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Profile

Issue 01 · July 2011

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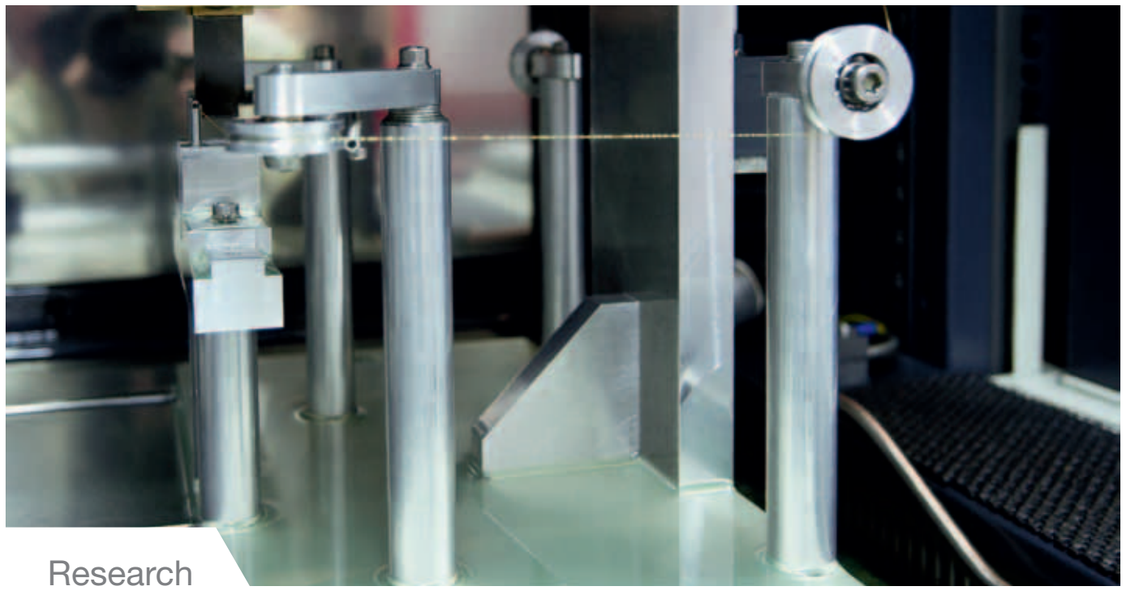

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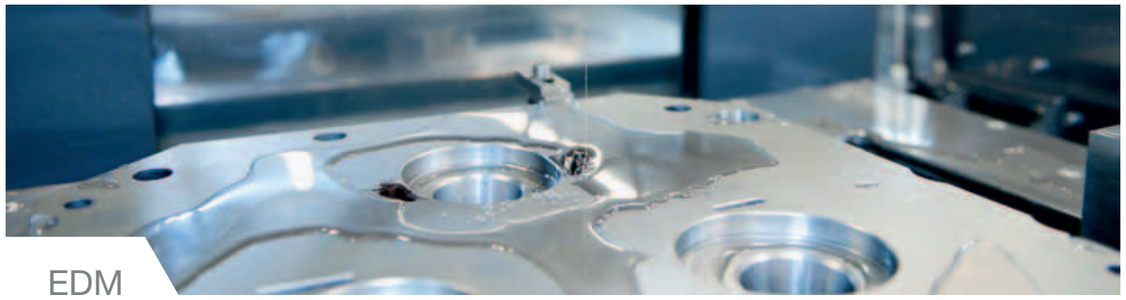

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HANS-JÜRGEN PELZERS

Editorial

This is a time not for talking but for action

If you want to be among the world's best, you need not only outstanding technology, but also the employees that make full use of it. So that you can win the battle for the best young talents, Mitsubishi Electric supports you with valuable advice and special rates to encourage the up-and-coming generation and strengthen your company. To be more precise, there's a 3-for-2 campaign for training on the Mitsubishi EDM machines with the current Advance control.

Mitsubishi Electric has a firm commitment to apprenticeships and ongoing training, not only in the EDM sector. With special budgets for equipping technical schools, we promote training on modern machine systems, as demonstrated in this issue by the example of Villingen-Schwenningen vocational school. On top of this, we are developing, in cooperation with our training partner TBZ Eisenach, strategies for the targeted further training of "older" skilled staff whose many years of experience and knowledge of current production systems are capable of benefiting any company.

So that newcomers can benefit from the best technological know-how from the outset, Mitsubishi Electric sponsors research at various institutes and establishments. The Goethe University of Frankfurt is allowing us a fascinating glimpse behind the scenes.

So, let's stop poking around in old PISA studies, but instead take the initiative together so that your business will continue to have the skilled staff it needs for future expansion.

Best regards from Ratingen

Hans-Jürgen Pelzers
Distribution Manager Europe

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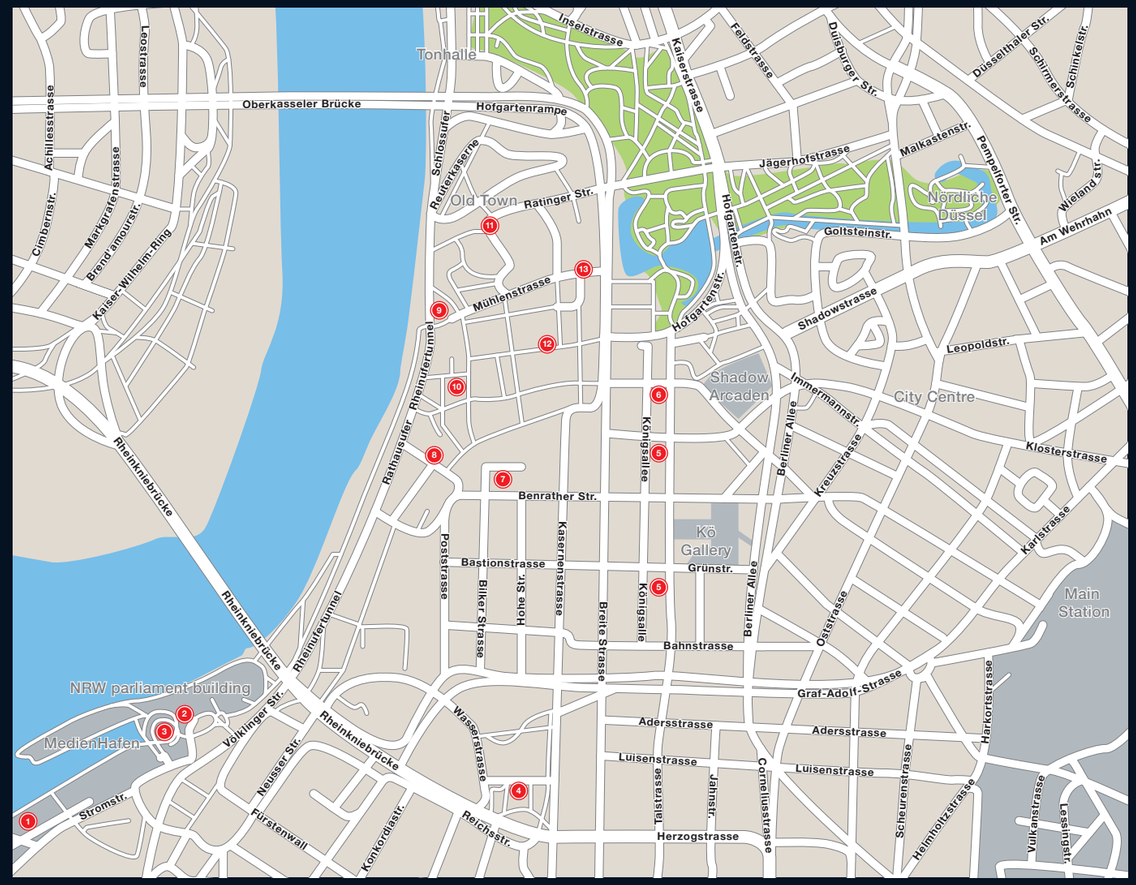
Düsseldorf in half a day

Pressed for time? If so, confine yourself to a longish walk to the main sights of the city.



1. Gehry buildings — 06 min
2. NRW parliament building — 03 min
3. Rhine Tower — 15 min
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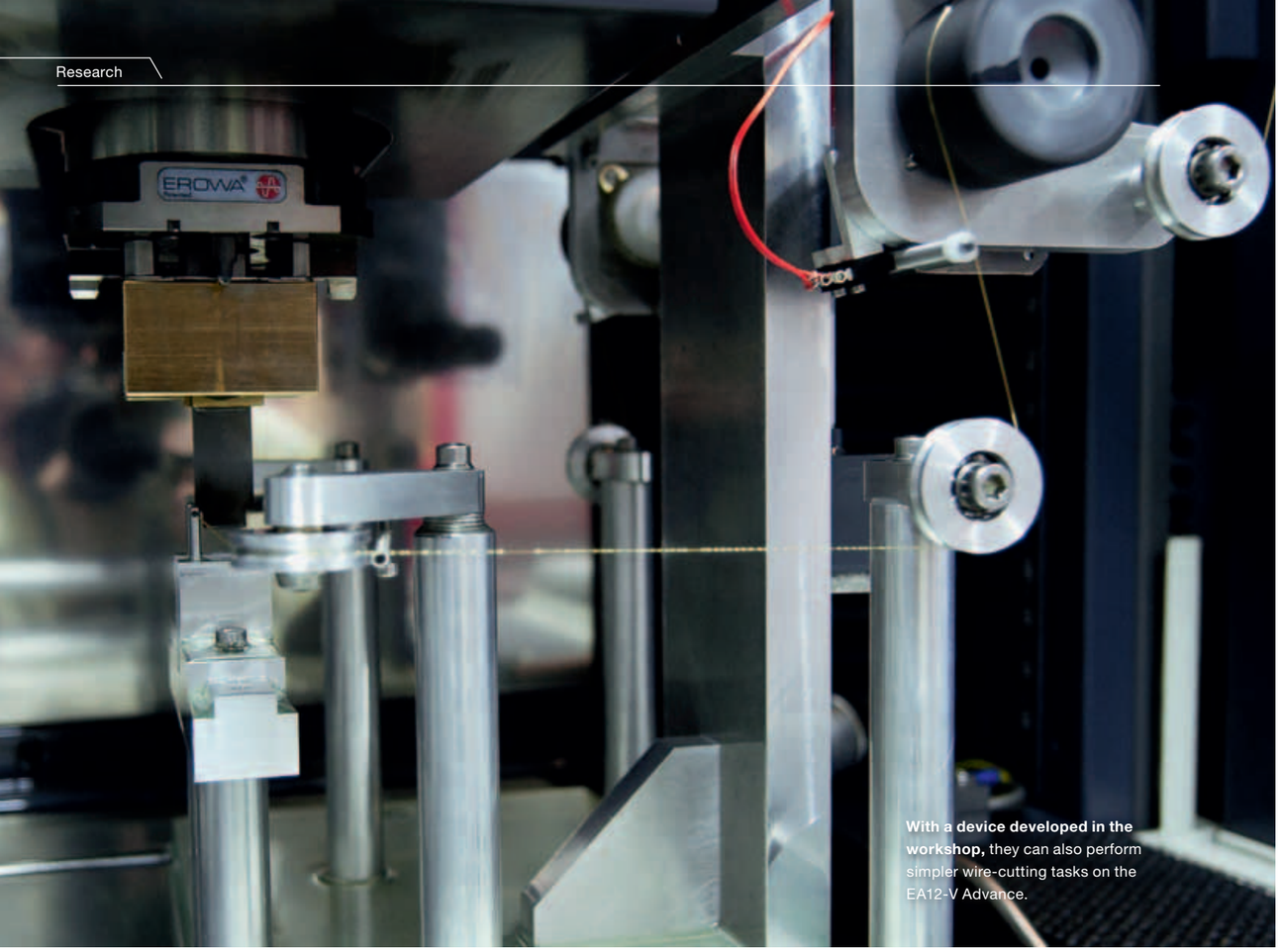
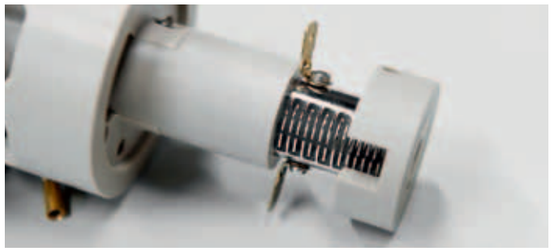


With a device developed in the workshop, they can also perform simpler wire-cutting tasks on the EA12-V Advance.

GOETHE UNIVERSITY

In the service **of research**

Scientists at the Goethe University benefit from the high manufacturing depth of their workshop. The latest addition to the machine park is an EA12-V Advance from Mitsubishi Electric.



The multipole at the right-hand end of the component consists of two elements inserted into one another. Sinker erosion is necessary to achieve the narrow gap dimensions.

The Central Scientific Workshop of the Goethe University of Frankfurt am Main has an entirely practical purpose in the context of what is often theoretical research. Experts in industrial and fine mechanics, the workshop's employees build apparatus that plays a central role in research projects. The innovative components are produced with the very latest production technology. The range of machining methods extends from conventional machining to die-sinking EDM. The latter has been possible since the installation of an EA12-V Advance from Mitsubishi Electric in 2009.

The Institute of Physical and Theoretical Chemistry at the Goethe University concentrates on "investigating microkinetics, molecular dynamics and the structure of biomolecules and model systems," as it says on the institute's website. This may seem theoretical at first sight, but the scientists are dependent on entirely practical instruments for their research. This is where the Central Scientific Workshop takes its cue: "We support the work groups by building apparatus enabling them to reliably perform their tests," explains workshop manager Helmut Jäger.

The Central Scientific Workshop of the Goethe University is of key importance for research. Production orders are not awarded to industry, because of its lack of the requisite expertise and because of the excessive cost. "We produce almost exclusively prototypes. This has a lot to do with basic research, and it often takes several attempts to obtain the desired result," says Helmut Jäger describing everyday workshop activities. The professors are also highly appreciative of their efforts, because close cooperation with the workshops not only yields better results, but also accelerates research. The timely publication of findings is in the interests of everyone concerned because of the high value of research project grants. It is against this background that the Central Scientific Workshop was thoroughly modernised in 2009.

» I would never have thought that we would make so much use of it. «

Markus van Tankeren, fine mechanic in the central workshop, makes full use of the scope offered by the EA12-V Advance.

A more flexible and faster response thanks to sinker EDM

Although the workshop isn't located in industry, it does benefit from a high manufacturing depth enabling it to respond quickly and flexibly to the needs of the work groups. Realising this, Prof. Thomas Prisner, head of one of the work groups at the Institute of Physical and Theoretical Chemistry, advocated the purchase of a die-sinking erosion machine in 2009. Helmut Jäger remembers the reason: "With conventional machining, we eventually reached our limits where high precision or extremely fine cuts were concerned." Inviting tenders for the new machine was therefore a logical step, since awarding jobs to outside service providers wasn't a feasible option for the reasons mentioned above.

Since this was the first die-sinking EDM machine that the workshop had ever purchased, Helmut Jäger was not biased by previous machine experience. One of the offers in response to the request for tenders came from Mitsubishi Electric. "In the end, the EA12-V Advance impressed us most with its operation and control." The die-sinking EDM machine from the Japanese manufacturer is also a model of versatility. This

→ applies as much to workpiece size – the machining range is 400 x 300 x 400 mm – as to workpiece material. The latter is a crucial factor in research, because the workshop team sometimes has to process materials that are very difficult to machine. “Many components are made of copper, silver or cemented carbide,” the workshop manager adds. The machine’s performance in this area is made possible by the FP120V generator.

The functions of the EA12-V Advance, a versatile machine as it is, have been extended by the staff of the Central Scientific Workshop, as Helmut Jäger explains: “With a device that we have developed ourselves, we can also use the machine for wire-cutting on a limited scale, which helps us a great deal in electrode production.” Such tasks are often impossible with conventional means. The multipole of an ion mass spectrometer serves here as a suitable example: “The various comb bars are so close together that they can only be machined with a suitable electrode by sinker EDM. The slots of 0.08 to 0.4 mm, on the other hand, can only be wire-cut.”

Manufacturing depth creates independence

Unlike users in industry, the Central Scientific Workshop doesn’t generate any income with its die-sinking EDM machine from Mitsubishi Electric. Nor does it aspire to achieve maximum machine capacity utilisation or continuously improve productivity. Instead, the goal here is to produce components that help the work groups of the institute to achieve their research breakthroughs. “The technology of sinker EDM has given us a powerful boost in this area, because we have retained our independence and have become more versatile into the bargain,” is Helmut Jäger’s assessment of the benefits of the EA12-V Advance.

As far as capacity utilisation of the die-sinking EDM machine is concerned, the workshop manager expresses his positive surprise two years after installation: “I would never have thought that we would make so much use of it.” The machine has already paid its way “because the Institute of Physical and Theoretical Chemistry are not alone in benefiting from the purchase,” Helmut Jäger remarks. Since all institutes have access to the EA12-V Advance, the Central Scientific Workshop today covers an extremely broad spectrum of components. This is just one of several reasons why the workshop manager views the future with optimism: “If new investments become necessary and are approved, I could well imagine the machine park being extended in the wire-cut or sinker EDM fields as well.”

www.uni-frankfurt.de

Helmut Jäger (centre), manager of the Central Scientific Workshop, and his colleagues **Markus van Tankeren** (left) and **Christoph Langer** (right), in charge of the machine and of programming and design.

www.uni-frankfurt.de

Professionals in Profile:
Helmut Jäger

Name and place of business:
Goethe University, Frankfurt am Main, Germany

Founding year:
1914

President:
Werner Müller-Esterl

Number of employees:
Roughly 4,600

Core business:
Research and teaching

Interviewee:
Helmut Jäger, manager of the Central Scientific Workshop

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Please describe in a sentence what the Central Scientific Workshop does!
We support the research projects of the Goethe University by producing components for scientific apparatus by conventional machining and by wire and sinker EDM.

How did you earn your first money?
Training as a fine mechanic.

What motivates you?
Working in research at the university, I’m free to take decisions and contribute my own ideas.

What’s different about how you do things now, compared to five years ago?
We do more work at the computer.

Where do you see your company in five years?
Work will be dominated even more by controlled machines.

What was your biggest business success?
The planning and realisation of the Central Scientific Workshop newly established in 2009.

What’s your favourite way to relax?
Listening to music.

What attributes do you value most in other people?
Competence, honesty and creativity.

How would you briefly describe what you do to someone with no technical knowledge?
For scientists we produce apparatus that’s not available on the market.

A perfect fit for a **brighter smile**

With its FA10-S Advance, WF Fottner GmbH opts for forward-looking wire EDM technology from Mitsubishi Electric

WF FOTTNER

In tool- and mouldmaking, WF Fottner GmbH is firmly established in the premier quality league. Working with a Mitsubishi FA10-S Advance since October 2010, the company based on Mössingen is now capable of carrying out high-precision wire erosion work on its own premises. And this has also had a positive effect on incoming orders at Fottner.

To be and stay successful, you have to invest in forward-looking technologies. Choices in this area have to be properly considered, as the investment has to pay off. This is why Wolfgang Fottner, owner of WF Fottner GmbH, takes a very close look at the available options and suppliers. For his most recent investment, he decided in favour of an FA10-S Advance from Mitsubishi Electric.

"Important for me," Wolfgang Fottner explains, "is that I can maintain the standard of quality that my customers have come to expect of me. I always want to do the best-possible job and for this I need outstanding machines and staff." The entrepreneur is impressed by the high cutting accuracy and precisely machined surfaces of the FA10-S Advance. "This clearly sets the machine apart from its rivals," Fottner confirms. "What's more, it operates very quickly and reliably."

Investment in modern machines is not enough

Another reason for Wolfgang Fottner's choice, along with the excellent technology, is Mitsubishi's exemplary after-sales service. In the first months of machine operation, it's not the big problems but the little ones that make life difficult. Difficulties that can be quickly solved in a phone call to a knowledgeable service technician. "And," says a contented Fottner, "at Mitsubishi not only are the service staff available around the clock, but the assistance is always provided quickly and competently – simply brilliant! We're totally satisfied with the service."

» We're totally satisfied with the service! «

Innovative from the outset

Wolfgang Fottner launched his successful business in 1987 in Mössingen, south of Tübingen. Over the years, he has specialised in building precision follow-on composite tools with up to 12 stages and making injection and die-casting moulds.

Effective tooth realignment thanks to tiny, precision-machined parts.

One of his company's specialities is injection moulds for small parts with intricate structures. Challenging products such as dialysis and ear, nose & throat components, brackets for dental braces and mass-produced items for automotive component suppliers who expect high quality of design and surface finish are produced with the moulds machined by Fottner. For many of these products, the emphasis is on reliable technical function. Until recently, all the wire EDM tasks were subcontracted to jobshops in the region.

Investment opens up new fields of business

Equipped with their new FA10-S Advance, Wolfgang Fottner's employees can now carry out high-precision wire EDM work on their own premises. This saves money and creates a high degree of flexibility, which is much appreciated by customers. Since the purchase of the Mitsubishi FA10-S Advance, wire erosion has developed very promisingly and benefited from new orders.

However unremarkable they may look at first glance, the true quality of these parts is revealed on the measuring machine.

→ The new technology also enables WF Fottner GmbH to explore new fields of business. In micro-machining and medical technology, the intricate products have to meet high standards. This is where the high machining quality offered by the Mitsubishi FA10-S Advance really pays off. However, high-grade machines and outstanding service are only half the battle – all this would be worthless without motivated and skilled staff.

Nothing doing without skilled and motivated staff

Wolfgang Fottner was quick to appreciate the huge importance of skilled and motivated employees for his firm's competitiveness. Work at the machines and programming stations in tool- and mouldmaking is particularly demanding. Along with superlative craftsmanship, it calls for a thorough grounding in theory. In his company Fottner therefore only employs skilled tool- and mouldmakers capable of performing the entire sequence of tasks.

Each employee handles each job from start to finish. This means he has to be a work scheduler, programmer and machinist in one. His staff expand their skills by performing all these tasks and in this way acquire a direct relationship with their own products, thus improving quality and productivity. To keep his employees in line with technological advances, they regularly attend training courses.

For employees it is a huge challenge and responsibility to be involved in the entire production process. It is also highly motivational, and the workforce identifies strongly with the business and also derives plenty of satisfaction from its work. Employees are, after all, more than purely a means of production and a cost factor.

"You've got to enjoy your work and you need new tasks and challenges so that you're always fully alert," says Wolfgang Fottner. The company reaps the benefits of this approach. The typical indicators of staff satisfaction are high manpower turnover, length of employment and number of days lost due to sickness. At Fottner, manpower turnover has been at zero for the last few years and 50 per cent of staff have been working here for over 20 years. The turnover rate is almost matched by the rate of sick leave, with very few days lost.

Fottner knows that this places very high demands on everyone, but this way of working makes the job truly interesting. It's these challenges and the holistic approach that he and his team love. And it's not just the company that profits from this strategy, as his employees' commitment pays off for them as well. They all drive to work in their own company cars.

www.fottner-formen.de

www.fottner-formen.de

Name and place of business:
WF Fottner GmbH, Mössingen, Germany

Founding year:
1987

Number of employees:
6

Managing director:
Wolfgang Fottner

Core business:
Making of injection and die-casting moulds and follow-on composite tools, and machining under subcontract

Speciality:
Injection moulds for small parts with intricate structures

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Professionals in Profile: Wolfgang Fottner

Please describe in a sentence what WF Fottner GmbH does!
We specialise in three lines of business: injection moulds, die casting moulds and follow-on tools.

How did you earn your first money?
Training as a railway assistant on the German railways. The work wasn't very satisfying.

What motivates you?
I always want to try out new things and am happy to take on new challenges.

What's different about how you do things now, compared to five years ago?
We're more productive.

Where do you see your company in five years?
Fottner aims to expand its micro-machining and medical technology activities.

What was your biggest business success?
The first job for the American market in 2005.

What's your favourite way to relax?
With sporting activities in the mountains.

What attributes do you value most in other people?
Honesty and sincerity.

How would you briefly describe what you do to someone with no technical knowledge?
Producing a high-grade technical product from a simple piece of steel.

Innovative training:

The career springboard

Thanks to the new wire and die-sinking EDM machines from Mitsubishi, trainees in Villingen-Schwenningen receive the best-possible training.

VILLINGEN-SCHWENNINGEN VOCATIONAL SCHOOL

In the corner of Germany bordering France and Switzerland is the peaceful town of Villingen-Schwenningen – in the heart of an important economic region. Within easy reach of the automotive centres of Stuttgart, Munich and Ingolstadt, component suppliers are domiciled here along with makers of electrical equipment, measuring instruments and clocks. Progressive training is provided by Villingen-Schwenningen's vocational school where Mitsubishi has sponsored two EDM machines.

Skilled tool mechanics are among the specialists in biggest demand in this Swabian high-tech region. The vocational school in Villingen-Schwenningen prepares young people for this trade by giving them modern training. Supporting companies in the region that train their own apprentices, the vocational school pursues the educational strategy of according equal status to theoretical knowledge and its practical implementation. The trainees are encouraged by skilled workshop instructors to put their skills and knowledge into practice. "Learning by doing" is the motto of Villingen-Schwenningen vocational school.

Modern training needs advanced technology

This approach can only work well if the trainees do indeed have access to modern equipment. Training has to keep pace with technological trends, otherwise it falls behind.

This fact was also appreciated by the district's school providing body, which invested some 8.2 million euros in the modernisation of the vocational school. The somewhat antiquated workshops have undergone thorough renovation and have been equipped with the latest equipment. The ideas of experienced teaching staff have also contributed to the modernisation programme. The up-and-coming industrial and tool mechanics and the firms in the region are very happy with "their" modern school.

Investment in future skilled manpower

However, this didn't all proceed smoothly. Even if the school providing body invested over 8 million euros, the budget was not sufficient to equip the school with all the desired machines and technologies.

To realise its teaching strategy, the school needed machines that are advanced, heavy-duty, precise, inexpensive and simple to operate. The technology should have a high market penetration, as non-mainstream machines are unsuitable for training. The school's tight budget merely enabled the school to purchase one modern EDM machine.

Villingen-Schwenningen vocational school **in brief**

The Villingen site teaches the subjects of electrics, motor vehicle mechanics and metalworking. The Schwenningen site teaches the subjects of electrics, food and body care. Teaching is shared by 58 science teachers and 22 technical teachers (senior staff and technicians).

The vocational school is currently training 1,573 young people in 13 different training professions. In the metalworking field, Villingen vocational school concentrates on the following professions:

- Plant mechanic for plumbing, heating, ventilation and air conditioning
- Industrial mechanic
- Tool mechanic
- Machinist

In full-time classes, the school prepares 220 young people for their training professions. Under the dual training system, 106 young adults work towards admission to senior technical school or to qualify as state-examined technicians.

Top Before they are allowed on the machines, the pupils have to write the programs.

Bottom left Unsupervised work is encouraged in workshop lessons.

Bottom right The pupils write short programs at the machine.

→ Modern training, however, calls for two machines, for the practice of wire and die-sinking EDM.

The quest for sponsors

The school turned to Mitsubishi Electric, the market leader with EDM equipment. Mitsubishi knew from its own experience how important it is to introduce vocational school pupils to advanced technology at an early stage so that they acquire sound training and a good basis for their future careers. Quickly and without red tape, Mitsubishi agreed to support the vocational school and pledged two demonstration machines. Nevertheless, the school was not alone in showing interest in these machines, and one was required at short notice in industry. But Mitsubishi responded immediately and, as an alternative, offered a new machine for the price of a demo model. The school's managers and the teachers concerned of course had no hesitation in accepting this solution.

At the handover ceremony for the BA8 compact wire EDM machine and a die-sinking machine of the EA series for advanced, top-quality erosion, there were smiles all round in the modernised workshops.

Training to modern standards

For Manfred Euler, workshop instructor at Villingen-Schwenningen vocational school responsible for erosion and milling, what counts is progressive and innovative pupil training. Essential for this in his view are modern machines and technologies, as can be found today in industry. "Our claim is to combine theory and practice in our lessons. And this is only possible when trainees have the chance to practise all the commonly used processes," Euler stresses. Part and parcel of this is a responsible attitude when using modern machines. In companies, however, modern wire and die-sinking EDM machines are often much in demand in the daily work process and can only be used for training purposes to a limited extent. For "learning by doing", which also entails costly learning time at the machine and the freedom to make mistakes, the expensive production machines are rarely available.

Teaching in real-life conditions has a high instructive value

To give young people the chance to engage in "hands-on" instruction, Manfred Euler and his colleagues work closely with them in the workshops of Villingen-Schwenningen vocational school.

The workpieces machined and finished in the workshop are often small and intricate. This calls for precise machining of the workpiece from the trainees. In the wire EDM teaching project, for instance, pupils have to machine a vice worked to within a few thousandths of a millimetre.

Mitsubishi responded immediately and offered a new machine for the price of a demo model.

Measuring machines are the ultimate arbiter at the vocational school.

Working from drawings or data from the CAD program, the first step for trainees involves studying the drawing and writing the machine program for every single component of the vice. Everything from the 60 x 25 mm base, the jaws and the jaw inserts has to be shaped with precision. However, the process of converting a block of metal with a programmed idea into a vice takes a series of work steps. The pupils have to tool the machine by themselves and simulate a program run before machining can start. However, when the young people finally have the finished item in their hands, a vice they've machined and assembled themselves, they can't help being proud of themselves.

The instructive value of such projects for pupils is inestimable. However, implementing such projects costs the school more than it can afford. This is also where sponsors like Mitsubishi Electric have an important role to play. The experts are on hand to advise teaching staff with their technical knowledge, while also supporting the school with consumables such as erosion wire.

5 to 10
per cent make use of the chance to shorten the course

60
trained tool mechanics per year

15
pupils per workshop class

58
science teachers

22
technical teachers

Young people seize the opportunity

The profession of tool mechanic and hence the course of training is challenging, and this is reflected in the qualifications for the course. “About 90 per cent of our trainees have a technical school-leaving qualification,” says Manfred Euler. The tool mechanics course takes 3½ years, a length of time most of the trainees also need. Only five to ten per cent make use of the chance to shorten the course.

Giving young people a future

Each year about 60 trained tool mechanics leave Villingen-Schwenningen vocational school. They have lessons on theory, divided into classes of about 30 pupils each. However, in practical workshop instruction, this size of class is too large for a good standard of teaching. “We’ve therefore split the workshop classes into 15 pupils per class. We want them to learn a wide range of tasks either in small groups or by themselves,” Manfred Euler explains.

Today’s youngsters are the workforce of the future. This explains the need to have technical colleges and vocational schools that provide high-quality training and share the training of future skilled staff with companies. They need the commitment of industry.

www.gewerbeschule-vs.de

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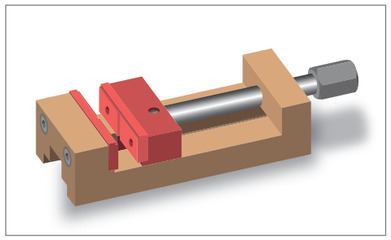
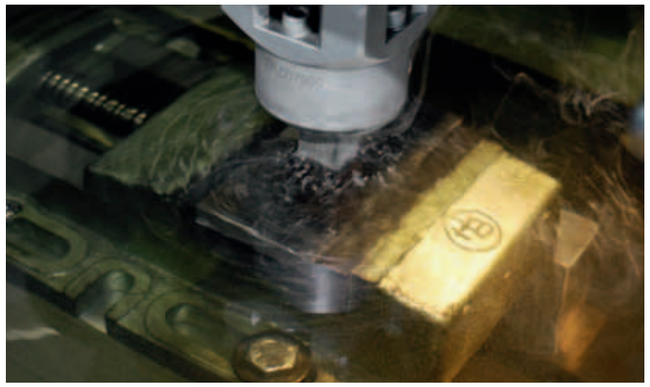
The vice machined during project work is only 60 mm long but fully functional.



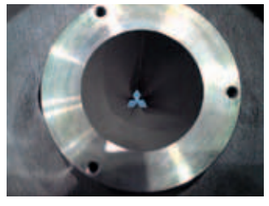


More **axes,** greater **scope,** higher **precision**

Multi-axis technology extends the application range of wire EDM machines.

ITS-TECHNOLOGIES

With its multi-axis and spindle technology, ITS-Technologies is writing a new chapter in high-precision wire EDM. Mitsubishi Electric was quick to spot the potential of this technology and was the first manufacturer to offer cooperation.



With the ITS hollow axis it is even possible to erode the Mitsubishi logo with micrometre precision in a single clamping operation.

Machining intricate structures with extremely low tolerances used to be barely possible with conventional technologies. However, ITS-Technologies has found the solution with its multi-axis system. With the new technology, ITS-Technologies has rolled back the boundaries and considerably extended the machining range of wire EDM machines – a big step forward technically. In addition, the ITS technology makes it possible to machine complex small parts in a single clamping operation and to mass-produce workpieces that are difficult to machine conventionally. For all products, the developers are keen to find not only precise, but also time-saving and inexpensive solutions.

All the same, manufacturers of EDM machines have initially shown little enthusiasm for this innovation. "When we introduced the leading EDM machine manufacturers to our innovative multi-axis technology in 2010, most companies had strong reservations," Managing Director Berthold Brandecker recalls. "However, Mitsubishi immediately identified the potential of this technology and offered to work with us." Cooperation between Mitsubishi and ITS-Technologies benefits both sides.

Highest standards of precision and quality

ITS-Technologies is based in Oberndorf am Neckar, in the high-tech region on the fringes of the Black Forest. This is where precision and top quality have a long tradition in the locally established branches of industry, notably clockmaking and defence engineering. The company founded in 2010 is a spin-off of ITS Industrie Team Service, a company with a long history specialising in the development and manufacture of large measuring machines. The company is also responsible for worldwide service and training for all large Zeiss measuring machines. To this end, Zeiss measuring machines are installed in the company's facilities so it can carry out measurements under contract with ranges of up to 2.2 x 3 x 6 metres.

The approach of aspiring to and achieving the highest standards of precision and quality has always been embraced by the employees of ITS-Technologies from its ties with the parent company.

ITS-Technologies goes for innovation

The target customers of ITS-Technologies are the turbine and pump industry, medical and implant technology, and manufacturers of microtechnical components. Production therefore focuses on multi-axis systems as well as spindle technologies for EDM and measuring systems. This also includes the modification of wire EDM machines and construction of machines to customer specification. Special EDM machines for wire, sinker and hole-drilling EDM round off the portfolio.

» Mitsubishi Electric immediately identified the potential of our technology! «

For production, ITS-Technologies has sought high-performance partners within a range of a few kilometres from the company base. However, ITS-Technologies insists on carrying out final assembly and quality control itself so that it can ensure its high standards of quality.

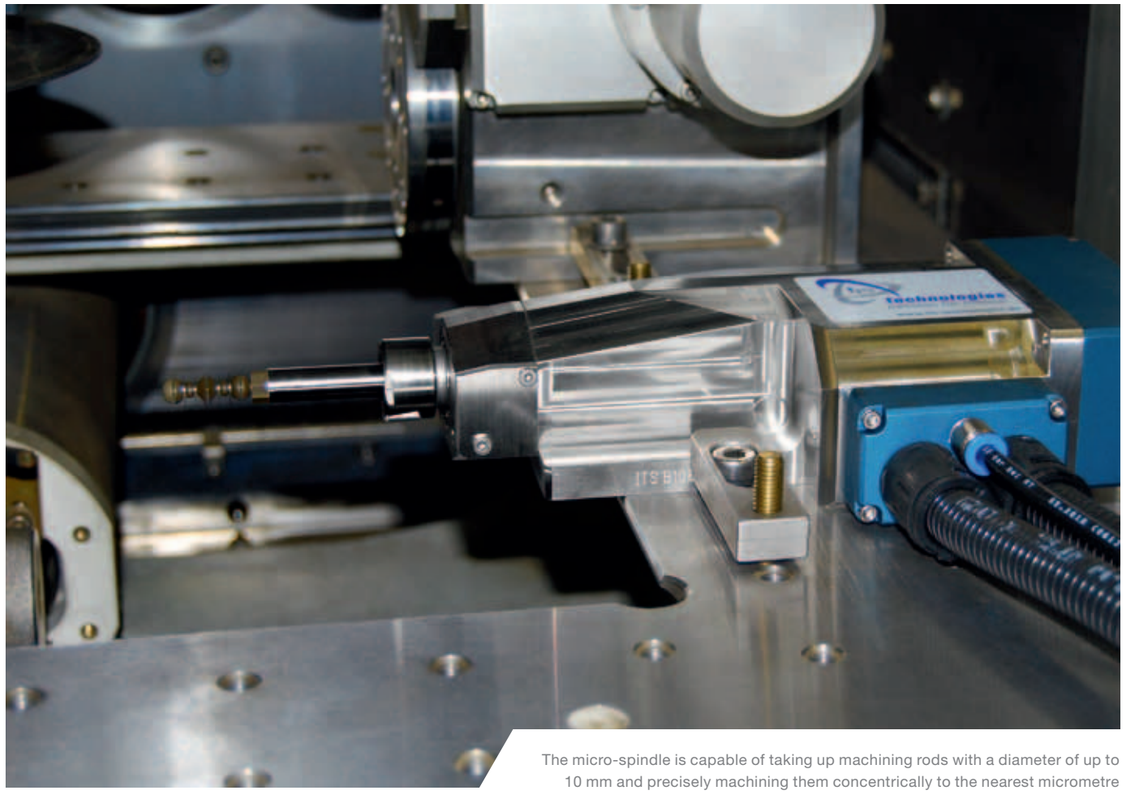
The employees also attach special importance to the development of innovative technologies. For instance, to achieve even greater precision with their own multi-axes, ITS-Technologies has been experimenting with new control technologies that can simultaneously master up to seven axes. The company places strong emphasis here on active process support.

Departure into a new dimension

Totally new is the hollow axis MA2-i-115, which revolutionises multi-axis wire EDM. With this new technology, it is possible to machine not only parts with extremely small dimensions at different angles but also small components with a dual-axis rotary table. Several sides can be machined in a single clamping operation.

The ITS multi-axes deliver maximum precision

Whereas the minimum diameter used to be 100 mm, the hollow axis with an internal opening now offers a perfect solution. The principle is ingeniously simple and involves reversing the existing design of a multi-axis as used in wire EDM. On conventional multi-axes, the diameter of the face plate determines the limits of machining.



The micro-spindle is capable of taking up machining rods with a diameter of up to 10 mm and precisely machining them concentrically to the nearest micrometre

Machining is always possible with the wire vertical.

→ The new ITS hollow axis dispenses with the face plate and instead has a continuous opening 115 mm in diameter in which various clamping systems for the parts being machined can be integrated. If the chuck is intelligently laid out as on the MA2-i-115, components with diameters of less than 100 mm can now be machined as well. With this principle, it is possible to machine right into the centre in a single clamping operation.

A dual-axis system in the form of a hollow axis generates free-formed surfaces as familiar from medical technology, aerospace and the automotive sector. Problems with precision, surface quality or from repeated workpiece reclamping are now a thing of the past. The big advantage of this technology is that machining is always performed with a vertical wire, thus ensuring effective flushing and maximum precision at all times.

Mitsubishi a neck ahead

Interested Mitsubishi customers are already benefiting today from the multi-axis expertise of the Oberndorf company, because the company has gathered wide-ranging experience with these wire EDM machines and realised many projects. A Mitsubishi NA2400 Essence is used by the ITS engineers as a trial and demonstration machine on which new developments are tested and axes are developed further.

Although the NA2400 Essence ranks among the most precise wire EDM machines on the market, the combination of the NA2400 Essence and the multi-axis system shows that standard of machining precision can be improved still further and the fields of application of these high-end machines can be extended. With the ITS multi-axis, workpieces can be freely positioned in the erosion process, so that machining always takes place with a vertical wire and efficient flushing – an important precondition for maximum precision.

A young team with big goals

The team of the two managers Jörg Springmann and Jochen Hipp is still small with only five employees. But that is all set to change soon. “Our goal is to reach all European EDM machine manufacturers with our technology within five years,” the two managers say.

The advantages of multi-axis technology

- Production of small, complex parts in a single clamping operation
- Series production with materials that are difficult to machine
- Time-saving, precise and inexpensive

ITS’s three managing partners: **Jörg Springmann, Jochen Hipp, und Berthold Brandecker** (from left to right).

For a young company with limited resources, this agenda would be difficult to implement. However, in a strategic partnership with the established parent company ITS Industrie Team Service, many factors can be jointly exploited with positive results. Cooperation yields synergies in administration and logistics as well as in purchasing, quality assurance and, finally, assembly and service. To develop new fields of application for axis-extended EDM through to maturity, ITS-Technologies also cooperates, among other things, with Institut für Mikrotechnik Mainz GmbH, IMM.

Big goals need sufficient space. ITS-Technologies currently still shares its premises with ITS Industrie Team Service. But not for much longer, as Industrie Team Service is building a modern production plant on the edge of Oberndorf this year.

After the successful start of close cooperation with Mitsubishi, ITS-Technologies is very optimistic about the prospects of successfully marketing its innovative technology.

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Higher manufacturing depth boosts added value

HOHENLOHER KUNSTSTOFFTECHNIK

Hohenloher Kunststofftechnik is another name for expertise in wire inmoulding. Its product diversity depends on high-quality toolmaking.

Before installation of the FA10-S Advance, Mitsubishi Electric carried out extensive training so that HKT could start production without delay.

Hohenloher Kunststofftechnik GmbH & Co. KG has been a quality-oriented supplier of industrial thermoplastic and thermoset parts since 1952. Under the management of Michael Baum, the Öhringen-based company of Prince Kraft zu Hohenlohe Öhringen concentrates today on its strengths in plastics processing and is at pains to consistently extend manufacturing depth. With its almost 60 employees, HKT aims in this way to become more independent and flexible and boost value added in production. In the toolmaking sector, these steps have already been taken, with a wire EDM machine from Mitsubishi Electric being installed in 2009.

Top The FA10-S Advance cuts tool components of different kinds – in this case a gearwheel mould. The picture shows the finished injection-moulded plastic gearwheel.

Left HKT's diversified products are used in all sectors of industry where electronics is a prominent feature.

» Mitsubishi Electric's support made a lasting impression on us. «

→ "It's our goal to perform as many tasks as possible ourselves," says manager Michael Baum, describing HKT's policy. The principle is insourcing rather than outsourcing. The company is already a force to be reckoned with in the field of wire and pin inmoulding. These highly specialised industrial thermoplastic and thermoset parts can be found in virtually all sectors of industry where electronics is a prominent feature. Along with the classical electronics industry, HKT also serves the automotive industry and medical technology, to mention just three examples.

HKT has many reasons for pursuing its insourcing policy mentioned above, as Michael Baum explains: "First of all, we want to strengthen our independence and become more flexible. In addition, we also want to thus boost our valued added." His aim with the company is to achieve maximum manufacturing depth. "To this end we shall gradually increase our production area as well as our workforce," says the manager, outlining his medium- and long-term plans.

The increase in staffing is made possible by consistent initial and further training. "Highly skilled staff are difficult to find in our sector," says Michael Baum. "That's why we take the matter into our own hands." This commitment is tangible, with over ten per cent of employees undergoing initial training. As far as the expansion of production is concerned, a portion of the extended space already benefits toolmaking, where the company went new ways in terms of machinery in 2009 – with a wire erosion machine from Mitsubishi Electric.

Wire EDM as a key technology

Michael Baum has no doubts about the importance of wire-cutting. "Our tools have a very high degree of segmentation. A wire-cut EDM machine is absolutely ideal for us and our way of building complex tools," he says, giving insight into their approach. The machine they chose is an FA10-S Advance, because the popular model from the Japanese manufacturer fitted perfectly into the reorganised toolshop. The graduate engineer is appreciative not only of the machine parameters: "The equipment is just what we were looking for. In the end, however, it was the overall package that tilted the balance."

In Michael Baum's view, the overall package includes not only the high-performance machine but also outstanding service. "Mitsubishi Electric's competence during initial consultations as well as during training and in recurring support made a lasting impression on us," the manager recalls. The attractive price also contributed to the purchase decision. The training in the use of the control and of the machine was carried out by Mitsubishi Electric before machine installation, which meant that tookmaking got started at about the same time as production.

Thanks to the FA10-S Advance, the toolshop is now capable of much more than before. While the toolshop used to only handle tool repairs, the wire EDM machine now enables HKT to build entire tools as well. Michael Baum also stresses quality as a factor: "Many tool components call for a level of precision and surface quality that can only be attained with wire erosion – and cost-effectively at the same time."

Forward-looking ongoing development

With production benefiting from improved flexibility and higher value added, Michael Baum looks ahead: "Our growth goals can only be achieved with consistent ongoing development in the company." In other words, innovation is writ large at HKT. "This is just as crucial in our sector as in others and is ultimately expected by our customers as well," the manager adds.

The restructuring of tooling is just one example of the commitment to innovation at HKT. Another example is the continuous optimisation of production processes in the moulding shop. "Wherever possible and sensible in production, we employ robots in order to automate processes," says Michael Baum explaining the procedure. This boosts productivity and improves efficiency. The measures taken so far have paid off, so Michael Baum sees no need to depart from this policy: "We've still got plenty of potential and want to grow to twice the size in the coming years."

HKT engages in injection-moulding production with highly advanced equipment and highly optimised processes.

www.hkt-hohenloher.de

Manager **Michael Baum** (right) inspects the current project with wire EDM machinist **Norbert Trefz.**

www.hkt-hohenloher.de

Name and place of business:
Hohenloher Kunststofftechnik GmbH & Co. KG, Öhringen, Germany

Founding year:
1952

Number of employees:
52

Managing partner:
Prince Kraft zu Hohenlohe-Öhringen

Core business:
Kunststofftechnik

Hohenloher Kunststofftechnik GmbH & Co. KG
Pfaffenmühlweg 82
74613 Öhringen
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Fax +49.7941.6096 40

info@hkt-hohenloher.de

Professionals in Profile:
Michael Baum

Please describe in a sentence what Hohenloher Kunststofftechnik does!
We specialise in the high-precision injection-moulding of thermoplastic and thermoset products in combination with wires, pins and metal in-moulding technology.

How did you earn your first money?
As a student in the laboratory for the testing of concrete samples.

What motivates you?
Achieving something every day!

What's different about how you do things now, compared to five years ago?
We learn from our mistakes and make adjustments faster so that we can continue to pursue our goals.

Where do you see your company in five years?
We aim to continuously and consistently develop personally and technologically and offer the market options in our technology of wire inmoulding in order to grow with it. Expressed in concrete figures, we'd like to see our company double in size within the next five years.

What was your biggest business success?
Restructuring the company.

What's your favourite way to relax?
After sport, having a good chat over a glass of beer.

What attributes do you value most in other people?
Reliability and trust.

What was the best advice that anyone ever gave you?
Go your own way and listen to your inner voice!

How would you briefly describe what you do to someone with no technical knowledge?
Imagine casting shapes in lead, but using plastic instead.

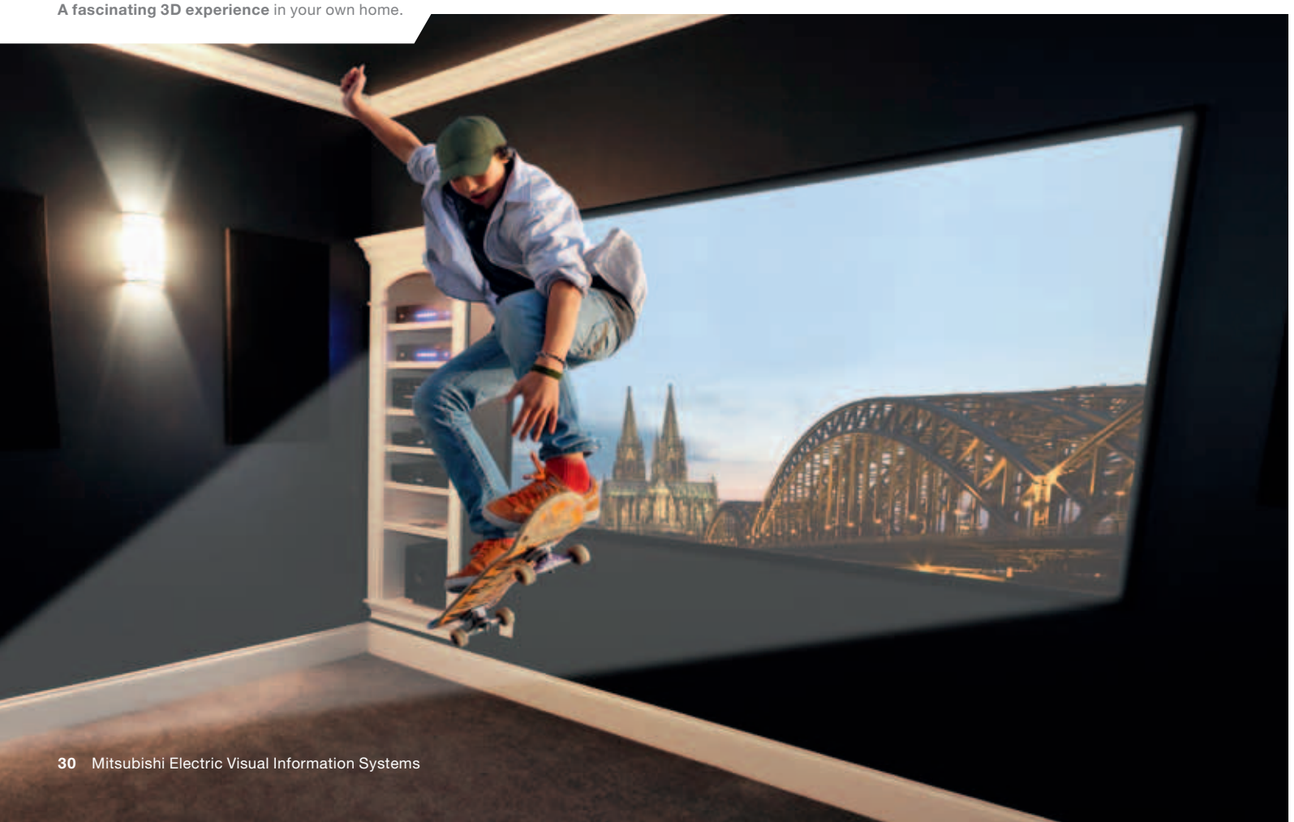
With their first full HD 3D home cinema projector, Mitsubishi Electric is pursuing one single objective: unlimited high-end cinema experience within your own home. Thanks to many years of experience in the area of full HD projectors, the Japanese manufacturer has combined proven technologies with outstanding innovations to create a product that has the potential to set the benchmark in its class. Delivering the highest levels of technology and quality, the HC9000D inspires enthusiasm with a totally new visual experience in 3D – through the use of active shutter technology.

The SXRD panel ensures flowing images.

See the most incredible colours.

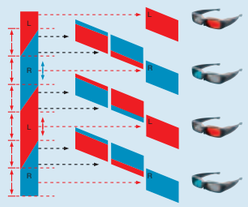
The optical heart of the HC9000D is the 0.61" 3-SXRD panel, which enables the representation of three-dimensional content in 1080 p. The panel sets numerous new standards in image representation right from the outset. With its revolutionary new configuration it guarantees flowing images with vivid colours in cinema quality, enhancing picture brightness, contrast and reproduction speed. At the same time, the high pixel density ensures sharper images and the reaction time of just two milliseconds enhances the reproduction of quick motions and fast colour changes. The powerful frame rate converter computes motion in images and produces an interim picture by using the preceding and subsequent images. Thanks to the Trident NXP chip – the best chip for frame interpolation available today – the HC9000D achieves an even more fluid, more authentic image sequence. Characteristics which, when reproducing 3D content or conventional sources, contribute to unlimited viewing enjoyment and impress even the most demanding of home cineastes.

A fascinating 3D experience in your own home.



A true CinemaScope experience thanks to a special projector lens attachment

The record-breaking maximum contrast ratio of 150,000:1 and the picture brightness of 1000 ANSI lumens ensure exceptionally brilliant images and unsurpassed blacks. As a True 3D projector of the premium class, the HC9000D offers sophisticated image-enhancing features. The Colour Management enables individual configuration of each colour, for example, and the innovative Cinema Filter optimises the display of the colour green, resulting in an optimal, cinema-like colour experience. And the newly developed 1.8 x power zoom lens is far superior to conventional lenses in terms of light concentration, colour fidelity and reproduction. With the 3D anamorphic mode function, Mitsubishi Electric proves that it takes the interests of cineastes to heart. In combination with a special lens attachment, films are projected in the original Cinemascope format – also in 3D. No more objectionable black bars across the top and bottom of the picture. The HC9000D uses a powerful HQV processor to extrapolate the resolution required in order to ensure outstanding reproduction in full HD, no matter the source. Even when it comes to installing the projector, Mitsubishi Electric leaves nothing to chance: the lens-shift function guarantees the widest possible flexibility in the set-up for the users.



The 3D glasses have two shutters that open and close in rapid sequences imperceptible to the human eye.

Cinema experience of the superlatives

The HC9000D by Mitsubishi Electric combines innovations and technical highlights into the ultimate cinema experience. The outstanding technical equipment and the extraordinary performance in 2D and 3D make the HC9000D the benchmark in its class. When it comes to installing a true 3D home cinema system, the new top-of-the-range full HD projector from Mitsubishi Electric is the only answer. The HC9000D will be available from authorised dealers in black or white gloss finish starting from the end of February 2011.

www.mitsubishi-vis.de

EDM and more

PÖPPELMANN

3,000 articles, 13 design engineers:

Precision

beyond the bounds of conventional machining

Pöppelmann underlines the central importance of mouldmaking with the very latest production technology – which also includes wire EDM.

Stefan Kühling (right) and **Christian Südkamp** are responsible for one-off and small series production on the FA20-S Advance.

The company was founded by Josef Pöppelmann on his parents' farm in 1949. 60 years on, Pöppelmann GmbH & Co. KG with its roughly 1,500-strong workforce and production plants in Germany, France and the USA is considered one of the leading suppliers of plastic parts for a huge variety of sectors. The plastics specialists achieve their high level of customer satisfaction with a huge commitment to quality, the necessary expertise and innovative technologies. A more recent example in the modern machine park is the Mitsubishi Electric FA20-S Advance installed in the mouldmaking department in 2010.

A straightforward cork with a cap bearing the logo still in use today marked the starting point for the wide-ranging product portfolio at Pöppelmann today. The company in Lohne in Lower Saxony develops and manufactures plastic parts in four different business sectors. The KAPSTO sector is mainly concerned with protective elements that Pöppelmann offers in about 3,000 different versions and produces to customer specification if requested. K-TECH stands for industrial plastic injection mouldings used in different industries either as individual parts or complete subassemblies. In its FAMAC sector, the company concentrates on functional components and packaging for the food, cosmetics, pharmaceutical and medical industries, and the products in the TEKU business sector include plastic plant pots for commercial horticulture.

Business growth has been remarkable over the decades. The workforce has increased markedly in recent years, while expansion abroad has also been pursued. "This success is attributable solely to organic growth and not to any takeovers," Hermann Winner, head of mouldmaking, stresses. "And this is how we intend to continue to grow." The varied product range is also a reason why Pöppelmann has come through difficult economic periods unscathed. "This gives our customers the assurance of our reliability even in long-term projects," Tim Simoneit, who works in marketing, adds.

A development challenge: Plastic plant pots are extremely thin-walled and have an intricately designed base.

Pöppelmann covers the entire process chain, from the design through to the finished printed item.

Injection moulds as an asset

Pöppelmann naturally aims for high manufacturing depth in its everyday production activities so that all departments can operate flexibly and with a quick response. Hermann Winner sees one continuous theme throughout the process chain. "In all areas, we rely on the very latest technological processes so that we can satisfy customers' high expectations and be at the forefront of innovation." This applies as much to elaborate injection moulding, thermoforming and extrusion processes as to high-grade printing methods. Tim Simoneit puts it concisely: "Along with our employees, this expertise is our most important asset." This is particularly true of complex injection and thermoforming moulds, without which the high quality of our plastic parts would be inconceivable.

This also explains the huge importance of the company's own mouldmaking department, which in Lohne has a central function for the entire company. 117 employees, including 13 design engineers, are responsible for making sure that the company's four business sectors are supplied punctually with the necessary moulds for production. "Production usually needs the moulds at short notice because of the high level of daily output," Winner adds. At the same time, his department ensures that a high standard of quality is upheld. "The tiniest inaccuracies can cause burrs on the finished product." This degree of precision cannot be achieved with conventional machining.

Pöppelmann has been producing plastic protection elements for many years. The current KAPSTO product range comprises over 3,000 items.

FA20-S Advance: The matching machine for the right price

In view of these tough requirements, wire EDM is one of the central production technologies. High and modern standards apply here as well. When an old wire EDM machine was to be replaced by a new model in 2010, the FA20-S Advance from Mitsubishi Electric made a brilliant impression across the board. "The price/performance ratio was very good and its technical data such as removal rate and machining range were more than sufficient for use in our mouldmaking activities," Winner recalls.

By switching to a wire EDM machine from Mitsubishi Electric, machinists had to learn how to operate a totally new control. However, Stefan Kühling, one of the operators, doesn't see any problem in this: "The training by the manufacturer beforehand prepared us well for working at the FA20-S Advance." The machine was thus fully ready for operation immediately after installation. Employees are equally appreciative of customer service, which was always available with advice and practical support in the following months whenever anything cropped up.

Pioneering personnel management

Innovative and high-productivity machines are of course only part of the story. The other part is competent and motivated employees. "Like customer satisfaction, employee satisfaction is an important aspect of our company philosophy," explains Yvonne Brüning, responsible in the personnel department for training. Regular feedback from staff and an extensive programme of further training are permanent fixtures in everyday work activities.

"We attach great importance to employee satisfaction even at the initial training

After basic training in the teaching workshop, trainees at Pöppelmann are introduced to all the departments in mouldmaking.

→ stage," says Brüning reporting on her sphere of responsibility. It is important in this context that trainees with poorer school-leaving qualifications are given attention and that everyone after initial training is offered a chance to stay with the company. The good reputation of training is reflected by the numbers of applicants: "We review a good 500 applications each year. At the moment we have 150 trainees, and in 2011 we shall be taking on 53 new ones." Pöppelmann does not confine itself to the conventional commercial and industrial/technical training professions, as courses of study combining part-time education with on-the-job training are also available. The company also encourages professional further training at schools for technicians and highly skilled staff, for which employees can be exempted from their usual duties.

Motivated and competent staff plus innovative development and production will continue to be the foundation of Pöppelmann's future business. The expectation of further growth is illustrated not only by the increase in the workforce, but also by the ongoing diversification of the product range. The plant in the USA is also a good example, as Hermann Winner elucidates: "We have so far only built on about 10,200 m² of the roughly 120,000 m² plant site. So there's plenty of room for expansion."

www.poeppelmann.com

Name and place of business:
Pöppelmann, Lohne, Germany

Founding year:
1949

Number of employees:
1,500

General managers:
Friedrich Kühling, Norbert Nobbe

Core business:
Plastics processing

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49393 Lohne
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Newsflash

90th MITSUBISHI ELECTRIC GROUP Anniversary

90 years of Mitsubishi Electric – new logo to mark anniversary

The Mitsubishi Electric Corporation has been celebrating its 90th company anniversary since 1st February. "With its knowledge based on 90 years of experience, Mitsubishi Electric will combine new ideas so that it can continue to position itself as a global and strongly environmentally oriented corporation," says Kenichiro Yamanishi, President and CEO of Mitsubishi Electric Corporation.

Maximum precision and top speed – a perfect combination

When motor-racing aces Sergio Peréz and Kamui Kobayashi climb into their 750 hp race vehicles on Sundays, Mitsubishi Electric is already there with them. As a technical partner, Mitsubishi Electric is supporting the F1 Sauber Team with die-sinking and wire EDM machines as well as with robots for laminating carbon fibre components.

Sauber F1 Team
Technical Partner

IMM celebrates its 20th

Institut für Mikrotechnik Mainz and Mitsubishi Electric have been cooperating closely since 2007. It is since then that a PA20 has been aiding the machining of complex microstructures of exceptional quality. As a globally operating provider of development and research services in the field of microsystem technology, IMM specialises in customised development work. Congratulations from Mitsubishi Electric to IMM on its 20th anniversary!

EDM User Forum 2011

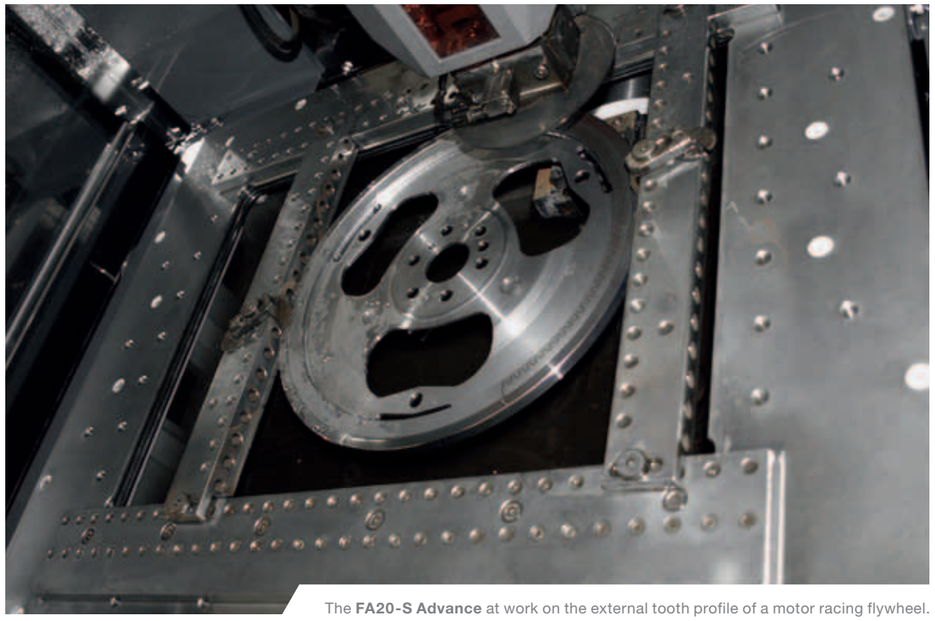
In February another free workshop for users and operators of Mitsubishi Electric EDM machines was held in Ratingen. Due to the large number of registrations and limited space, the event had to be spread over two days. The total of roughly 60 participants gives some indication of the strength of interest in our expertise and in an exchange of experience with fellow users.

Breaking the sound barrier **with top quality**

HK Technologies supplies eighth Mitsubishi to precision engineering firm.

EDM PRECISION

EDM Precision Technologies Ltd, a highly successful precision engineering business, has taken its eighth Mitsubishi EDM. Supplied by exclusive UK agent HK Technologies, the Mitsubishi FA20-S Advance extends much-needed capacity at this progressive and ambitious precision engineering company.



The **FA20-S Advance** at work on the external tooth profile of a motor racing flywheel.

Based on the Technology Park at the Silverstone Circuit in Northamptonshire, EDM Precision's association with the motorsport sector is clear. Interestingly, after its recent move to a larger unit at the Technology Park, the company is now housed in the very facility where Eddie Jordan built his first Formula One car in 1990.

And yet while motorsport constitutes around 60 per cent of company revenue, EDM Precision is keen to build on its growing reputation in a number of other challenging sectors such as scientific equipment, medical, electronics, oil, defence and, importantly, aerospace. With regard to the latter, the company was accredited with EN/AS 9100, the aerospace quality management standard, as part of its commitment to continual improvement.

Established in 1992, EDM Precision was acquired by its present Managing Director, Paul Waldron in 2006. Mr Waldron has since introduced a number of changes that have pushed the company into the UK's vanguard of EDM service providers. For instance, an ethos of job ownership has employees taking responsibility for planning and inspecting their work and not just setting and running

machines, while another new initiative sees important events and projects handled using a four stage philosophy of think-decide-plan-implement, with particular emphasis on the "think" part of the process. Indeed, this very formula was applied to the process of selecting a new wire EDM machine.

"We wanted a machine that would give us the extra capacity to meet growing demand, which meant it needed to be capable of reliable, unattended, overnight operation. After careful consideration we opted for a Mitsubishi Electric FA20-S Advance. By selecting this machine we not only ensured the highest quality, but also the ability to start using the machine on day one due to the similarities with the seven other Mitsubishi Electric machines already on site."

Left Delivery of the new FA20-S Advance.

Bottom The FA20-S makes machining easier at twice the speed.

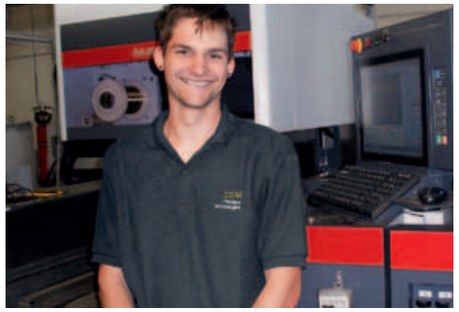
EDM Precision enjoyed a strong 2010 with demand increasing across the board. For instance, a total of seven Formula One teams carried parts made by the company during the 2010 racing season, while other motorsport disciplines such as Le Mans, touring car and historic car racing also placed high demands on capacity. Furthermore, aerospace is becoming an increasing part of revenue generation.

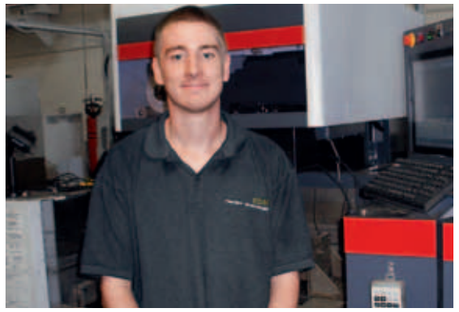
Maximum precision is the key

"Precision (for Formula One) and repeatability (for aerospace) are key factors if you want to win contracts in these sectors, which is where the FA20-S Advance comes into its own," explains Mr Waldron.

Capable of handling workpieces up to 1050 x 800 x 295 mm, the FA20-S Advance showcases Mitsubishi's dedication to high precision. Wire EDM has never been so simple, particularly using functionality such as the M700 touch-screen control, anti-electrolysis technology and SL (Step-Less) control, all of which combine to make machining multiple parts with varying thicknesses and shapes faster and easier, saving up to 50 per cent machining time over previous models.

"There are many advantages to EDM, but typically our customers like the fact that no stress is induced into the part due to the absence of heat or friction generated by conventional cutting processes such as milling or grinding," says Mr Waldron. "Additionally, because of the high cost of the materials used in many of the sectors we serve, customers appreciate that EDM can often yield a higher number of parts per billet."





Right The staff of EDM Precision combine ingenuity and determination.

Speedy response to customer requests

As a company, speed of response is another real strength of EDM Precision, this relates to both quote turn around and production supported by its seven wire EDMs, three die sink EDMs, as well as CNC milling, CNC turning, EDM hole drilling and grinding capabilities. Additionally, smart engineering through the use of Erowa tooling systems enables work pieces to be transferred from EDM machine to mill, and vice versa, without the need for lengthy set-up procedures.

"In Formula One we might be tendering for a job at 2 pm with the order arriving at 4 pm and delivery required within a week – and we might have to source material in that time," says Mr Waldron. "From time to time we have orders with a next-day delivery required. Formula One is essentially product development at warp factor 10 on a race-by-race basis. Some of the components we are asked to produce are extremely challenging, but we have a growing reputation for using the determination and ingenuity of our experienced engineers to solve seemingly impossible problems."

» The new Mitsubishi is a good investment for our business. «

In 2009, like many engineering companies, EDM Precision found the market tough-going. However, the business worked hard to make a modest profit and focussed its energies on emerging from the recession in a strong position. The company took on two trainees at the beginning of 2010, refreshed its website and pledged to begin searching for a new high precision wire EDM, a process that commenced at the MACH exhibition at the NEC in June 2010. With the FA20-S Advance now installed, this progressive strategy is already starting to pay dividends.

"We're now seeing larger orders from existing customers plus a steady increase in new customers – in the past four months we have been adding new customers at the rate of two per month," says Mr Waldron. "I feel we are well positioned to continue to grow with additional employees, extra capacity and continuous improvements in our processes and efficiency. The Mitsubishi FA20-S Advance plays a big part in this."

Long operating life – high cost-effectiveness

The company's Production Manager, Roy Marks, continues the theme: "Our Mitsubishi machines are reliable, well made and accurate. With Mitsubishi you get extremely high quality – we have seven other Mitsubishi machines so our engineers are familiar with the controls. For maintenance, we can call out one engineer to service eight machines and with many of the wear parts and consumables

Total commitment for the end products of the FA20-S Advance.

→ being interchangeable, we can keep running costs under control. Last but not least, HK Technologies offer a full-time, dedicated applications engineer. He is an easy-to-access expert, and in addition to basic training he can add real value to a project by helping reduce machining time through his knowledge of the optimum machining settings to use for unusually shaped parts."

Due to its speed, accuracy and cost efficiency, the FA20-S Advance is now first choice for all jobs at EDM Precision. Mr Waldron says he is expecting 10–15 years' peak operating life from the machine, which will be "many years after it has paid for itself".

Batch sizes at the company range from 1-off to over 100 in some instances, although 20–25 is typical. At the time of writing, the machine was loaded with a flywheel for a motorsport customer that required the external tooth profile machined.

In terms of accuracy, Mr Waldron says the machine is easily good to ±5 µm, often ±2 µm, although he states this is usually only in cases where EDM Precision is creating the datum. If the component is already part-machined by another company, the subsequent EDM work will only be as accurate as the datum created.

As a point of note, the company also manufactures a small selection of its own products. A recent example is a titanium brake shim that reduces heat transfer from the brakes to the brake fluid. This effect can be disastrous in motor racing as heated brake fluid with compressible gas bubbles can suddenly reduce the effectiveness of braking.

A Mecca for F1 engineers

Such is the growing reputation of EDM Precision that the company even hosts tours of its facilities for technical colleges and universities. In fact, the company recently hosted 25 design engineers from a Formula One team, who were keen to find out more about EDM and design-for-manufacturing. The knock-on benefit for EDM Precision is the arrival of designs that are more conducive to EDM processes, as well as new parts that were previously manufactured using other techniques. Of course, taking centre stage for the tours is the company's new Mitsubishi FA20-S Advance.

"There is no escaping the fact that acquiring new plant and equipment represents a big commitment for small businesses, but to not invest is simply not an option," concludes Mr Waldron. "Running any company is about making the right decisions at the right time. Taking a long term view in a small business can be challenging, as it's easy to get overloaded with day-to-day work. However, if a small company is going to benefit from its particular mix of quality, service and value by using its own expertise, speed and agility, then time must be set the aside to make longer term plans. There is no doubt in my mind – the Mitsubishi is a good investment for our business."

Formula One means fast-track product development

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HÖRL KUNSTSTOFFTECHNIK

A million parts on the **zero-defects principle**

In plastics injection moulding, full-service provider HÖRL delivers superlative quality throughout the process chain, with a strong emphasis on highly advanced mouldmaking.

The machines perform their task extremely reliably and display high operator comfort.

HAINZ & HÖRL Kunststofftechnik GmbH was founded in 1991 in simple conditions and rented rooms, initially producing only plastics packaging materials by injection moulding. 20 years on, HÖRL Kunststofftechnik employs a 106-strong workforce that manufactures precision plastic parts in what are mainly multi-cavity moulds in bright, air-conditioned premises. Today, HÖRL Kunststofftechnik chiefly produces components for plug connectors and, in doing so, serves a multitude of prominent customers in a variety of sectors such as the automotive industry, telecommunications, automation and optical waveguides. The multifaceted industries catered to also include medical technology.

HÖRL Kunststofftechnik has been running its own high-precision, totally digital and fully air-conditioned mouldmaking department since 1999. For company founder Thomas Hörl, precision has enjoyed priority from the outset. It is therefore only logical that their first wire-cut EDM machine should have come from Mitsubishi. Heartened by the reliability of this machine and the precision of its machining processes, they then purchased further Mitsubishi eroding machines. Six wire EDM machines from Mitsubishi Electric are currently in operation around the clock.

Since setting up its own precision mouldmaking department, the company has been covering the entire process chain for plastics injection moulding. Today, HÖRL is known as a full-service provider that provides everything from a single source, from mould design and fabrication through to injection moulding production. “High-calibre customers trust in our quality and reliability. Top quality combined with reliability and outstanding plastics expertise are what HÖRL Kunststofftechnik and its employees aspire to,” says Alfred Heinl, head of mouldmaking. “With ongoing training and the implementation of advanced technologies and processes, we are able to supply our customers with technically high-grade plastics products at competitive prices,” he continues. “And this builds confidence.” However, the high level of customer satisfaction is attributable not only to quality, but also to a punctual and above all flexible parts supply.

HÖRL’s success can be ascribed to the perfectly optimised process chain and comprehensive quality management. The jobs usually start with the customer sending in 3D data for his component. After simulation and a feasibility check within as little as two weeks in some cases, a first injection mould is fabricated with a single cavity. After initial sample approval, often without a correction cycle, the customer then has the opportunity to define the desired number of cavities. “The big advantage for the customer is that initial and usually urgent demand can be met by the first, single-cavity mould while the multi-cavity version is being fabricated for mass production,” Alfred Heinl adds. However, this procedure necessitates a high level of availability of the entire machine park and the associated precision.

In plastics injection moulding, cameras check every single part for dimensional accuracy.

Quality from start to finish

Quality inspections take place throughout the process chain. Even in the case of parts produced in exceptionally large quantities – the injection moulding machines output as many as 100,000 plastic parts per day – an integrated camera system ensures in many cases that every single part is checked immediately after injection moulding. The investment in camera surveillance systems and a modern quality assurance system and highly skilled staff have made it possible to achieve zero-defects production. HÖRL has been certified to ISO 9001 since 1993. These outstanding results are rooted in mouldmaking, as Alfred Heinl explains: “Continuous production stands and falls with the quality of the injection moulds. This is why precision takes pride of place in mouldmaking.” It goes without saying that the tolerances are usually in the range of less than a hundredth of a millimetre.

Alfred Heinl (left), head of mouldmaking, and **Michael Passinger**, training manager.

Training skilled staff **and staying competitive**

HÖRL invests not only in advanced machine technology in order to stay competitive, but also in top-rate staff. The company has been training its own staff for some time now, a fact underlined by the large proportion of trainees. 17 mouldmakers, electronics technicians and process engineers in the making are currently undergoing training in the company. To keep pace with the high rate of growth, the proportion of trainees will be increased again in the new training year. “It’s becoming more and more difficult to recruit experienced and competent skilled staff, so we’re taking the matter into our own hands by nurturing the next generation of skilled personnel ourselves,” says Michael Passinger summing up.

As the manager in charge of training, Michael Passinger is fully aware of the value of junior staff being fully integrated in production at HÖRL at an early stage. The reasons are obvious: “A training workshop of the kind found in many large companies wouldn’t make economic or practical sense in our case. In real-life production, trainees are introduced faster to their tasks and also have to learn to accept the responsibility that goes with the job.” A conspicuous feature of training is a change that has taken place in the last few years, namely that a third of all trainees are now female. “The times when our trades were male domains have long gone,” is the training manager’s conclusion.

The ongoing expansion of training and the associated increase in the workforce underscore HÖRL’s the rapid growth. Since there is no space for further machines in the current mouldmaking department, there are already definite plans for expansion. “The construction of new production shops a few hundred metres away is planned so that we can respond appropriately to sustained demand from our customers,” says Alfred Heinl looking ahead.

Along with mould components, copper electrodes are produced by wire EDM for subsequent sinker erosion.

Michael Passinger (right), training manager, stresses the importance of integrating trainees in production at an early stage.

Left Complex moulds permit the production of up to 48 plastic parts with a single shot. The mould in the picture is designed for 12 parts.

→ The high precision of the injection moulds calls for equally precise machine tools in their production. Conventional machining has therefore been supplemented with wire EDM. HÖRL has been working with models from Mitsubishi Electric since 2001, with six currently in operation. “The machines perform their task extremely reliably and display high operator comfort,” says Alfred Heinl, explaining the company’s loyalty to the Japanese manufacturer. In this connection, he highlights the smooth-running automatic threading even with the thinnest wires and the user-friendly control.

Innovative wire erosion for greater precision

Thanks to its satisfaction with Mitsubishi Electric, HÖRL again turned to its preferred wire EDM supplier for the most recently purchased machine. Although the existing machines all belong to the FA series, the decision went this time in favour of a NA1200 Essence. The reasons for this Alfred Heinl sees in the even greater precision and the possibility of working reliably with the smallest wire diameters. “The generator can be controlled even better, which offers us greater scope in terms of precision in the production of complex geometries.” Thanks to the fine wire diameter of 5/100 mm, the much smaller radii increasingly demanded by customers are also possible.

The NA1200 Essence was developed with precisely such high-precision fields of application in mind. The tried-and-tested cast-iron design, load-free direct drives and ultra-swift communication via optical waveguide between the control, axis amplifiers and drives permit this high standard of wire erosion. “Since the degree of precision that we and our customers aim for to will continue to grow, the NA1200 Essence was an important investment in our future,” is Alfred Heinl’s assessment of the machine’s importance.

www.hoerl.de

www.hoerl.de

Name and place of business:
HÖRL Kunststofftechnik GmbH & Co. KG, Laufen, Germany

Founding year:
1991

Managing directors:
Thomas Hörl, Franz Praxenthaler

Number of employees:
106

Core business:
Mouldmaking and the production of precision injection mouldings for the automotive and electrical industry

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Germany

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Fax +49.8682.9557 57

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Professionals in Profile:
Alfred Heinl

Please describe in a sentence what HÖRL Kunststofftechnik does!
Our range of plastics injection mouldings extends from mould design and fabrication through to mass production of injection mouldings and quality assurance.

How did you earn your first money?
With the production of plastic parts.

What motivates you?
The passion of producing high-quality parts.

What’s different about how you do things now, compared to five years ago?
We now operate with greater foresight and profitability.

Where do you see your company in five years?
Among the elite in precision plastic parts.

What was your biggest business success?
Achieving rapid growth in the years to date.

What’s your favourite way to relax?
When mould sampling has gone off well and the machine produces immaculate plastic parts.

What attributes do you value most in other people?
The ability to work in a team and with great precision, and honesty.

What was the best advice that anyone ever gave you?
Never stand still.

How would you briefly describe what you do to someone with no technical knowledge?
We produce precision plastic parts for the automotive industry, mobile phone manufacturers, medical technology and a number of other sectors.

TOOL & STAMPING

Giants in precision
for micro-components

Tool & Stamping has established itself on the market with highly complex stamping tools. Two Mitsubishi Electric wire EDM machines provide the required precision.

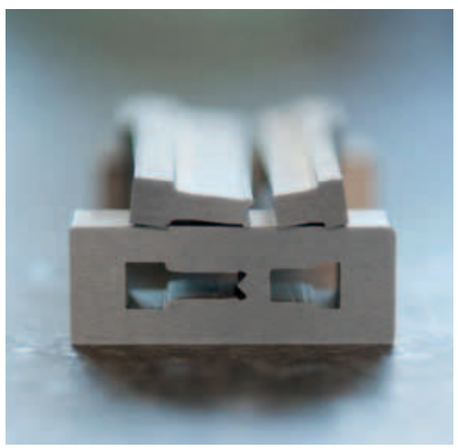
Tool & Stamping GmbH & Co. KG was founded by Alfons Manzo in 2004 when his then employer, Molex GmbH gave up its location in Bad Wimpfen.

The young businessman took over Molex orders in the tool and stamping sector and built up its own stock of customers at the same time. The latter now account for 95 per cent of business. This success can be ascribed to the high quality standard that has top priority for the entire product range of Tool & Stamping. The small team of specialists meets this high standard, among other things, with high-precision wire EDM machines from Mitsubishi Electric.

Tool & Stamping mainly produces punches and dies for the manufacture of copper contacts.

With just four employees, Tool & Stamping ranks among the smaller and highly specialised firms in toolmaking. Working from sample parts, the company designs elaborate stamping tools employed in the working of copper, brass, aluminium, steel and stainless steel. Examples of the end-products include copper contacts for the electronics and automotive industries. Stamping is also one of the services provided. Founder and manager Alfons Manzo attaches great value to high manufacturing depth: “Most customers today expect an all-inclusive service – something we’re perfectly equipped to provide.” ‘Perfectly’ in this case means that the firm has to operate highly efficiently in order to design and machine the tools. “The times when making a tool took three months are well and truly over. These days it’s more like three to six weeks,” says Manzo, a toolmaker by trade.

Tool & Stamping’s customers appreciate this philosophy and trust in the toolmakers’ skills, for the company has made a lasting impression with its sophisticated tool solutions. The stamping tools benefit enormously from the employees’ wealth of experience and their technical expertise. “Depending on the job, this can run up to several hundred man hours per tool,” says Manzo describing the production process. However, the results are certainly remarkable and customers are delighted. Combining precision with quality, the stamping tools are an expression of what is technically feasible today.



Right The expertise of Tool & Stamping finds expression in a huge range of different geometries.

Managing partner **Alfons Manzo** (left) talking to design engineer **Wilfried Funk** (centre) and wire EDM machinist **Andreas Roth**.

FA20-S boosts capacity

Tool & Stamping have been achieving high precision with the aid of a Mitsubishi Electric QA 10 since 2006. “It enables us to achieve precision to the nearest thousandth of a millimetre,” Manzo enthuses. The machine is also capable of high productivity. Such values find expression not only in the quality of the stamping tools, but also in delivery times. Despite their high-performance QA 10, Tool & Stamping reached its limits in 2010 and became aware of the need to boost both capacity and flexibility in production.

Having awarded a number of jobs to outside firms, it soon dawned on Manzo that it would make more sense to buy a second wire EDM machine. “It’s important for us to be able to respond quickly rather than having the join the queue for outside services.” Tool & Stamping therefore invested in a Mitsubishi Electric model in 2010, this time in an FA20-S Advance. In doing so, Manzo killed two birds with one stone, because greater flexibility was only one reason. “Customer orders showed that we also need a greater machining range if we wanted to make all the tools ourselves,” the manager adds. While the QA 10 has to make do with 350 mm, the FA20-S Advance has a range of 500 mm on the X-axis.

» The easy-to-grasp instruction by the manufacturer and the rapid response from after-sales service speak for themselves. «

With the FA20-S Advance, Tool & Stamping has sensibly extended its machine park and clearly underlined that wire erosion is a key technology for the still young business. “We depend on these machines so that we can fully exploit our strengths in high-precision toolmaking,” Manzo stresses. The high level of quality is, after all, an important selling point that sets them apart from the competition. As the FA20-S Advance now achieves this quality at a relatively high speed, Tool & Stamping benefits additionally from higher productivity.

In line with the state of technology

There were good reasons for choosing Mitsubishi Electric as the second wire EDM machine. Firstly, the team was already familiar with the manufacturer’s control system, and secondly previous experience had shown the service to be competent and reliable, as Manzo recalls: “The easy-to-grasp instruction by the manufacturer and the rapid response from after-sales service speak for themselves.”

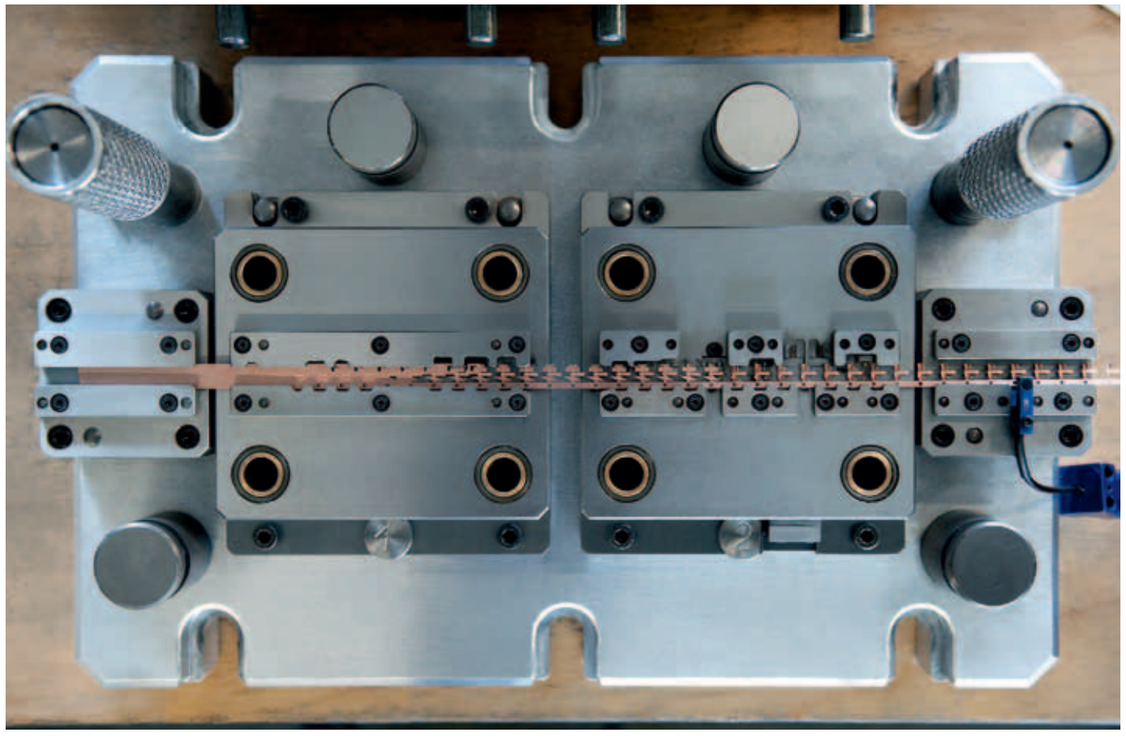
Alfons Manzo hopes for a continuation of the positive experience with Mitsubishi Electric, as he is already looking further ahead. “Our order situation is so promising that we’d like to expand further in the foreseeable future.” Along with moving into larger premises and recruiting more staff, the machine park would also be included in expansion. “It goes without saying that it is our aim to always keep our equipment in line with the state of technology,” says the manager with respect to possible new wire EDM machines.

www.toolstamping.com

Right The contacts with their complex shapes are punched out of a copper strip in several stages.

Bottom Up to 500 man-hours go into the design and production of a stamping tool from Tool & Stamping.

The emphasis in wire EDM is on precision



www.toolstamping.com

Professionals in Profile:
Alfons Manzo

Name and place of business:
Tool & Stamping GmbH & Co. KG,
Bad Wimpfen, Germany

Founding year:
2004

Number of employees:
4

Managing partner:
Alfons Manzo

Core business:
Toolmaking and stamping

Please describe in a sentence what Tool & Stamping does!
We make tools and stamp parts with them for the electrical and automotive industries.

How did you earn your first money?
As an apprentice toolmaker.

What motivates you?
We'd like to stay in line with the state of technology and hold our own in the market-place with this know-how.

What's different about how you do things now, compared to five years ago?
Now that we've got the second machine, we can plan more flexibly.

Where do you see your company in five years?
We want to continue to grow and move into a larger production shop.

What was your biggest business success?
Attracting big-name customers.

What's your favourite way to relax?
Motorcycling or tinkering at the machine.

What attributes do you value most in other people?
Staying calm and keeping to the point.

How would you briefly describe what you do to someone with no technical knowledge?
We make tools for the electrical and automotive industries and stamp parts such as copper contacts and plug connectors.

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Finding the best young recruits

If you not only want to build on your market position in the short term, but also aim to become one of the top addresses in your sector in the long term, you need not only innovative technology, but also highly skilled staff that are fully conversant with the processes within the company. But what's the most efficient way of finding future employees?

When searching for the best young talents, there are a variety of approaches. Some entrepreneurs still swear by "positions vacant" advertisements in magazines or newspapers as an effective way of recruiting staff. However, such ads usually have at least two serious drawbacks.

Firstly, they only appeal to a small number of potential recruits (i. e. only the purchasers of that particular print medium). And secondly, these ads are highly expensive for the company and are only circulated for a limited period as well. If the period is extended, the cost increases without an equivalent increase in the chances of finding the matching applicant with such an advertisement.

The Internet – the alternative

The Internet has firmly established itself as the leading information portal for graduates. As confirmed by a Kienbaum study of 2009/10, the Web is used by 89 per cent of graduates as the "job search engine No. 1". According to Kienbaum, 99 per cent of job- and training-seekers visit company websites and gather information there. This is now standard practice.

Companies are evidently largely unaware of this procedure. Only relatively few employers seem to appreciate the huge potential of the company website for attracting new staff. At the same time, it must be perfectly obvious that job-seekers in preparation for their applications want to find out as much as possible about potential employers. This is why they search (often in vain) on the company website in question for menu items such as "Jobs" or "Careers". What they often find is merely a telephone number with the remark: "For further information, please contact Mr Such-and-such."

A personal phone call is not only time-consuming for both sides, but it also represents an unnecessary obstacle for many potential applicants. The application is then often sent to a rival company – and only for a reason that many business owners would consider trivial.

When it comes to recruiting staff, the Internet is also an exciting alternative to the print media. Job offers can be published and updated on the spot, and industry-specific searches simplify the whole process. However, gaining a realistic picture of the countless job exchanges and what they offer the entrepreneur is neither possible at short notice nor expedient. So how do you publish advertisements free of charge without time-consuming research and also optimise the chances of success with as broad a coverage as possible?

How to place free advertisements in many reputable portals

The German Employment Agency offers employers a whole range of free services. The search for the best applicant is supported here by a personal contact. The latter draws up a shortlist, for instance, which is based on the client's requirements, wishes and specifications. This ensures that no time is wasted with unsuitable and unqualified applicants.

Another advantage of the job exchange of the Employment Agency is the possibility of activating the job advertisement, once it has been written, in a whole selection of exchanges at the same time. The employer thus has an attractive multiplier for his job offer because its coverage increases enormously.

Top tip:

The more recent a job offer is, the more applicants will be interested in it. If a job-seeker sees, for instance, that an advertisement has already been viewed by 2340 potential rivals, he will probably decide against applying even if the position is still vacant. To overcome waning interest, it is possible to delete the job advertisement after a certain time and then renew it.

User horoscope

Aquarius (21.01.–20.02.)

This summer you have to take bold decisions. Approach them with common sense, and don't allow yourself to be influenced too much by your lucky pebble. You have to erode like mad to stay in the game. In your private life, everything's looking brighter. You and your partner are as madly in love as you were on your first day together.

Pisces (21.02.–20.03.)

This summer your EDM machine is aglow with affection for you. Flirt instead with the fair sex, as there's more in it for you. Your workmates admire your skill – so take a break and show them some of your tricks. In private matters you should exercise restraint to prevent unnecessary friction.

Aries (21.03.–20.04.)

Make use of your creative potential and erode something extravagant that not only makes your colleagues green with envy, but also makes an impression on the fair sex. Everything's going beautifully at work and in your private life. Give yourself a treat and go for a swim in the lake round the corner.

Taurus (21.04.–20.05.)

Everyday routine is currently getting on top of you, as can be seen from your eroded workpieces – you'd better watch out! The stars will be back on your side in August. Your partner feels neglected by you at the moment, so give her some attention. Go out for a meal with all the trimmings or take an excursion down to the lake.

Gemini (21.05.–21.06.)

Word of your exceptional dependability and commitment is spreading. So it's hardly surprising that new customers are queuing up at your door. Business is booming. However, you shouldn't rest too much on your laurels, as your partner has been seeing too little of you recently. Grab your loved one and take her off on your EDM machine to the sun, sand and sea.

Cancer (22.06.–22.07.)

Being diplomatic doesn't get you very far, so be assertive – it is the right decision. With your top-quality EDM machines, you're equal to any challenge, however demanding. Your partner is spoiling you in every conceivable way, but don't take it for granted – return the favour at the next opportunity.

Virgo (24.08.–23.09.)

The planetary constellation is perfect for your business needs in July. You effortlessly hold your own with the world's best EDM experts and rake in the jobs one after the other. Your partner would not mind you putting the same energy into your relationship. How about a candlelit dinner in the moonlight?

Libra (24.09.–23.10.)

The career stars aren't shining on you at the moment. But don't despair, things will pick up. Put all your energy in your relationship with your partner, but don't surprise her with a bunch of eroded flowers. Leave your work at work, and everyone will be happy.

Scorpio (24.10.–22.11.)

Catch a few rays of sun in your lunch break and replenish your energy reserves. Because you need them for your private life. Your partner wants you to spend more time together. But you can lean back and relax, as your EDM machine operates automatically and does not need you to watch over it.

Sagittarius (23.11.–21.12.)

Mercury has been behind your financial growth this year – maybe there's scope for another EDM machine. Go and have a party with your friends again. Who knows who might turn up? Having a flirt along the way isn't a bad idea, as it boosts your morale and gives you inspiration. The next EDM idea is already on its way.

Capricorn (22.12.–20.01.)

You concentration has been flagging recently, so pull yourself together! The financial crisis may be over, but every cent still counts – and then you can soon look forward to a pay rise. Everything is running smoothly at home. You're still floating on Cloud Nine just like on Day One.

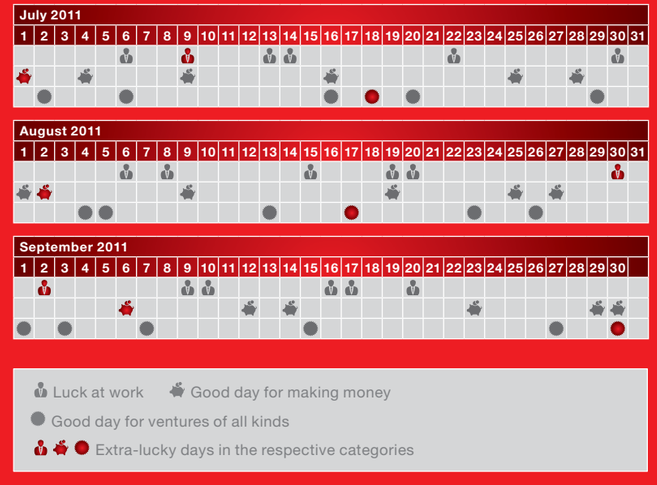
This month's horoscope

LEO

(23.07.–23.08.)

Mars is your planet in July. It gives you the strength to push your EDM machine from one corner into the other – a great opportunity for you to sweep the floor properly.

Treat yourself to a short break and enjoy the sunshine. This not only releases endorphins, but also helps you relax and renews your interest in your partner. Before you know it, you'll be looking forward to the hours after work.



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