well as innovative lightweight construction technologies. In 2030 a total of 1.2 billion private vehicles will be on the roads around the globe. <

2030 at a glance

- 85 percent of the almost eight billion people live in non-OECD countries. A good third in China and India alone.
- Energy demand grows by 35 percent. Non-OECD countries require 70 percent of this.
- The energy demand of non-OECD countries is 70 percent higher than that of the OECD region.
- The demand for electricity increases by 150 percent in non-OECD countries and by 25 percent in the OECD region.
- The number of automobiles worldwide increases by 400 million to 1.2 billion.
- The proportion of vehicles with conventional drivetrains will fall to 85 percent. 25 percent have a hybrid, liquefied gas or purely electric drivetrain.

Energy consumption

in quadrillions of British thermal units

REGION	2005	2030
OECD	233	230
Non-OECD	237	406
Asia-Pacific	159	273
China	69	132

Proportion of global total energy consumption

REGION	2005	2030
OECD	50 %	36 %
Non-OECD	50 %	64 %
Asia-Pacific	34 %	43 %
China	21 %	21 %

Source: ExxonMobil, The Outlook for Energy: A View to 2030, Irving (Texas) 2010

Feintool and the automotive industry

The automotive sector is undergoing profound changes. A reduction in fuel consumption, carbon dioxide emission limits, hybrid vehicles and e-mobility are growing in importance; cars are becoming more environmentally friendly. Feintool is involved in this process with new technologies. Fineblanking presses manufacture components for modern, consumption-reducing gearboxes, for turbocharged downsized engines and economical diesel fuel injection systems.

Examples include shift-fork elements for direct shift gearboxes or clutch plate carriers for new eight and nine-speed automatic gearboxes, which can be produced more cost effectively with the aid of fineblanking technology than using traditional methods. In many areas, cast and punched parts are being replaced by lightweight parts, for the manufacture of which Feintool has also designed systems and tools.

In the seat adjuster sector, Feintool has developed manufacturing solutions made from high-strength steel, which contribute to the further reduction of vehicle weight. Feintool also plays a part in the development of alternative drivetrain concepts – for example, through research into the economical manufacture of key elements for fuel cells.

ORGANIZATION IS THE BE-ALL AND END-ALL

Feintool has optimized both of its Japanese factories in line with the oriental **work philosophy "5S"**. The factories do not just look tidier now. They produce more efficiently too.

Text: André Schmidt-Carré

> Anyone entering the Japanese Feintool factory in Atsugi in Japan knows what order looks like: Safety regulations are highlighted in red on the general notice board at the entrance, making them easily recognizable; environmental topics are green, production yellow. Traffic and pedestrian routes are identified by floor markings. Even brooms have their own hooks, drawers for cleaning utensils are labeled, yellow stripes on the floor show where each bucket is to be placed and employees wear bright, spotless work clothes. "Clean, tidy surroundings make it easier for all employees to concentrate on their work and produce precision parts," explained Marcel Pernici, Division Head, Feintool System Parts Asia.

HIGH REQUIREMENTS

Feintool operates two factories in Japan. Apart from the main location in Atsugi, there is a second in the small coastal town of Tokoname a little further south. The company employs a total of 100 employees at both locations. They produce primarily automotive parts. As a so-called "third-tier producer," Feintool supplies automotive subcontractors. The parts can be found in models of Japanese manufacturers like Honda, Toyota and Nissan produced all over the world. In Japan, the main focus of the Swiss technology group is on components for reclining seat adjusters. Since the parts are essential for the safety of driver and passengers, quality is the top priority. "The requirements of Japanese customers regarding production quality are enormously high," Pernici noted. As a result, the manager is constantly on the lookout for ways to make both locations better. This is how he came across the "5S" philosophy. The code shows how people can permanently improve their work. The letters stand for the Japanese terms seiri, seiton, seiso, seiketsu, and shitsuke, which translated mean: create order, preserve order, cleanliness, personal sense of order, and discipline (see info box). This doctrine for lean production originated in Japan. Toyota, which became one of the foremost automotive manufacturers with this concept, is a pioneer in this area.

Feintool is continuing to expand the automotive supply business segment. The company has been producing parts for the increasingly important turbo technology, which helps engines to save fuel. "Our core skill is cutting metal components with the utmost precision," Pernici revealed. Since the quality requirements for the turbo technology exposed to high temperatures are particularly exacting, Feintool further enhanced production quality. To convert to lean production, the company brought in a kaizen consultant specifically for this purpose (see info box "Kaizen"). He approached the improvement process in a very practical manner: consultants, engineers and managers first went around the production area with cameras and took photos of every single situation they considered less than perfect. In the end the list of improvements in the Tokoname factory had 342 items, in Atsugi 157. "Taken as a whole the little things hold an important key to success," Pernici explained.

CHANGES SIMPLIFY WORK

Spare parts for machines were sorted and labeled, routes for forklift trucks for example marked that they had to be kept free, the locations of machines, desks and chairs fixed with lines. At the workstations each tool now has a specified place, and repeatedly needed special screws and hooks hang sorted and labeled on the wall.

To preserve order, the production bosses for each area appointed an employee responsible for checking that the order that had been laid down was adhered to during ongoing operations. "Most people find change difficult," Pernici observed. "To begin with many were pessimistic about what the measures would achieve. But since then, everyone has become convinced because they've noticed that the changes have simplified work." In addition, employees have learned to engage in personal improvement. In kaizen groups allocated by the plant managers they discuss what they could improve in day-to-day processes. "We shut down the machines for this purpose for ten to fifteen minutes once a week," Pernici said. Moreover, Feintool offers its employees the opportunity to work in other plants of the company group in order to get ideas for their own production. English courses for all employees facilitate the exchanges.

FLAWLESS GOODS

The production managers check the production figures of every single machine so they can track the progress made. And to find out in the event of deviations from the target whether the problem is due to an overly long set-up time, or whether the tools were at fault. Then they consider how to eliminate the problem. This is because a well organized working environment is just one part of kaizen, the striving for continuous improvement. It also includes aspects like the ideal combination of production machinery and tools. On the latest production line in Atsugi, Feintool has achieved a value of 0.809 in the important OEE key figure. In other words, for over 80 percent of the time the line produces flawless goods. "That's a pretty good figure as it is," Pernici added. But he and his colleagues are already fine-tuning ways to make the factories even more efficient. <

5S

Five rules to make workplaces tidy and permanently more efficient.

Seiri: throw away what is not needed.

Seiton: organize what is left.

Seiso: maintain cleanliness and order.

Seiketsu: make both a personal priority.

Shitsuke: be disciplined in adhering to both.

KAIZEN

A Japanese work philosophy that strives for continuous improvement in customer benefit. In Germany the approach created waves as the "continuous improvement process (CIP)". As one of its pioneers the sports car manufacturer Porsche went from being a niche producer to one of the most profitable car-makers in the world.

According to kaizen, the seven types of waste in production include the following areas:

- **Producing more than necessary**
- **Excessive inventories**
- **Reworking defective components**
- **Transport routes of components and products being too long**
- **Waiting times arising because employees have nothing to do**
- **Space being wasted**
- **Inefficiency of employees' physical effort**

Thorough tool inspection: The goal of the 5S philosophy is to be able to concentrate on what is important, without any distractions.

Picture: Feintool

A NORTH AMERICAN FIRST

State-of-the-art metalforming excellence – new **1600-ton servo press** for Feintool Tennessee.

Text: Lars Reich **Photograph:** Feintool, Todd Joyce

The new 1600-ton transfer press will be a sister machine to this existing 2000-ton press at Feintool Nashville, TN

Net shape parts are possible with the 12 station 18' press table

> Feintool invests more than $10 million USD in a state-of-the-art long-table servo press, which is specially designed for three-dimensionally formed transmission/powertrain components. The new servo press extends the Nashville, Tenn. drivetrain facility's capabilities for future automotive industry advancements. Feintool decided to take the next step in North America by investing in the 1600-ton servo press from Schuler.

The pressure on the automotive industry to reduce fuel consumption and the need for continuous reduction of carbon dioxide emissions are driving next-generation powertrain developments. The introduction of eight- and nine-speed transmissions translates into complex metal-formed sheet metal parts to live up to the automotive industry's quality and precision requirements. The ability to form complex drivetrains with advanced technology allows for more intricately formed parts.

Modern disc carriers, pistons and drive plates are formed and rolled in one press run on advanced transfer presses. Complex tooling stations, combined with a three-axis transfer system, allow in-tool rolling of tooth geometries, forming grooves for oil-retainer rings and cutting to length to be accomplished in a single run.

Incorporating the lessons learned from the two existing transfer presses installed in Nashville, the servo press represents the latest technology available for net shape component manufacturing. Additional processes such as welding or tapping can be reliably integrated into the press cycle with high output levels resulting >

1600-TON SERVO PRESS AT A GLANCE

- Large 18' press table
- Forms high-strength materials
- High output
- Precise adjustment of slide motion profiles
- High flexibility for complex part geometries
- Short die change times
- Improved die life
- Reduces part unit costs
- Increases productivity

In-tool rolled disc carrier (Hub) for automatic transmission

Pictures: Feintool, Todd Joyce

Servo presses are driven directly by large torque motors. The lack of a flywheel and clutch/ brake combination make the presses flexible and energy efficient. Adjustable forming speeds guarantee a continuous production process with optimal forming capability.

in economical production of complex part geometries. The 18-foot press table combined with the advanced servo drive will open a whole new dimension of parts accuracy and metalforming excellence at a very competitive cost point.

The addition of the new servo press in Nashville will enable Feintool to use flexible manufacturing models and ensure components supply during unplanned downtime of equipment as all the tooling will be 100 percent interchangeable between the different machines. This 100-percent interchangeability of the tooling, which allows uninterrupted component supply, was a required specification of the new equipment.

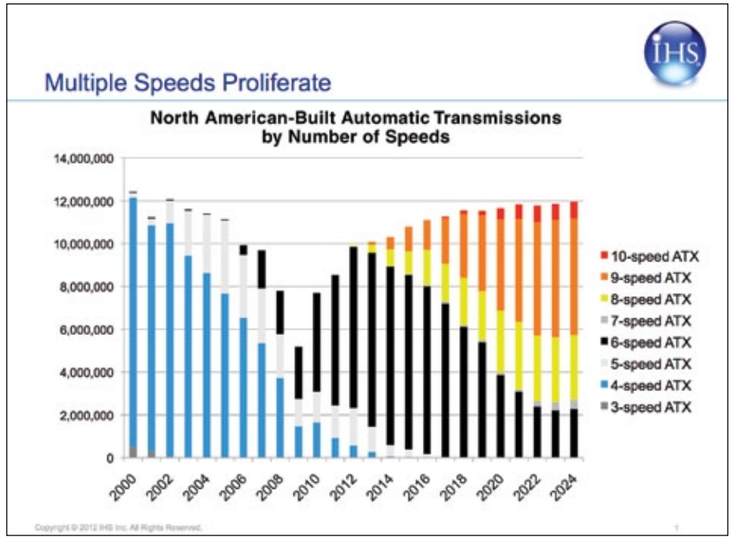
With the addition of the latest servo press, Feintool will possess one of the youngest and most advanced fleet of forming presses in North America.

At Feintool, we truly make metal do more for less! <

"The direct drive Servo Press customized for Feintool is a North America first. The advanced press will open whole new possibilities for forming, repeatability and ultimately parts quality"

Timothy McCaughey
President & CEO Schuler Incorporated

Advanced 9-speed FWD transmission using precision formed Feintool parts



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Pictures: Feintool, private, ZF Friedrichshafen AG

OUT OF STRIP

Fineblanking, deburring, bending – multiple process steps within one tool make **parts manufacture** quick and economical. But only if it succeeds in eliminating errors. With the concept of relocating the subsequent processes after fineblanking outside the strip, Feintool presents a solution which contributes to security of production and, depending on the layout concept, achieves significant material and cost savings.

Text: Michael E. Schmid

> A shift-fork component, a bent part. Previously they were fineblanked and formed within the strip in sequential stages. This sort of process requires free-cuts which in turn require a comparatively large amount of materials. The materials are of course valuable and are often responsible for up to 50 percent of the costs of the parts. It would be substantially more economical to avoid free-cutting, that is, firstly to cut the shift-fork out flat, take it from the strip within the tool and form it separately. Feintool conducted a trial to see how much more economical this process could be and came to a striking conclusion: In the case of the shift-fork, around 22 percent less raw material would be used. Instead of 38.2 grams of material per part in the conventional progressive compound tool, only 29.9 grams are used in processing outside the strip. As the strip itself is only subject to one machining stage, an optimized strip layout, which for example, creates substantially thinner webs, can also contribute to material savings, depending on the component.

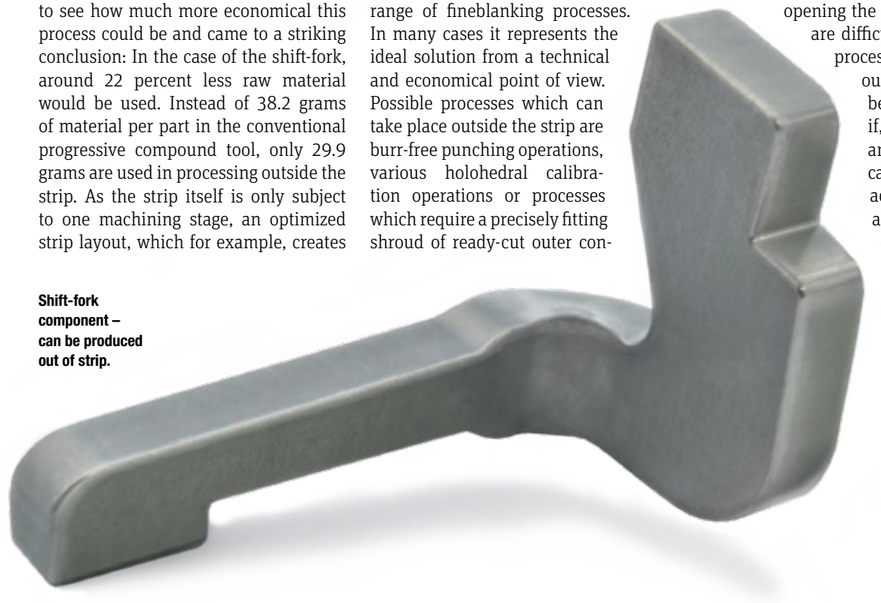
IDEAL SOLUTION

Feintool calls this process "Out of Strip", the basic idea for which was the realization of form-enclosing processes – developments that were previously only practicable as secondary operations with separate feeding of parts. Thanks to continuous development the Out-of-Strip processes are applicable today to a wide range of fineblanking processes. In many cases it represents the ideal solution from a technical and economical point of view. Possible processes which can take place outside the strip are burr-free punching operations, various holohedral calibration operations or processes which require a precisely fitting shroud of ready-cut outer contours or generally unimpeded mechanical deformation.

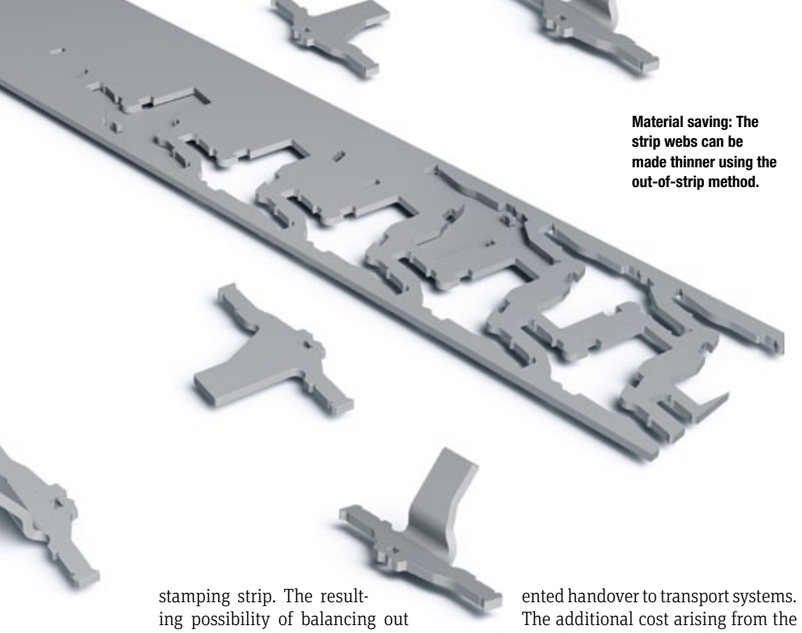
BALANCED FORCES

As well as the potential material savings, the out-of-strip processes are generally suitable for minimizing errors, such as those that arise in progressive tools, by up to 80 percent. The most important effects include the balanced forces which come close to the ideal equilibrium of forces at every point in the working stroke when closing and opening the tool. Things that are difficult to achieve in process stages carried out sequentially, become possible if, in the case of an even number of cavities, up to two additional stages are relocated outside the >

Shift-fork component – can be produced out of strip.



Pictures: Feintool



Material saving: The strip webs can be made thinner using the out-of-strip method.

The out-of-strip processes are suitable for minimizing errors, such as those that arise in progressive tools, by up to 80 percent.

stamping strip. The resulting possibility of balancing out forces symmetrically protects tool elements from one-sided stress and thus reduces wear. It also ensures the directional stability of the strip – a challenge especially for layout concepts that allow for forming processes within the strip. So the bending of a part can for example cause horizontal displacement of the materials, alter the pitch step or affect the tolerance of finished geometric areas on the part. Similarly, one-sided punching and stretching operations have a disruptive effect on the run of the strip, especially in the area of the strip edges, because mechanical limits exist within the lateral strip guides. Here the formed skeleton strip can buckle so severely up to the scrap cutter that collisions and time-consuming production halts are hard to avoid. Both balancing forces and directional stability are guaranteed if the parts in the tool after fineblanking simply leave the strip on both sides for further process steps. The question of whether those could be disturbed simply does not occur to the same extent thanks to the absence of additional production steps in the strip.

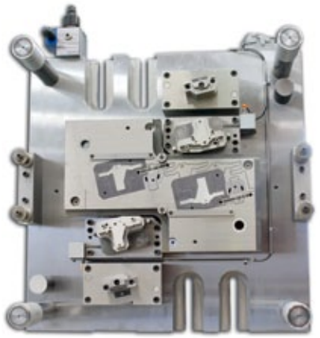
CORRECTLY ORIENTED DELIVERY

The unimpeded output of parts is a central theme of fineblanking, and in this case the out-of-strip solution offers advantages too. As the parts have already been separated from the strip earlier, they are “free” when they are ejected from the side of the tool, to the front or the rear. That makes it easier to maintain the current optimum arrangement of the parts and to organize their correctly oriented handover to transport systems. The additional cost arising from the installation of the appropriate pick-up and transport systems cannot be compared with the huge effort required when parts from a bulk material container have to be repositioned for further machining.

FASTER EXCHANGE OF ELEMENTS

A further argument for the out-of-strip principle is the increased accessibility of tool elements which are prone to failure. The large number of fineblanking applications makes it inevitable that there may be parts that compromise some tool elements as a whole or individual features of them. For that reason it is becoming more important that the tool design not only takes into account the actual part production but also enables the rapid exchange of failure-prone individual elements, whole steps, or modules quickly and in the press on the installed tool. Progressive compound tools with out-of-strip processes offer this potential thanks to their space-saving method of construction. The flexibility of production itself also benefits if a part can be manufactured in several versions with the same basic tool, thanks to the smooth, rapid exchange of modules.

Optimum arrangement: The out-of-strip method facilitates the correctly oriented transfer of parts after the fineblanking process.



Symmetrical: The machining stages in the tool are grouped around the center.

Progressive compound tools with out-of-strip processes are another big step towards increased machine availability and overall equipment effectiveness. Today this high-tech equipment is no longer reserved for specialists, but guarantees the execution of a large number of fineblanking jobs in a secure and economical way. Your trump-cards are: considerably fewer machinery breakdowns, tools with longer service lives and reduced material usage, achieved by means of the application of an essentially simple principle: not to draw out in an unbalanced way but rather to stay symmetrically in the middle. <

Pictures: Feintool

Skyline with river – the Ohio River is about 2,000 feet wide at Cincinnati.

AT THE GATES OF THE CAR MANUFACTURERS

Feintool supplies products and services to the American automotive industry. A technology and production center situated in the city of Cincinnati beckons with its sights and rich cultural life.

Text: Florian Sievers

> The industrial heart of the Midwest is where Feintool has called home since 1977. The technology center and production facility near Cincinnati plus the production plant in Antioch, Tennessee, are where Feintool established its U.S. operations. Previously, fineblanking was still largely unknown in the U.S. However, now there is much more industry knowledge about fineblanking. Today, Feintool specializes primarily in the production of car seats, drive trains and safety components. Clients include Magna and Johnson Controls, General Motors and Ford. Since 1986, Feintool in Cincinnati remains the only training establishment for toolmakers recognized by the state of Ohio.

Feintool supplies its products directly to the U.S. automotive industry from this strategically chosen location. Automotive manufacturing is one of the principal industries in the region. In addition, Ohio is the second most important production site for the U.S. automotive industry after southeastern Michigan, headquarters of the big three national car manufacturers. But Feintool also serves customers from numerous other industries in the region: The state is third overall in industrial production nationwide.

HARD WORK INSTEAD OF GLITZ AND GLAMOUR

Feintool established itself in the small town of Blue Ash. From there it is fewer than 12 miles to Cincinnati, which lies on the banks of the Ohio River. This stretch of river is approximately 1,950 feet wide and meanders slowly in long curves past the city with its high-rise skyline and a population of 300,000. Numerous bridges link Cincinnati to Northern Kentucky.

The people of Cincinnati are honest and straightforward; they value hard work more than glitz and glamour. It’s no surprise that in this trading and industrial city that there are more Fortune 500 companies per capita than any other U.S. region. Their employees enjoy a comparatively low cost of living and rich cultural life. >

Pictures: Bryan Busovicki

Historical: The newly renovated Findlay Market hall dates back to the 19th century (right). American Football is a highlight in many major cities across the US. Cincinnati is home to the Cincinnati Bengals (below).

Those with cultural interests will find numerous museums here, including the multi-award-winning Rosenthal Center for Contemporary Art, designed by star architect Zaha Hadid. It is near Fountain Square, the main square of the city, created in 1871. Its name is derived from the fountain sculpture at its center: a bronze statue by Munich artist Ferdinand von Miller entitled, "The Genius of Water." In the summer, residents and tourists frequent the beauty of the square's blossomed landscaping and striking skyscrapers to drink coffee, shop and dine.

From the observation platform in the nearby Carew Tower, one of the highest skyscrapers in the city, visitors can enjoy a breathtaking view over the city. The view stretches over the two sports stadiums on the banks of the Ohio River. The Bengals National Football League team is based here, as is the Reds Major League Baseball team, the oldest professional baseball team in the U.S. Between the two stadiums is the new Banks district, which is currently being completed with an approximate $3.5 million investment to invigorate downtown with restaurants, clubs, offices and loft apartments.

ARTISTS AND GALLERIES

North of downtown lays the Over-the-Rhine district, consisting of old, brick houses and richly decorated buildings from the late 19th century. With almost 900 historic buildings, it is one of the largest collection of Italianate architecture in the U.S. After being neglected for years, a renaissance is taking place there. Many artists live there today and eclectic galleries, restaurants and boutiques have opened in the area. Findlay Market, a local outdoor farmer's market, recently underwent a $16 million renovation. As the name suggests, Over-the-Rhine is the old center for German immigrants. It historically lay beyond a canal, which has since closed, that the German immigrants called the "Rhine." Their district was consequently called, "Over-the-Rhine." The German heritage has shaped much of Cincinnati today.

ZINZINNATI

"Oktoberfest Zinzinnati," which is based on the Munich original, is an annual highlight for many Cincinnatians. It has taken place since 1976 and is one of the world's biggest. Oktoberfest Zinzinnati (Zinzinnati originally a parody of the German pronunciation of Cincinnati) attracts up to 500,000 visitors each year. Visitors can enjoy beer, bratwurst, pretzels and bee sting cake (Bienenstich) among other German-centric specialties in a large area in the closed-off city center.

ANCIENT NAMESAKE

The city of Cincinnati is named after the ancient Roman, Cincinnatus. He withdrew from politics after the end of his term as a Roman consul in 460 B.C. to become a farmer. But when Rome came under attack, he was recalled from the fields and appointed head of state. After defeating the enemies in just 16 days, he voluntarily gave power back to the representatives of the people in order to devote himself to agriculture once again. The virtues he demonstrated are considered classic examples of patriotism, willingness to serve and humility. During the Revolutionary War, a group of officers called themselves the "Society of the Cincinnati" out of admiration for Cincinnatus. The city on the Ohio River inherited its name from them. <

Pictures: BEN SOLOMON/ralf. Lanskeith, Wikipedia

FINEBLANKING AROUND THE WORLD

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