

Profile

Issue 01 · July 2014

Advertise your **Profile!**

Would you and your company
like to be in the next edition?

Then write to us!



Mitsubishi Electric Europe B.V.
German Branch
Mechatronics Machinery

Gothaer Strasse 8
40880 Ratingen · Germany
Tel +49.2102.486 6120
Fax +49.2102.486 7090

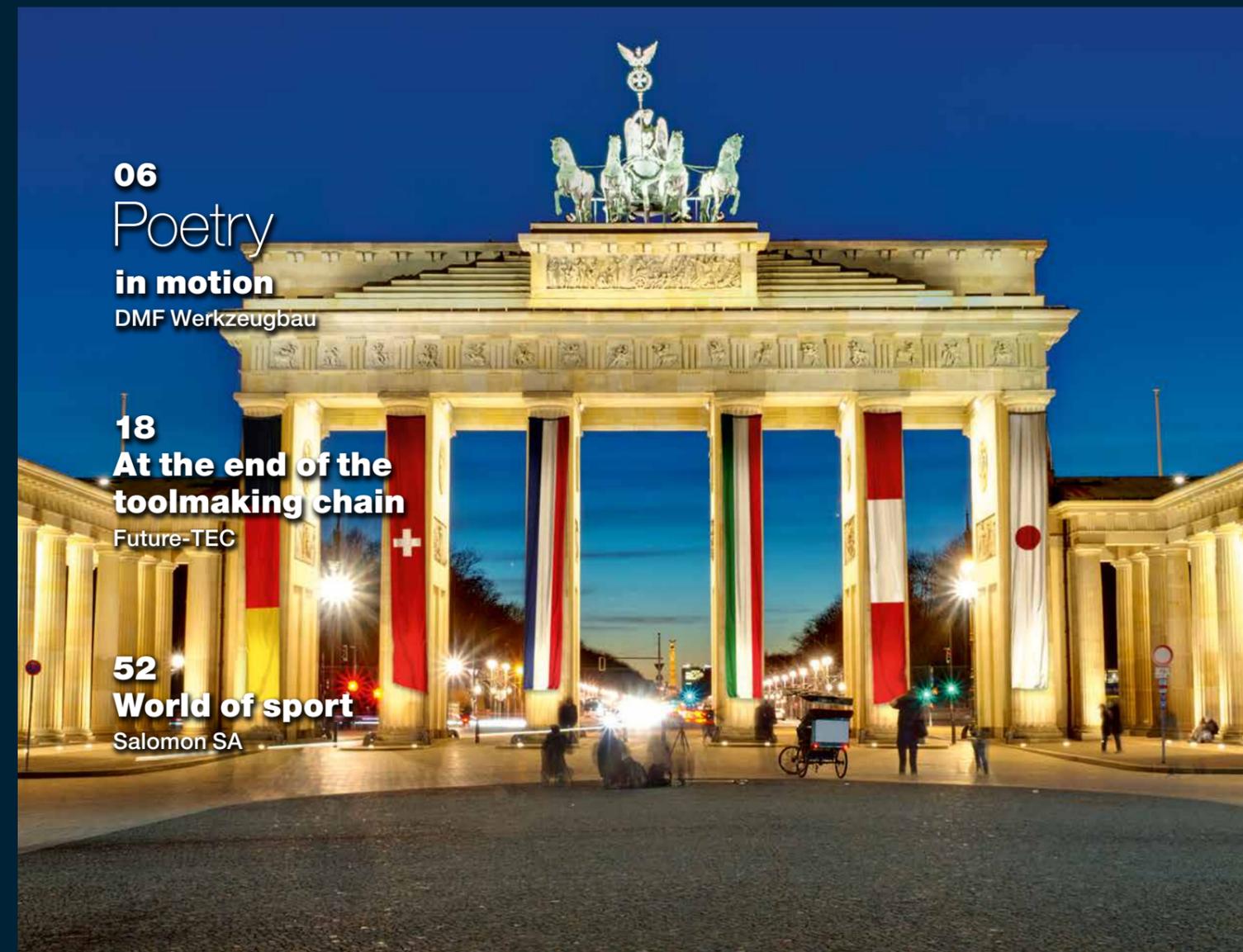
edm.sales@meg.mee.com
www.mitsubishi-edm.de



06
**Poetry
in motion**
DMF Werkzeugbau

18
**At the end of the
toolmaking chain**
Future-TEC

52
World of sport
Salomon SA



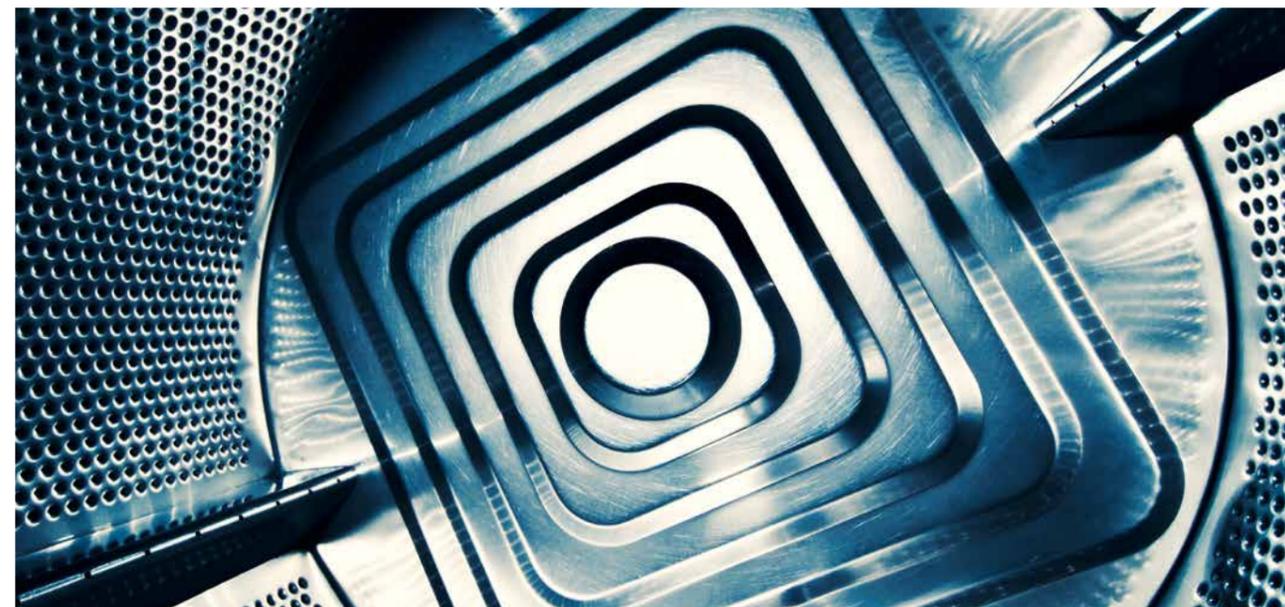


Contents

- 06 Poetry in motion
Excellence in and around Weimar
DMF Werkzeugbau GmbH
- 12 The sweet scent of success
Breaking the mould
Amiet AG
- 18 At the end of the toolmaking chain
Specialists in 3D moulds
Future-TEC GmbH
- 24 Full of the joys of springs
200 million springs per year
Hirsch Federn KG
- 29 Focus on precision
World market leader with precision measuring instruments
Marposs S.A.S.
- 34 Specialists in small, high-precision series
Always ahead by a nose
PWR Präzisions-Werkzeuge AG
- 40 Cutting edge
For speed on the ski slopes for over 80 years
TYROLIA
- 43 Your car runs with Wiesaplast
Injecting safety into motoring
Wiesaplast GmbH & Co. KG



- 48 A good job of work
Big in nanotechnology
Fraunhofer ICT-IMM
- 52 World of sport
Precision equipment for sports enthusiasts
Salomon SA
- 56 Bright sparks
Many irons in the fire
SAL S.r.l.
- 62 User horoscope



- 04 Editorial
- 05 Newsflash
- 39 Profile magazine
You've missed one of our issues? No problem!
Ordering back issues and change of address

HANS-JÜRGEN PELZERS

Editorial



Economic miracle on just a few square metres?

In 2014 everything is shooting up – orders, sales and particularly profits. But one thing isn't: overheads. Companies like Marposs (*from page 29*) are reporting 55 per cent savings in electricity in practice. Others are delighted that the spool of cutting wire is now lasting longer than ever. The MV Series uses up to 45 per cent less cutting wire (*page 43*).

Much more important than savings are of course quality and dependability. Our cooperation with the Fraunhofer Institute (*page 48*) is helping you to conquer new territory. So there are exciting developments on many levels – something that is a little unusual for a sector that has been established for decades. If you accomplish something extraordinary with your EDM machine, get in contact with me so that your company can feature in the next issue of Profile.

And, if not in 2014, when?

Best regards

Hans-Jürgen Pelzers

from the Technology Centre in Ratingen

Legal notice

Published by:
Mitsubishi Electric Europe B.V.
German Branch
Mechatronics Machinery
Gothaer Strasse 8
40880 Ratingen · Germany

Tel +49.2102.486 6120
Fax +49.2102.486 7090

edm.sales@meg.mee.com
www.mitsubishi-edm.de

Copyright:
Mitsubishi Electric Europe B.V.

Editorial board:
Hans-Jürgen Pelzers, Stephan Barg,
alphadialog public relations

Design and layout:
City Update Ltd., Düsseldorf

No responsibility is taken for the accuracy of the technical data and information in articles.

Newsflash



Mitsubishi Electric successfully sends satellite into space

Mitsubishi Electric has successfully launched the TÜRSAT 4A satellite that the company has built under a turnkey order received from Türksat Satellite Communication, Cable TV & Operation Inc. Co., (Türksat A.) in March 2011. TÜRSAT 4A was launched at 06:09 h (Japanese local time) on 15 February 2014 from the Baikonur Cosmodrome in Kazakhstan and brought into a geostationary orbit.



Strong together! Mitsubishi Electric is a sponsor of the Special Olympics 2014 in Düsseldorf

The 9th National Summer Games for people with mental disabilities is taking place in Düsseldorf from 19 to 23 May 2014 and are making the Land capital the scene of outstanding sporting achievements. 4,800 athletes, 18 disciplines, 2,000 volunteers, 1,700 coaches and assistants, 500 judges and referees, and 1,000 family members – these make up the 2014 Special Olympics in Düsseldorf.



Touchpanel displays that can be operated with gloves

These days, more and more machines in complex industrial applications are controlled via touchscreen displays. In these areas, employees often have to wear gloves, which poses a challenge when using capacitive touchpanels. Mitsubishi Electric is presenting two new touchpanel display modules that can be operated intuitively and accurately even with gloves.



Mitsubishi Electric presents **prototypes of cars that can think**

Mitsubishi Electric is presenting "Ultra-simple HMI", a prototype that knows in advance which information the driver will soon need and thus makes safe and straightforward operation of vehicle systems possible in one or two steps and 15 seconds maximum. The predictions of the Human-Machine Interface (HMI) technology from Mitsubishi Electric are based on the driver's behaviour history.



Poetry in motion

Mould insert with wire-cut ejector holes, oblique slides and the associated oblique penetrations

It's Goethe and Schiller wherever you turn. But there are other names in and around Weimar that deserve recognition for their achievements. DMF Werkzeugbau, for instance, that has made a name for itself in mouldmaking. One of the company's machining fortes is wire EDM.

Lorenz Luczynski, one of the two managers of DMF Werkzeugbau GmbH in Nohra, Thuringia, puts some components on the table and gives us a glimpse of the product spectrum. "On a surface area of 1,300 square metres, we fabricate technically sophisticated injection and die casting moulds for items made of plastic, aluminium, zinc and magnesium."

Most of the moulds made by DMF Werkzeugbau are one-offs. On the wire EDM machines, the company processes mould inserts and cores, cutting blades, punching dies and slides. The material employed is tool steel, some of it high-temperature. With wire diameters of 0.25 and 0.3 millimetres, they achieve a surface finish of 0.2 to 0.4 μm Ra. On small components, the company achieves parallelism and precision to within as little as five micrometres. As to the maximum workpiece size, the company quotes 700 x 300 millimetres for mould inserts, 250 x 200 millimetres for other parts and heights of up to 400 millimetres. Machining can take anything from 2 to 100 hours, depending on the workpiece.

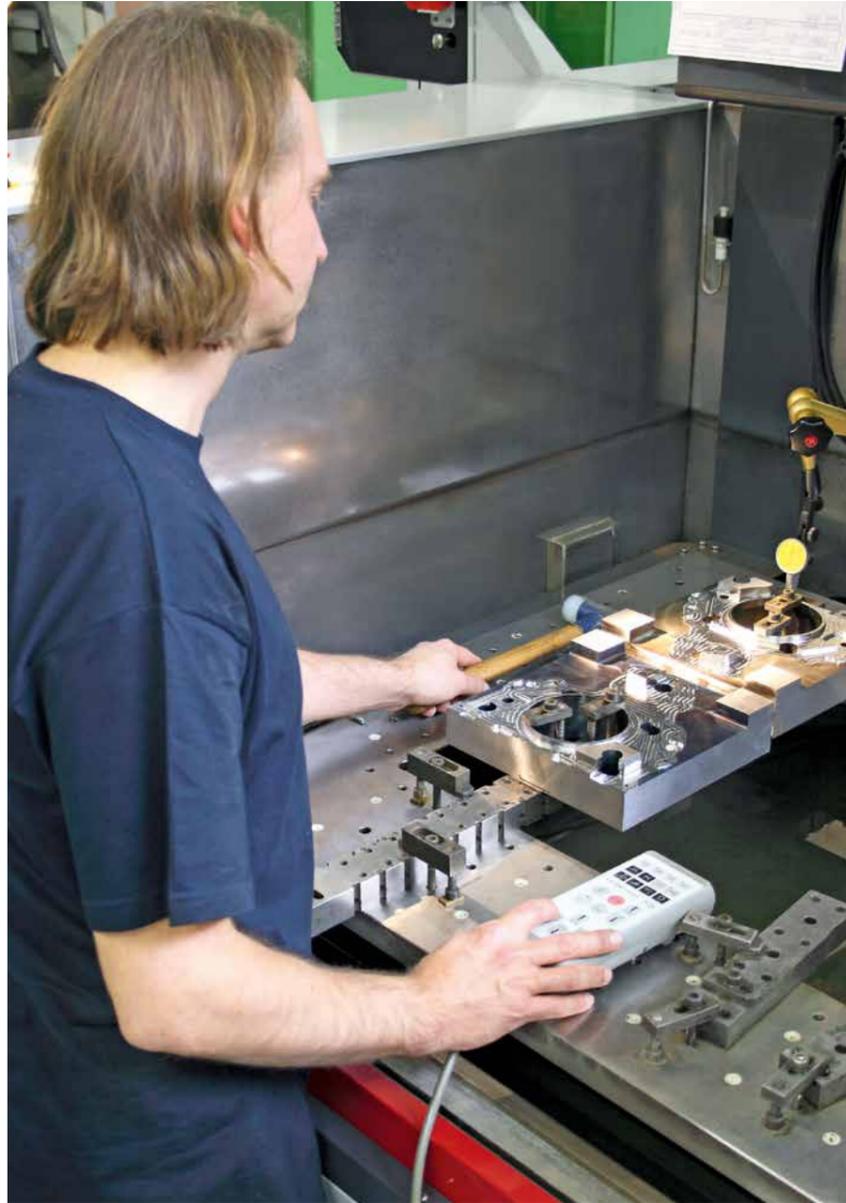
Cutting angle up to 30 degrees

Because an increasing number of angled cuts arise during wire cutting, the Thuringian company benefits from the fact that the wire EDM machines from Mitsubishi Electric cut very precise angles. Luczynski lifts up such a part. "The smaller the workpiece, the bigger the angle that we can achieve. We manage up to 30 degrees."

The only conceivable alternative for Luczynski is die sinking. And only when the customer does not insist on absolute accuracy. Wire cutting, he says, is also much more economic than the old

DMF Werkzeugbau GmbH in Nohra, Thuringia, has made a name for itself in mouldmaking.





On the wire cutting machine, DMF Werkzeugbau processes mould inserts and cores, cutting blades, punching dies and slides.



DMF Werkzeugbau can look back on about 15 years' experience in wire cutting and has the full complement of equipment on its own site.

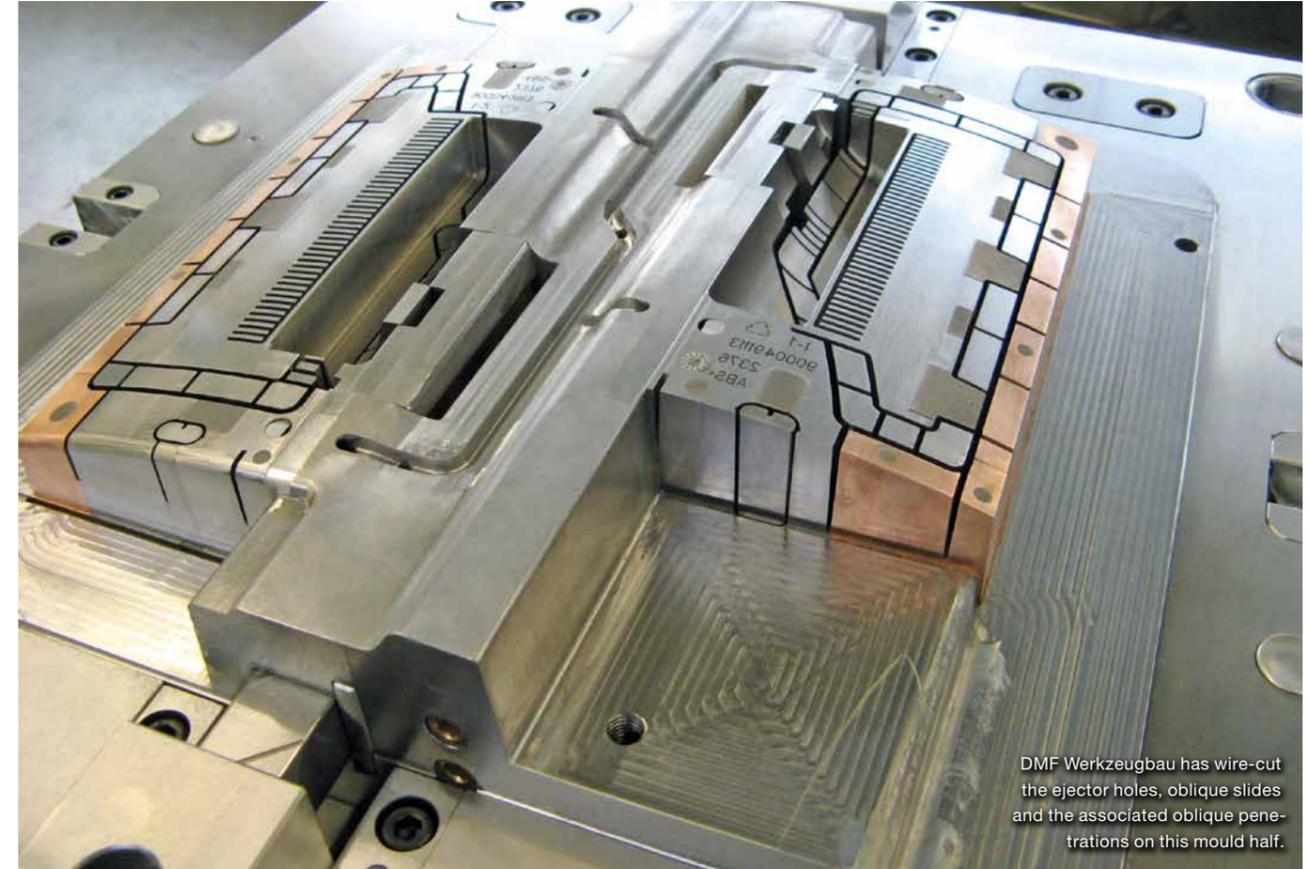
fers the full range of solutions – from item optimisation and the finished mould to a supply of sample plastics parts. In addition, DMF Werkzeugbau is also capable of supplying prototype moulds and, for the die casting sector, package solutions inclusive of deburring tools at short notice. The company has strengthened its competitive position by introducing efficient CAD-CAM systems early on and constantly updating them and training its staff accordingly.

Expert advice and service

From an elevated position in the production shop, Luczynski views the three wire cutting machines from Mitsubishi Electric arranged in a neat row. "We've invested in an FA30-S Advance, an FA10-S Advance and an FA20-V. We chose the first machine on the strength of tests and the impressive price/performance ratio. As a satisfied customer, we then stayed with Mitsubishi Electric. The manufacturer's expert advice and services also contributed to this. We

→ conventional process of die sinking followed by milling. And the whole process takes place today on a single machine that operates with a lower failure rate in addition. The only real scope for mistakes today, he continues, is with programming. During the tour, Luczynski explains what DMF Werkzeugbau is capable of in mouldmaking. "We can look

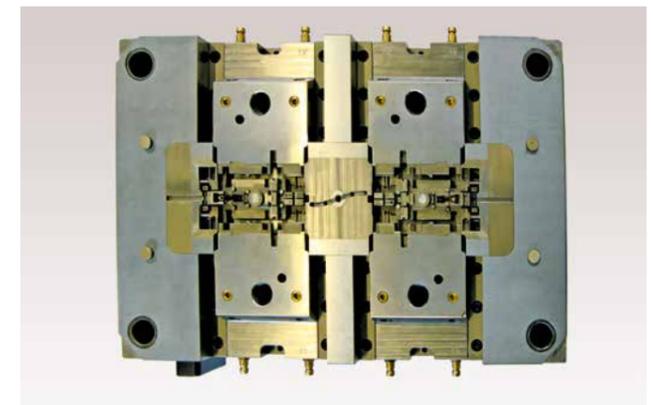
back on about 15 years of experience in wire cutting. What's more, we have all the equipment we need in-house and no longer have to contract any work out. This is appreciated by our clients. These are mainly producers of injection mouldings and plastics destined for automotive component suppliers." The company certified to ISO 9001:2008 of-



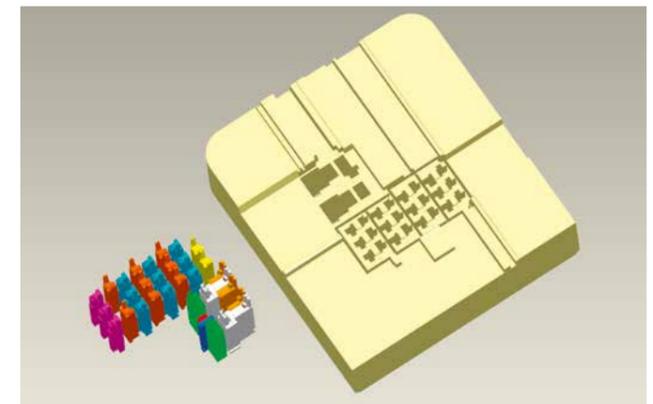
DMF Werkzeugbau has wire-cut the ejector holes, oblique slides and the associated oblique penetrations on this mould half.

were given really quick assistance with any problems that arose, so we didn't see any reason to look elsewhere on the market. In addition, by resorting to a single supplier, we only have to stock parts for a single make."

The FA20-V went into operation in 2005, the FA10-S Advance in 2009 and the FA30-S Advance in 2013. The company also opted for the FA30-S Advance because of its larger working range. It is equipped with a high-speed generator, while the FA10-S Advance has an optional digital fine-finishing generator. The machines are adapted to the needs of DMF Werkzeugbau and are synonymous with high availability. The company ensures the continuous readiness of the wire EDM machines under a maintenance contract with Mitsubishi



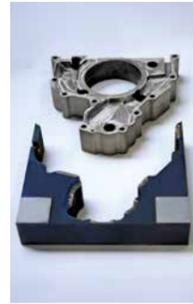
On this mould half, the ejector holes, core seats and cores have been wire-cut.



The CAD drawing shows a component on which DMF Werkzeugbau has wire-cut the insert and cores.



Last year alone, the three wire cutting machines of DMF Werkzeugbau clocked up 12,000 hours of operation.



Deburring tool on which the external contour and large hole have been cut



Inserts for an injection mould on which DMF Werkzeugbau has cut the square core penetrations on the circumference

➔ Electric. The contract includes annual maintenance by the manufacturer's service staff, so Luczynski expects the machines to have a long service life and achieve a consistently high quality of machining. The operators themselves play their part by cleaning the threading and guide area and taking the opportunity to replace wearing parts.

No alternative to automatic wire threading

Matthias Dohne, wire cutter at DMF Werkzeugbau, threads a new wire on the FA30-S Advance. In doing so, he benefits from the user-friendly automatic wire threader that the FA10-S Advance is also equipped with. "Rapid and reliable threading are absolutely essential for us, as we usually work at night and at weekends, in which case the machine is unmanned. Last year alone, our three wire EDM machines clocked up 12,000 hours of operation." Because of the night and weekend assignments, the company has invested in further optional extras – firstly, in a 20 kilo wire station that is indispensable for longer unmanned operation, and, secondly, in the Telecontrol and

Teleservice tools. With the aid of Telecontrol, the EDM systems are monitored via a data line in real time.

The Teleservice tool permits remote diagnosis and online assistance from the Mitsubishi Electric after-sales service which is thus able to remedy hitches online. Luczynski opens up his iPad. "The machines are also continuously connected to the Internet. This means that, on their iPads and PC monitors, the staff concerned can view the same machine data and messages as are displayed on the screens of the operator terminals."

Good work

Finally, to return to the reference to German poets: DMF Werkzeugbau GmbH demonstrates day after day that in Nohra, only about eight kilometres from the centre of Weimar, the town of Goethe and Schiller, that one's liveli-

» As a satisfied customer, we then stayed with Mitsubishi Electric. «

hood does not necessarily have to depend on tourism and the commemoration of Germany's greatest men of letters. Anyone who does good work will make a name for himself – among readers or customers.

www.dmf-werkzeugbau.de

Name and place of company:
DMF Werkzeugbau GmbH, Nohra,
Germany

Founding year:
1991

Managing director:
Lorenz Luczynski, Lutz Märker

Number of employees:
47

Core business:
Die casting and injection moulds

DMF Werkzeugbau
Steinbrüchenstr. 10
99428 Nohra
Germany

Tel +49.3643.8714-0
Fax +49.3643.8714-20

info@dmf-werkzeugbau.de

Professionals in Profile: Lorenz Luczynski



How did you earn your first money?
As a milling machine operator.

What is your source of motivation?
I'd like to create something enduring for later generations.

What's different about how you do things now, compared to five years ago?
As far as the company's concerned, there's much more communication these days. We talk more about work during work. The reason for this is that the individual employees have much less time for much more work.

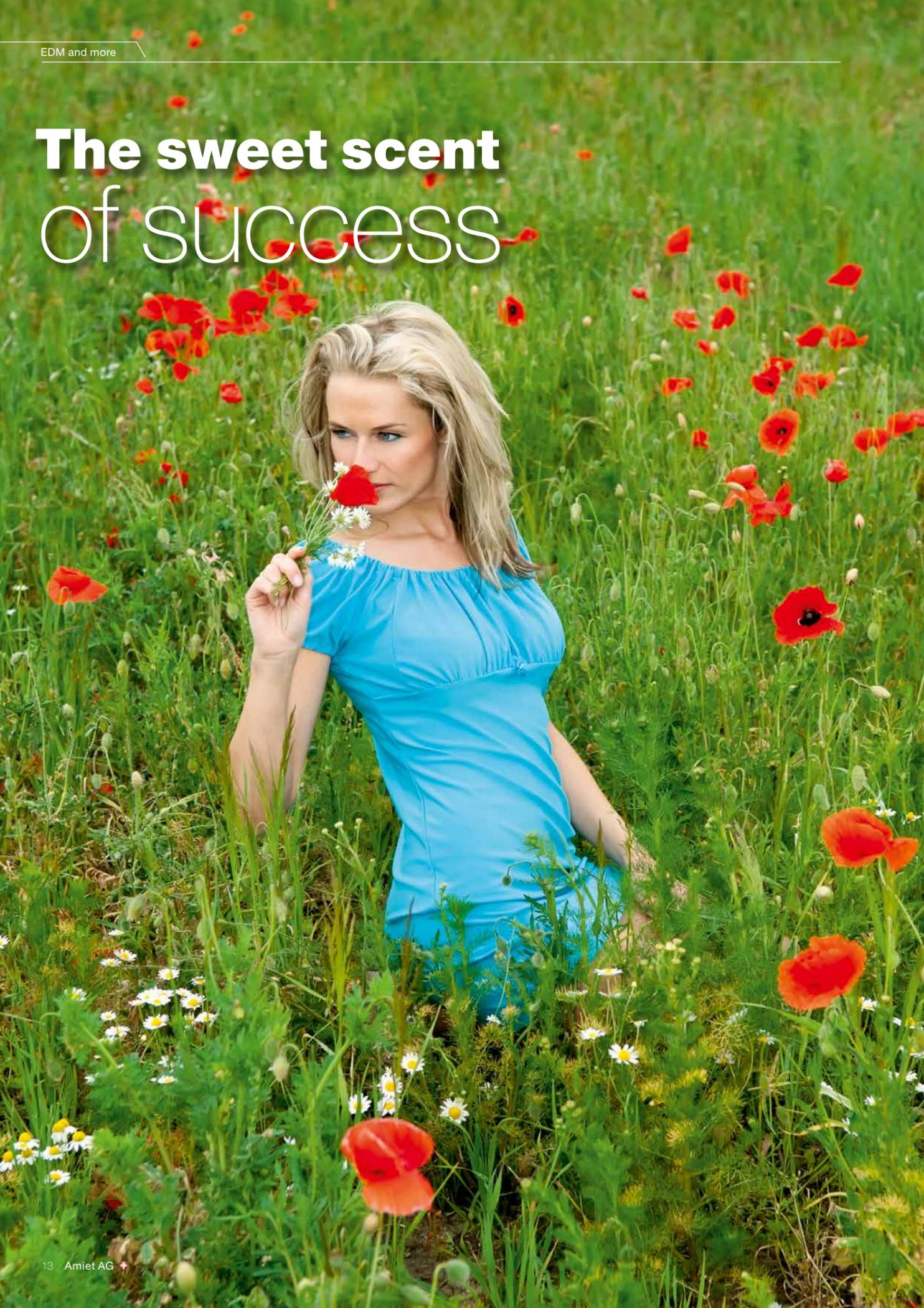
What's your favourite way to relax?
Walking.

What attributes do you value most in other people?
Honesty, reliability and loyalty.

What failings in others do you find easiest to forgive?
Ignorance.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?
What we do is like using an electric band saw.

The sweet scent of success



The specialists in Herisau focus on punching and follow-on composite tools.

AMIET

The production of punching and follow-on composite tools is the speciality of Amiet AG in Herisau, Switzerland. With its 13 employees, the family business covers the full range of machining plus design and programming. A few years ago, its owner Hans Roderer ventured into a totally new field of business: that of indoor scent diffusion.

For about 50 years now, Amiet AG has been designing and fabricating tools for all sectors of Swiss industry. The emphasis is on punching and forming tools for CNC punching machines and follow-on composite tools together with a number of in-house developments such as special tools for the forming of aluminium foil and plastic membrane.

Membrane keyboards can be found today in all areas of everyday life. Every toolmaker is familiar with them – among other things, from his EDM and milling machines. To create

the key “springiness” and letters, the makers of the membranes used to have to emboss the membranes in a relatively elaborate thermal process. Amiet has developed cold embossing forms for embossing keyboards in the same way as with thermal embossing. The process is very inexpensive, quick and durable.

Amiet’s list of customers now has a number of reputed companies from a huge range of sectors – including Huber+Suhner, a developer and manufacturer of systems

We can now process the tools on our machines within a short time and then individually harden them at acceptable expense.

→ solutions for high-frequency, fibre optics and low-frequency applications, and the internationally active Arbonia-Forster-Holding AG. The quality is also appreciated by Bühler, the technology expert in machines, plant and services for the processing of staple foods and for the production of high-grade materials.

Since production is geared entirely to precision tools, the scene at Amiet AG is dominated by advanced, high-tech machines. "To satisfy the wishes of our customers and carry out our jobs with the desired quality and within the given time," says owner Hans Roderer, "we have to operate with high manufacturing depth. We can machine hardened steels up to 64 Rockwell." In addition to the classical forms of machining for toolmaking, such as turning, milling, die sinking, wire cutting and start hole drilling plus all the grinding methods, the specialists in Herisau have perfected the hardening process.

Hard and fast

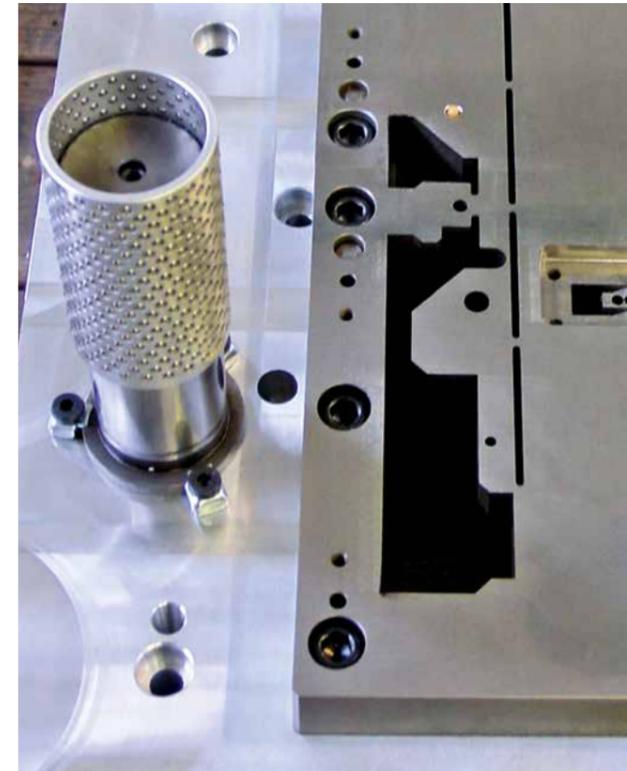
In purely financial terms, the hardening ovens as operated by Amiet are not particularly worthwhile. "Our purchase of a vacuum hardening oven is more of a response to necessity or an expression of our predilection for quality and perfection," Roderer explains. As a specialist in high-grade punching tools, the company used to repeatedly have problems swiftly obtaining properly hardened tool steels. There are a number of high-grade steels available, but when after tool breakage a machine manufacturer needs a fully functional replacement within 48 hours, time soon runs out or the quality of the tool steel employed is less than perfect.

"Our own small hardening shop has solved the problem," Roderer explains. "We can now process the tools on our machines within a short time and then individually harden them at acceptable expense."

Four Mitsubishi Electric machines can be found in Amiet AG's EDM centre.



"Our claim to quality has so far impressed all of our customers," says Hans Roderer.



The fully assembled punching tool ready for delivery

In the little vacuum hardening oven, there is space for batches weighing up to 30 kilos. To achieve the desired results, the employees first had to acquire a good understanding of metallurgy and draw on the experience of partners in the steel industry, for instance. With its expertise, Amiet is now able to fully exploit the potential of existing processes. This is the only way of hardening individual parts to perfection with temperature curves adapted to the workpiece in question and adjusting hardening processes to workpiece size.

Heaven scent

The smell that greets anyone entering the Amiet production shop is one of oil and coolant, much like in any other toolshop. So one would never realise that indoor scent diffusion systems are produced here. "How we came across scent diffusion is quite a bizarre tale," Roderer tells us. "Three years ago, a tame crow wandered onto the site. And we wanted to know who the tame bird belonged to and what we should do with it." Animal-lover Roderer contacted the vet in Herisau about its owner. The vet knew the bird and that it belonged to the artist Ms Hezel. Roderer took the crow back to its owner and they got talking. It turned out that the artist's husband was looking for a new innovative partner for the development and production of new indoor scent diffusion devices. "This laid the foundation for cooperation and stimulated interest on both sides," says a gratified Roderer. Today, three years after the first

meeting, the newly developed scent diffusion devices are creating a pleasant atmosphere in business rooms, discotheques, car dealerships and specialised hospitals. Another highly promising new development is an indoor scent diffusion system for local and long-distance public transport. The first trials have revealed astonishing effects – and unexpected side-effects. Accompanying studies showed that the users of buses felt not only more at ease but also safer as a result of the pleasant scent. "What's special about our devices is how they work," Roderer explains. "We atomise the scents in their cold state." By using this process known as micro-nebulisation, the scent can be dispersed in the room without the addition of alcohol or other carrier substances. Also important is the devices' high dosage quality to ensure that the air smells pleasant and not overpowering. Proverbial Swiss precision is obviously not confined to toolmaking.

25 years of precision with Mitsubishi Electric

Amiet has been working with Mitsubishi Electric EDM equipment since 1988, although the original machines have long



Unusual visitors sometimes come in through the red door.



→ vanished from Herisau. Today, the company wire-cuts on two Mitsubishi Electric FX20-K Platins, a Mitsubishi Electric FA20 and a Mitsubishi Electric MV1200R. "The new machines operate incredibly dependably," Roderer asserts. "In the last 15 years that we've been working with Mitsubishi Electric EDM equipment, a service technician from Mitsubishi Electric has only ever come to our company once. And that was when we overhauled our FX20-K machines and treated them to an upgrade. Otherwise we maintain and care for our wire cutting machines ourselves."

For such long periods of service, they still need the right support, because even Mitsubishi Electric machines need a revamp from time to time. This is when the Mitsubishi Electric parts service and hotline come into play – an important point for Roderer, because he has always been able to rely on the hotline advisers. Amiet's staff use the service regularly, and not only when machine operation or malfunctions and

repairs are concerned. When performing tricky tasks they can also be sure of obtaining competent advice from a Mitsubishi Electric applications engineer at the drop of a hat. "Practical skills are very important for us," says Roderer. "For out-of-the-ordinary jobs, when we have to wire-

» For out-of-the-ordinary jobs, when we have to wire-cut really awkward parts, we rely on the experience of the Mitsubishi Electric experts. «

cut really awkward parts, we rely on the experience of the Mitsubishi Electric experts. This is how we quickly achieve optimum results without any wastage. We've fared well with this strategy so far."

Turn for the better with an extra axis

Turning with EDM is not basically new. By purchasing the MV1200 with an additional rotary axis in November 2013, the company is able to wire-cut rotationally symmetrical parts. The decisive advantage for Roderer is that no cutting forces are applied to the components. Very thin-walled and complex, rotationally symmetrical parts can thus be machined with a surface quality Ra of less



Amiet AG erodes not only punching and follow-on composite tools, but also extrusion dies.

than 0.2 µm. Even tiny pins with an extreme length/diameter ratio of, say, 20 to 0.2 mm can be produced free-standing without steadying. "For our firm," Roderer adds, "advanced EDM is the key technology enabling us to tap new fields of application. We are therefore considering replacing one of our machines with a larger MV from Mitsubishi Electric – but before that we shall have to invest in a new machining centre."

www.amiet-ag.ch

www.amiet-ag.ch

Name and place of company:
Amiet AG, Herisau, Switzerland

Founding year:
1964

Managing director:
Hans Roderer

Number of employees:
13

Core business:
Production of complex punching and follow-on composite tools

Amiet AG Präzisionswerkzeugbau
Schützenstr. 24a
9100 Herisau
Switzerland

Tel +41.71.35006.60
Fax +41.71.35006.65
h.roderer@amiet-ag.ch

Professionals in Profile: Hans Roderer



What is your source of motivation?

The possibility of making things happen and discovering something new.

How did you earn your first money?

Delivering newspapers.

What's different about how you do things now, compared to five years ago?

Today I have more highly skilled employees who take some of the work off my shoulders. This way I've got more time to turn my ideas into reality.

Where do you see your company in five years' time?

Punching is being replaced by new technologies, but we shall continue to serve our customers efficiently. We want to concentrate more on EDM and position ourselves as manufacturers of complete components and tools.

What was your biggest business success?

We developed our own, highly efficient punching system for Raskin punching machines that had a lot of things going for it.

What's your favourite way to relax?

With my hobbies. I've got an old Beetle dating back to 1952 and a motorbike and I play the trombone.

What attributes do you value most in other people?

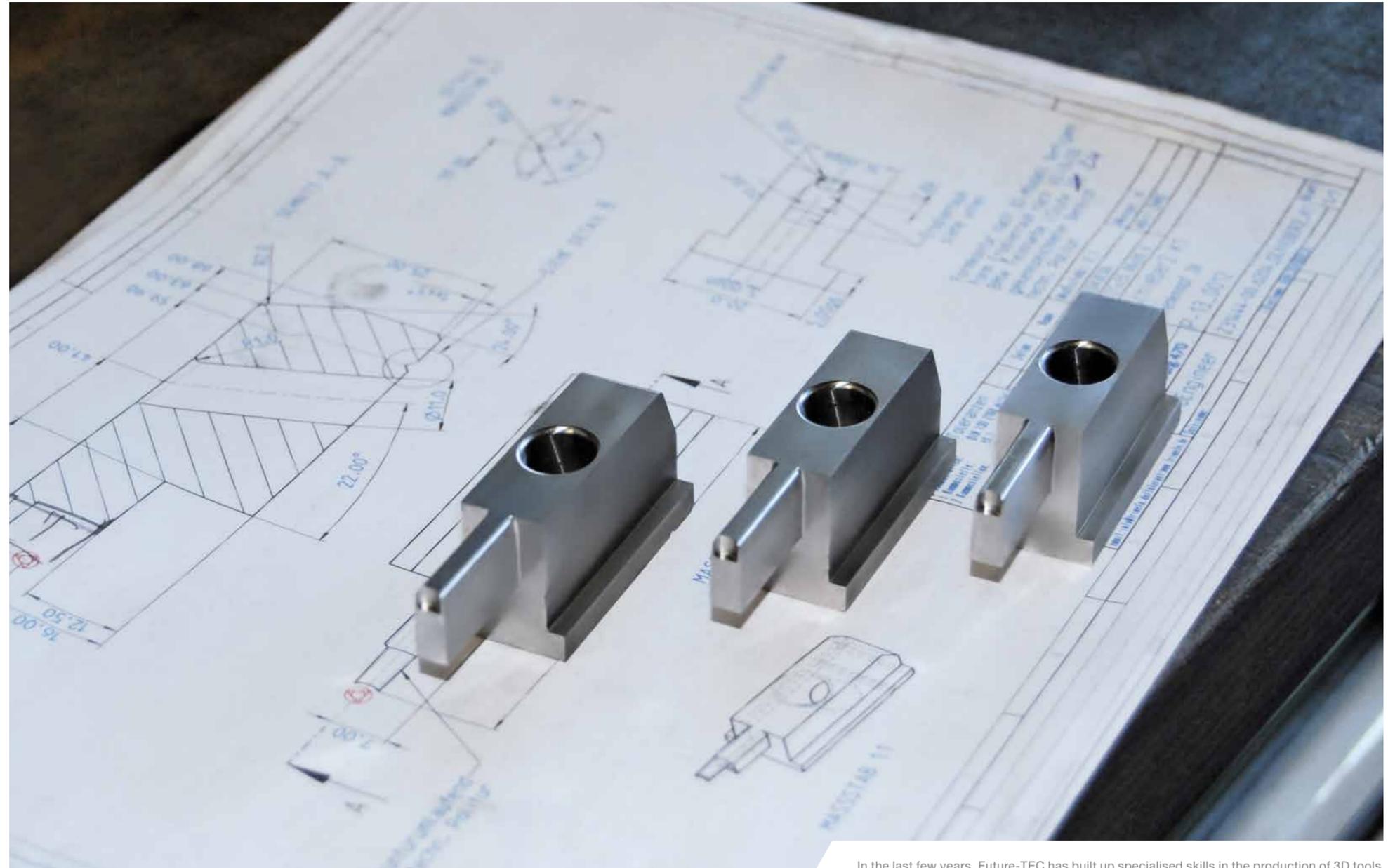
Integrity, technical competence and good manners.

What's the best piece of advice anyone ever gave you?

My former boss gave me the following advice: "Be bold and make mistakes. It's better to do something than do nothing. Test your limits."

At the end of the toolmaking chain

When Sven Kitzmann and Armin Baur set up business with Future-TEC in Wutha-Farnroda in 1999, they knew precisely the policy they would adopt and which target groups they wanted to attract. The construction of complete tools was out of the question for them, as Kitzmann calmly explains seated at his desk, even if it would have been an appealing challenge for the graduate engineer. But this would have meant taking on all the toolmakers in the region and competing for the same pool of jobs. And holding one's own alongside the established top dogs is difficult for a young, inexperienced start-up, particularly in a sector in which quality and reliability play such a huge role. Kitzmann knew that if they didn't find sufficient customers for complete tools, they would soon go to the wall.



In the last few years, Future-TEC has built up specialised skills in the production of 3D tools.

On the basis of these considerations and a precise market analysis, the young entrepreneurs managed to narrow down their target group. Future-TEC would be a partner and supplier to regional toolmakers. "Our goal," Kitzmann tells us, "was to serve tool- and mouldmakers rather than compete with them. We wanted to offer our cus-

tomers support when they reached their own limits." In addition to classical order surpluses, these are more and more often complex special jobs or parts difficult to machine and calling for special expertise. Future-TEC has specialised in three areas: classical tool- and mouldmaking with injection moulds, bending tools and die casting moulds,

model construction, and one-off and prototype fabrication. In the mould sector, the focus is on the production of shape-imparting 3D components.

Experts in special tasks

The machining of graphite electrodes for die sinking, for example, calls for in-

depth knowledge of the material and its processing. In many companies today, it is almost a standard process, Kitzmann explains, but a number of toolmakers have not yet taken the plunge and therefore need support in this area. "Another positive field for our company," Kitzmann stresses, "is orders for the complete production of active mould



Kitzmann also works at the machine in his overalls.

→ components. Word of our comprehensive know-how in this sector and of Future-TEC's high standard of quality has already spread." All sides benefit from this sharing of tasks. "Since the project rests on several shoulders, the contracting toolmaker can concentrate fully on design and assembly, while we devote ourselves to the complete fabrication of the shape-imparting parts," says Kitzmann summing up.

A climate for quality

"If we could start up again with new production operations, with a new building on a green-field site," Kitzmann fantasises, "we'd definitely go for a fully air-conditioned production shop with a constant temperature of 21 degrees Celsius all year round, summer and win-

ter." But making such dreams come true is difficult for a small service provider. "At present, only our measuring room is air-conditioned," Kitzmann regrets. To minimise the effects of temperature, Future-TEC has moved the heat sources away from production as far as possible. So that accurately machined tools always reach the customer, the company has a precise coordinate measurement system that is air-conditioned and works at precisely 21 degrees.

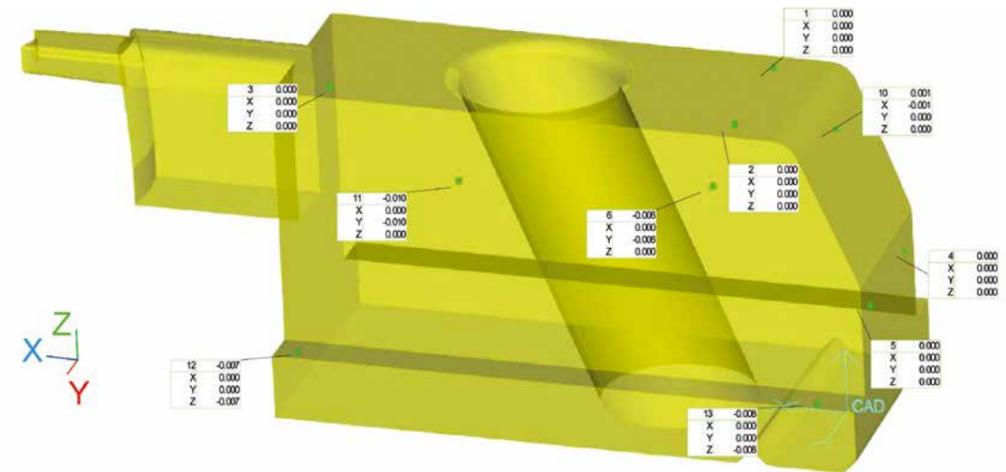
No workpiece leaves the company without a measurement record. Since quality and dimensional accuracy are existentially important for suppliers to toolmakers, Future-TEC has recruited a measurement technician who is responsible for measuring all the parts. The data recorded are used by the company not only for internal quality monitoring, but also as verification of the demanded dimensional accuracy vis-à-vis the customer. If desired, the customer is supplied with the complete measurement records together with the workpieces. However, many customers dispense with full workpiece documentation and trust in Future-TEC's production quality. "Since tools and moulds are usually designed for long periods of service,"

Kitzmann explains, "we may be called upon to supply data on certain tools even after years have passed. So we archive the details of each job long-term."

Toolmakers need EDM

"Until 2012, we were unable to provide our customers with any services in the wire cutting sector. We either contracted the work out or turned down the job. Neither option was satisfactory

» Our goal was to become a partner to tool- and mouldmakers and not a rival. «



The visual display of the measured data documents and illustrates the standard of quality.

for us in the long term," says Kitzmann outlining the situation as it was. "We'd been wanting to integrate wire cutting in our company for years because it's an elementary process in toolmaking." In mid-2012, Future-TEC took the decision to invest in a new EDM machine. "Since we were totally new to wire cutting at the time, we were open to all offers," the business owner explains. "Like with all other investments, the overall package of technology, service and parts supply and of course machine overheads was decisive."

The range of EDM machines on the market is pretty diversified. The company therefore took a close look at the market in advance and approached several manufacturers. "In particular," Kitzmann explains, "we wanted to know which size of machine would suit us and our production activities, which manufacturer could offer us newcomers good technical support and, last but not least, who has a hotline worthy of the term and can give quick and expert advice."

Benefiting from fellow toolmakers' experience

"Good colleagues – a term that I can happily apply to most of our custom-

ers," Kitzmann reports, "usually tell you the unvarnished truth. So I asked them about their experience with EDM. How reliable are your machines, how satisfied are you with them and what about the aftermarket?" This way Future-TEC has benefited from the experience of its customers. "If a colleague tells me his experience with his wire cutting machine, I take it seriously. And the decisions I take are based on

such findings," Kitzmann adds. This is how Mitsubishi Electric arrived on the shortlist with its MV2400S. This erosion machine then picked up further points with Future-TEC – among other things, with its training centre in nearby Eisenach and with its integrated programming system. For Kitzmann, this is a "five-digit" argument, because for the shortlisted machines it had to be purchased in addition.

A

Measurement technician Jürgen Kretzschmar and Sven Kitzmann examine the workpiece together.



The MV2400S has been in operation since December 2012 and has since been running trouble-free.



This erosion machine then picked up further points with Future-TEC – among other things, with its training centre in nearby Eisenach and with its integrated programming system.

→ year of trouble-free EDM

In Kitzmann's view, there are machines that may be better than the Mitsubishi Electric MV2400S on this or that count, but there is none that is equal to it when everything is taken into account. The MV has been in operation at Future-TEC since December 2012 and has since been running trouble-free. "The only problems we've ever had," Kitzmann explains, "were operating errors, we have to admit. Support via the hotline was sometimes necessary. Otherwise – and I'm not saying this to flatter Mitsubishi Electric – we're very happy with our MV2400S. It's extremely reliable, cuts quickly with the

desired precision and yields outstanding surface quality. We haven't regretted the decision one instant. The overall package is just right, the cost structure is as well, and the machining results are fully in line with our expectations."

With the new wire cutting machine, Future-TEC can now respond better to growing demand and offer its customers an extended range of services. The customer benefits directly from this, as the lead times have become shorter. "As a provider of services, we're at the end of the chain and the deadline pressure is passed on to us. We're aware of this and can live with it as well," ex-

plains Kitzmann. "And with the new MV2400S our lives will be that bit easier."

www.future-tec-gmbh.de

www.future-tec-gmbh.de

Name and place of company:
Future-TEC GmbH, Wutha-Farnroda,
Germany

Founding year:
1999

Managing director:
Sven Kitzmann and Armin Baur

Number of employees:
12

Core business:
Future-TEC is a service provider to tool-, mould- and model-makers and a producer of one-offs and prototypes.

Name of interviewee:
Sven Kitzmann, Manager; also in the picture (left): Armin Baur, Manager

Future-TEC GmbH
An der Allee 7
99848 Wutha-Farnroda
Germany

Tel +49.36921.234-0
Fax +49.36921.234-23

info@future-tec-gmbh.de

Professionals in Profile: Sven Kitzmann



How did you earn your first money?
As a designer of textile cleaning machines.

What is your source of motivation?
I still enjoy the job even after 15 years – with all its imponderables.

What's different about how you do things now, compared to five years ago?
I've got the experience to be more relaxed and calm about taking decisions.

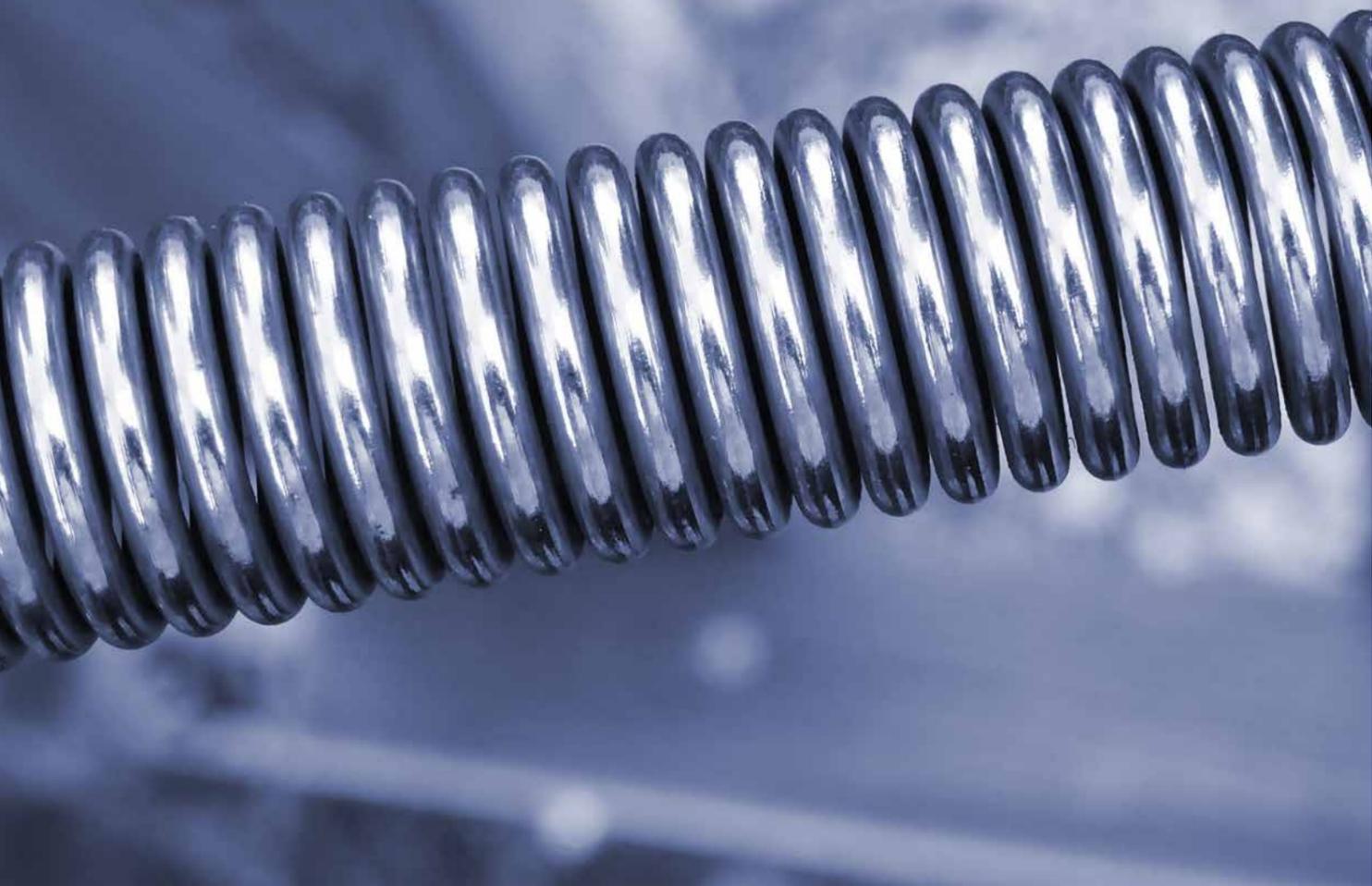
Where do you see your company in five years' time?
We shall continue to have highly advanced equipment and be on the lookout for new technologies and methods.

What was your biggest business success?
We've always achieved our goal of investing in advanced technologies on a major scale every two years.

What's your favourite way to relax?
I can relax best at home in the greenery of my garden.

What attributes do you value most in other people?
Honesty, the ability to think independently and the willingness to accept responsibility.

What's the best piece of advice anyone ever gave you?
To sleep on important decisions that have to be taken.



 HIRSCH FEDERN

Full of the joys of springs

There is hardly a vehicle in Germany that does not have springs from Hirsch KG fitted in it. But this does not mean that they are standard products. For a spring has to be designed precisely for the conditions in which it is used. This calls for plenty of ingenuity in its development – and the utmost precision during its production.

Be they in ballpoint pens, car seats, picture frames or pressure sensors, springs play an important role in every branch of industry. And each spring has to be designed for its specific application. “A spring is very often the final part in a design and there’s only a certain place available for it. Many users find it difficult to estimate the force that such a spring has to withstand and how much space it needs,” says Gerald Fischer, responsible for toolmaking at Hirsch KG. “Designing the spring precisely for these conditions calls for a lot of thought and creativity.”

Special eyelet with new force distribution

The company in Marktredwitz outputs over 200 million springs each year. But it is not so much the number as the diversity that is impressive, as the company now has over 40,000 different springs in its product range. “We also produce one-offs. For truly special cases we even have a fabrication department where springs are bent by hand – we still cultivate this craft today,” Fischer explains. The spectrum ranges from compression and tension springs to torsion springs and leaf springs in all shapes and strengths. Even surface treatment to extend service life is possible. Another main source of business is bent wire parts and CNC turned parts. For particularly tricky jobs, internal research projects for the construction of machines and tools are regularly performed and cooperation projects launched, e.g. with Kempten University of Applied Sciences.

The company is particularly proud of its latest product, the HiSo® eyelet. On a tension spring, the eyelets are usually the weakest point. As a rule of thumb, the eyelets can be assumed to withstand 70 per cent of the spring body’s maximum load. Dynamic applications reduce this value by roughly a further 30 per cent. With a stroke of design in-

genuity, this eyelet has now been designed so that the main forces act on the spring. The cost of production has been kept virtually unchanged, and the weight per spring has been reduced. “We’ve registered the HiSo® eyelet for patenting – there’s been a huge response to it,” Fischer explains.

No less varied than the shapes and designs of the springs are the customers of the family business, spread among all sectors of industry, from wind turbines and the automotive industry to electronics and medical technology. “Sometimes we don’t even know exactly where the spring ends up,” says Fischer.

What they all have in common is that the standards of quality and flexibility have risen enormously in the last five years. “We’ve always been known for our swift response and speed, but one can tell that the world is now spinning faster,” Fischer continues. And tool-making has to keep pace with these demands. Planning and production therefore proceed hand in glove. In the context of process-controlled development, the necessary tools are designed and fabricated in the company’s own toolshop. In tool design, advanced software like CAD and Inventor from Autodesk and FEM-based calculations are employed.

The MV2400S is always used when extra-fine contours are required.





Gerald Fischer is delighted with the precision of workpiece machining.

Pride and joy of the machine park

Fischer's department produces about 400 tools per year, and it takes about four weeks for a tool to reach mass-production maturity. In addition to grinding and milling machines, there are four EDM machines – the MV2400S has been the pride and joy of the machine park since March 2013. "We've been working with EDM for more than 20 years, but this is our first time with Mitsubishi Electric," Fischer candidly admits. "Until now we haven't needed the huge functionality of Mitsubishi Electric machines, so we didn't give them any attention." But since the launch of the new MV Series in 2013, the situation has changed fundamentally.

The MV Series offers customers with modest purchasing budgets the high productivity, quality and flexibility previously the preserve of high-end machines. What is more, the accuracy required in toolmaking has risen considerably in the last few years, particularly in terms of surface roughness, geometric variation and tolerances. "With the wire cutting machines from Mitsubishi Electric, a die can be accurately processed to the nearest 5,000th of a millimetre – we now need this for

the fine contours of our tools." Whereas further surface treatments used to be necessary in some cases, cutting is now so accurate that they can be omitted. But not only the tools benefit from higher accuracy, but also the springs made with them show fewer surface blemishes owing to the better surface quality of the tools. But this wasn't the only factor: "We were impressed not

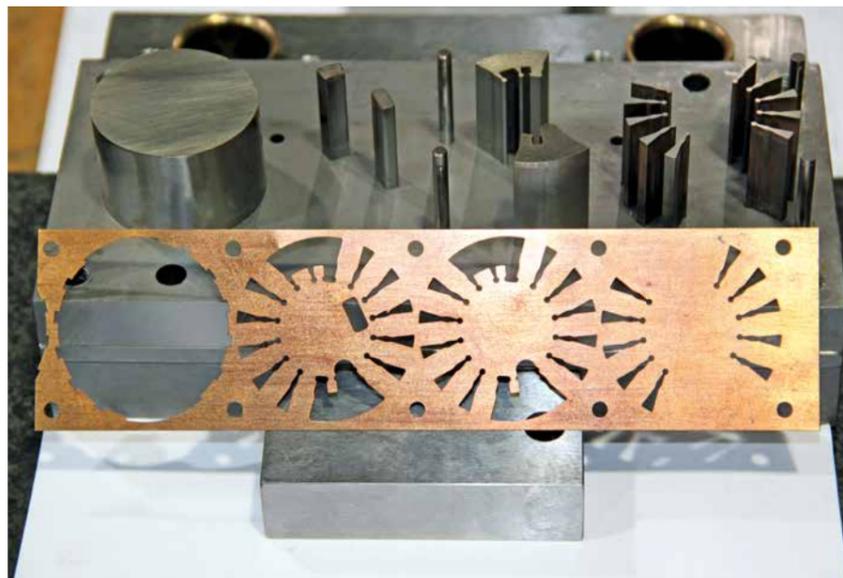
only by the technology, but also by the economics. Owing to the machine's superior accuracy, we can now entirely leave out a process step, that of glass bead blasting," says Fischer outlining the reasons for his choice.

» Stoppages due to the build-up of wire have been virtually banished. «

The control makes all the difference

The machine is now in operation for an average of 13 hours per day and thus

The tool (in the background) for the finer contours of a phosphor bronze component that later has to be coiled and installed in a pressure sensor.



has plenty to do. 90 percent of the tools produced are punching and bending tools, most of which are used in-house. 95 per cent of the parts are made of stainless steel, and the tensile strength is as high as 2,000 N/mm². The strip thickness ranges from 0.1 to 2.5 millimetres, and the strip widths from 3 to 100 millimetres.

The MV2400S also runs at weekends without having to be monitored. "If they have long contours, there's always a risk of the wire accumulating and causing a short circuit. With Mitsubishi Electric, the wire chopper solved the problem to perfection. Stoppages due to the build-up of wire have been virtually banished," says Fischer reporting from experience. He and his workmates are also impressed by the simplicity of operation. Since they were entirely new to Mitsubishi Electric machines, they were surprised how little time learning the ropes took. "The control was an important reason for purchasing the machine, as some of our operators had had over 20 years of experience on the old machine and we wanted as smooth a changeover as possible." But the cau-



Stefan Reichl, design engineer, Fabian Kohel, operator, and Gerald Fischer, toolshop manager, work together on the development of new springs and the tools required.

tion was unwarranted. "The layout of the control is brilliant," says an enthusiastic Fabian Kohel who works at the Mitsubishi Electric machine on a daily basis. "Just two mouse-clicks and you're ready to go – this is new compared to our old machines. And operation is so intuitive that we felt comfortable with the program after just two or three days." The ergonomics of loading the machine table went down particularly well. "We sometimes have to push 20 kilo blocks in, and this is where the ergonomics makes a positive impression," Kohel confirms.

No losing the thread

Even after a year in operation, the wire threader has not lost anything of its fascination. The wire is heated and stretched in the process, which yields a barely perceptible but sufficient reduction in the diameter. Then a water jet is

directed at the lower machine head (30 centimetres further down) that is a few millimetres larger than the wire diameter and threads the wire. Digital motors feed the wire forward, with the process undergoing continuous monitoring. "To be honest, I was sceptical at first, which is why I closely inspected the system and tested it exhaustively in Ratingen," says Fischer. But the system for automatic threading of the cutting wire has impressed him not only on the test set-up, but also now in practice and particularly at high speeds and on large blocks.

The bottom line

It was not only during commissioning that the company felt well taken care of by Mitsubishi Electric. Fischer and Kohel are unanimous that questions are always competently and quickly answered on the spot by the hotline, "al-

though we will only be able to give a definitive verdict after five years when supplies of replacement parts have gone into the equation." However, since going into action, the machine has been running without a hitch – and there's so far been no need to squander a thought on replacement parts.

www.hirsch-federn.de

www.hirsch-federn.de

Professionals in Profile: Reinhard Himmer



Name and place of company:
Hirsch Federn KG, Marktredwitz,
Germany

Founding year:
1954

Managing director:
Reinhard Himmer

Number of employees:
120

Core business:
Production and sale of industrial
springs

How did you earn your first money?

As a school kid I played the church organ and earned my first money; later music stayed an important source of income for a long time.

What is your source of motivation?

There is always something to improve or new challenges to master.

What's different about how you do things now, compared to five years ago?

I personally don't do much differently, but the demands have increased remarkably in the last few years – for instance in terms of speed, performance and documentation. It's up to us to respond accordingly of course – and we've done just that.

Where do you see your company in five years' time?

We want to increase our market shares. An important part will be played by our new HiSo® eyelet that really helps customers to cut their costs and improve their quality.

What's your favourite way to relax?

Like our springs – by returning to a state of rest.

What attributes do you value most in other people?

Fairness, honesty and a good team.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?

Bending wire and strip the way the customer wants it.



Hirsch Federn KG
Haag 17
95615 Marktredwitz
Germany

Tel +49. 9231.6699-0
Fax +49.9231.63031

info@hirsch-federn.de



MARPOSS has united its three French companies on a single site in Chelles.

 MARPOSS

Focus on precision

Under the KERN brand, MARPOSS produces high-precision measuring instruments. One of these is used by the company itself to precisely align and clamp workpieces on its own wire cutting machine supplied by Mitsubishi Electric.

Philippe Chandivert, operator of the MV1200S Tubular, has had the pleasure of an attractive workplace in a bright, light-flooded shop since May 2013. This was when GROUPE MARPOSS, which has 2,900 employees and operates 79 offices in 23 countries, united its three French companies, KERN, TRACE and MARPOSS France, on a single site. The customers of KERN and TRACE have been pooled as a result so that they can be served better collectively from a central location.

Fabien Vincentz, President of the united company, opens up Google Maps. "We now have our headquarters here in Chelles, a town on the Marne with a population of over 50,000 on the eastern outskirts of Paris. This also means that we are well served by transport links and easy to reach. Our company has been operating in France since 1968, but initially only sold products that MARPOSS produced in its home country of Italy. However, we wanted to build up production in France as well in

order to broaden our product range and satisfy demand for French-made goods." MARPOSS, the world's biggest supplier of precision instruments for measurement and control in production, is maintaining the previously independent KERN and TRACE brands. Under the KERN brand, the French company produces mechanical measuring instruments for the automotive and aerospace industries, while TRACE is responsible for leak test equipment for the automotive industry.

Better precision and surface quality

Frédéric Lesot, Production and Purchasing Manager at MARPOSS in France, watches Philippe Chandivert clamping a workpiece in the MV1200S Tubular and placing a measuring gauge on the workpiece. "On this system we mainly produce components for control gauges and drives." The material used by MARPOSS is cemented carbide measuring about 10 to 200 millimetres. Machining time varies. Depending on

the size of the workpiece and the demanded quality, it can be anything from 30 minutes to 10 hours. The same components are also machined by MARPOSS on an EA12-V Advance die sinking machine from Mitsubishi Electric.

Lesot looks over the shoulder of the operator who has measured the workpiece surface with the gauge. On the basis of the data indicated by his handheld terminal, it is possible to compensate for the wire's angle of inclination and adapt it to the exact workpiece length. "By using the MV1200S Tubular, we achieve better precision and surface quality. Previously, we used to award such work to jobshops or did them ourselves with the aid of a jig boring machine. The advantage of the changeover is that we can now handle larger production volumes per unit of time. We can now ease the pressure on the jig boring machine and spread our workload more efficiently."

Good reputation



Against the background of the growth in business, the investment in the MV1200S Tubular has been a pioneering step for MARPOSS.



Individual components are wire-cut on this assembly carousel for the aerospace industry.

Asked why he opted for the MV1200S Tubular, Lesot stresses Mitsubishi Electric's good reputation. The decision to invest at all in a wire cutting machine was taken because of the large volume of work in this field of metalworking. What is more, delivery problems had arisen among subcontractors. The company is now autonomous and achieves better delivery quality by handling the work internally rather than relying on outside jobbers. As to the performance expected of the machine, it is dimensional precision, positional accuracy and precisely machined contours that matter most to Lesot. This even applies to complex geometries. He also appreciates being able to cut angles on

the MV1200S Tubular.

Lesot opens up his laptop and scrolls through the orders of recent few weeks. "These records demonstrate that the machine often runs at night and at weekends unmanned and thus boosts our efficiency. This is only possible because Mitsubishi Electric has improved its automatic wire threader."

MARPOSS also benefits from the advanced drive of the machine with tubular shaft motors and the Optical Drive System and from the totally digital ADVANCE CNC control. According to Lesot, the machine thus cuts with greater accuracy and achieves better surface quality. In addition, he also ex-

pects the wire cutting machine to last a long time and sustain its high precision throughout its service life. At the same time, the MV1200S Tubular can be operated comfortably and with ease,

The high-precision measuring gauge produced by MARPOSS is used for measuring the surface of the clamped workpiece.



On his handheld terminal, Philippe Chandivert, operator of the MV1200S Tubular, reads off the data measured by the gauge.



→ he stresses.

Cost-effective investment

To illustrate the working of an assembly carousel for the aerospace industry on which individual components are wire-cut, Lesot gives the carousel a push and lets it turn. "We commissioned the MV1200S Tubular at the end of December 2013 and expect it to pay for itself in five years. We chose this machine because of its high quality and the dependability of Mitsubishi Electric. We also asked fellow wire cutters for their opinions."

The price/performance ratio was also attractive. Although the energy efficiency of the MV1200S Tubular, permitting up to 55 per cent energy savings, was not decisive for MARPOSS, the machine's very low operating costs yield plenty of benefits for the owner. Filter costs are cut by up to 45, wire consumption by a maximum of 42 and deionisation costs by up to 25 per cent. There are also appreciable sav-

ings on filter cartridges and ion exchange media. These are due to reduced dielectric flow and the optimised generator technology of the MV1200S Tubular that make it possible to filter out the eroded material more easily. Vincentz expands on this: "Our company's excellent performance in the last five years paved the way for the investment in a wire cutting machine. Ultimately, the purchase was inevitable for eco-

» By using the MV1200S Tubular, we achieve better precision and surface quality. «

economic reasons alone. Thanks to our new structure and equally new production shop, we've substantially increased our production capacity in any case. We're now receiving a growing number of orders that we can handle entirely on site here and we're recording increasing sales particularly from the aerospace industry, an area that we're keen to expand. But to come back again to

the wire EDM machine from Mitsubishi Electric, I have to say that the investment has been a pioneering step in the light of the growth in our business."

www.fr.marposs.com

www.fr.marposs.com

Name and place of company:
Marposs S.A.S., Chelles, France

Founding year:
1952 in Bologna, Italy

Managing director:
Fabien Vincentz

Number of employees:
2,900

Core business:
Measurement and control equipment

Marposs S.A.S.
ZAC de la Madeleine
3, 5, 7 Rue de la Tuilerie
77500 Chelles
France

Tel +33.1.757321.22
Fax +33.1.757321.40

Professionals in Profile: Fabien Vincentz and Frédéric Lesot



How would you describe in a sentence what your company does?

Fabien Vincentz: We develop and produce measuring instruments for industry.

How did you earn your first money?

Frédéric Lesot: In a large supermarket.

What is your source of motivation?

Frédéric Lesot: My work is my passion.

What's different about how you do things now, compared to five years ago?

Frédéric Lesot: In addition to purchasing, I'm now responsible for production as well.

Where do you see your company in five years' time?

Fabien Vincentz: For the KERN brand, the aerospace industry will remain an important development factor. In France and internationally. The same applies to the TRACE brand that, through its branches, today achieves 80 per cent of its worldwide sales abroad.

What was your biggest business success?

Frédéric Lesot: I'm a self-made man.

What's your favourite way to relax?

Frédéric Lesot: At the weekend in the country.

What attributes do you value most in other people?

Frédéric Lesot: Honesty.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?

Frédéric Lesot: I cut metal with wire the same way as others cut cheese.



“When a Swiss toolmaker says ‘precision’, he’s talking about micrometres,” Thomas Rüegg tells us. Maximum precision for him is more than a slogan, for it is the key to success for the innovative company from Rüti in Switzerland. For years, the production of precision tools was the main activity of the company founded in 1963. Today, PWR sees itself more of a maker of precision parts in small and medium series. Its customers come from many sectors. Top of the list is motor racing with the Sauber Formula One team, which, together with customers from the automotive industry, aerospace and medical technology, keeps the production shop ticking over. Classical mould- and toolmaking for machine manufacturers, the plastics sector and packaging industry is no longer as important at PWR as it used to be.

 PWR

Specialists

in small, high-precision series

When the Formula One race cars vie for points and victories in the 2014/15 series, precision parts from PWR in Rüti are always out on the circuit. Some years ago, when Sauber teamed up with BMW in Formula One, the Swiss company specialised in engine and transmission components such as differentials, shift drums and shift forks. Now, since the reorganisation of the Sauber race team, it is mainly high-precision components for chassis adjustment that leave the company. For Rüegg, Managing Director of the company with its 30-strong workforce, it is

not so important whether he produces a one-off or a part in a small series, for it is the quality that is always important. To meet the demanded high standards, PWR exclusively employs skilled mechanics who undergo regular further training and are therefore always right up to date.

It's the climate that counts

Precision is always closely associated with constant temperatures. To be able to deliver this standard of quality to its customers, PWR's production facilities

are fully temperature-controlled. To make do with just an air-conditioned measuring room, like many competitors, is not an option. Of course, this has its price. Some areas like the milling department therefore have to be cooled all-year-round, even in the icy Swiss winter. In areas devoted to EDM and grinding, the cost of constant temperature control is not quite as high.

Not everyone in the industry appreciates that precision requires a defined temperature. Even experts in large companies are sometimes unaware of

this. “Some time ago,” Rüegg tells us, “we produced a tool and had it sent by a forwarder to the customer in the evening. This was in the winter, and the tool was stored overnight in an unheated vehicle shed and delivered the next morning. On arrival, the customer put the tool straight onto the measuring machine – without time for acclimatisation – and complained of dimensional inaccuracy. About 24 hours later and at a temperature of 21 degrees Celsius – surprise, surprise! – all the dimensions were spot-on with micrometre precision.”



Shift drum of a Formula One vehicle. Gears are shifted at each cam.



The more accurately the gearwheels in the gearbox are tuned, the lower the power loss.



So that the drivers in Formula One can bring the engine's full power to the road, the shift forks are precision wire-cut to within a few micrometres.

Precision under high deadline pressure

If you want to stay in the running in Formula One, you've got to be quick, and not only on the track. From its component suppliers, the industry expects not only maximum precision, but also a good deal of flexibility. If a part is damaged during training, a replacement has to be supplied virtually on the spot. The whole company is then under pressure and has to work into the evening and night and at weekends. "The customer justifiably expects a replacement part that is fabricated speedily but also with absolute precision," says Rüeegg.

To carry out such work to perfection, a company needs not only advanced and adaptable equipment, but also skilled and committed employees who identify with what they do. Rüeegg relies on highly skilled mechanics for whom regular further training is a matter of course, as PWR depends for its existence on its high standards of workmanship. "Our goal," says Rüeegg, "is always to be a nose ahead of the competition, and that's why we invest regularly in new technology."

The production department is thus dominated by high-tech machines, starting with up to five-axis milling machines through to advanced CNC-controlled turning and grinding centres for coordinate, cylindrical and eccentric grinding, lapping and polishing. Wire cutting, die

sinking and start-hole drilling machines are also included in the battery of high-grade machinery. And, finally, there is a 3D measuring machine, which is absolutely essential in a company whose ethos of professionalism entails measuring and recording.

Mitsubishi Electric EA12V Advance

PWR's most recent acquisition is the Mitsubishi Electric EA12V Advance. The all-round machine installed at the end of 2013 is technically highly advanced. "We've again turned to Mitsubishi Electric," Rüeegg explains, "because our experience over many years with the company and its EDM machines has been nothing but excellent. Our confidence in Mitsubishi Electric technology has therefore grown."

"Before we invested in our first Mitsubishi Electric wire cutting machine, our customer Sauber gave us a nudge in the right direction," Rüeegg continues. "The employees at Sauber were enthusiastic about the machines and certainly influenced our decision." Without the Formula One connection, PWR may not have looked as closely at the Mitsubishi Electric machines, as its experience with wire cutting machines from other manufacturers was also encouraging.

A reference visit to Sauber during which PWR was able to try out an FA-20S Advance itself and produce a number of sample parts soon swayed

Rüeegg senior. "The quality was right, the working speed was impressive and the people at Sauber were full of praise for Mitsubishi Electric," Josef Rüeegg enthuses. "And we were so happy with the first FA-20S that we ordered a second, identical machine within a year." For the most recent investment decision, those responsible at PWR again chose a Mitsubishi Electric wire cutting machine, this time an EA12V Advance with 3R Workpartner Automation. They wanted a high-performance, high-tech machine that suits their product portfolio. It was soon clear that they wanted to build on their promising experience with Mitsubishi Electric. Since the EA12V Advance has only been in operation for a few weeks, PWR does not yet have much practical experience with the machine. But the findings so far have been encouraging.

Programming and execution from a single source

"Specialists not only achieve the exceptional, but they also need responsible tasks," says Rüeegg. "Although we have a central job scheduling department, we don't have our own programmer." At PWR, each machine operator programs his own job himself. And each employee has his own way of going about this. "We set the goal," says the boss, "and the mechanics themselves decide how to get there." The employee programs his parts himself and

gets down to work at the machine as soon as he's ready. This way, the jobs are not only more interesting, but the employee bears full responsibility for the programming. "PWR has had nothing but positive experience with this exacting way of doing things. It's also one of the cornerstones of our quality and precision," says Rüeegg summing up.

» **The employees at Sauber were enthusiastic about the machines and certainly influenced our decision.** «

by high-tech production, but also by quality control and logistics. "In the European Union, every cow has its own unique ID clipped onto its ears so that its path from its birth to the abattoir can be traced," Rüeegg explains. "In tool-making, the tool is usually accompanied by the measurement record and data. However, unique identification on the tool itself is the exception."

This quality shortcoming was the reason for the company to invest in a laser printer some time back. Since then, each workpiece gets its own fabrication number and is thus unmistakably and permanently marked. "The consistent application of this technology

benefits both sides, us and the customer," Rüeegg explains. "The customer can clearly identify each part even after several years and we can quickly fish the complete production data out of the archive and produce an identical replacement part if needs be."

Win-win situation thanks to clear identification

PWR aspires to be technologically ahead of the competition. For Thomas Rüeegg, this is made possible not only

In the last few years, PWR has developed into a maker of precision parts and of small and medium series.



www.pwr.ag

www.pwr.ag

Professionals in Profile:

Thomas Rüegg



Name and place of company:
PWR Präzisions-Werkzeuge AG,
Rüti, Switzerland

Founding year:
1963

Managing director:
Thomas Rüegg

Number of employees:
30

Core business:
Production of small series of precision
parts and toolmaking

How would you describe in a sentence what your company does?

We make highly complex components.

How did you earn your first money?

Cleaning windows as a schoolboy.

What is your source of motivation?

My family and the pleasure of my work.

What's different about how you do things now, compared to five years ago?

It takes me longer to lose my cool.

Where do you see your company in five years' time?

We shall automate our processes and produce more high-end parts.

What was your biggest business success?

The integration of ADAXYS Solutions AG in our company at the turn of the year 2011/12.

What's your favourite way to relax?

With my family, mountain-biking and skiing.

What attributes do you value most in other people?

If they can stay flexible and still be purposeful.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?

I run a company.

PWR Präzisions-Werkzeuge AG
Neuhofstrasse 10
8630 Rüti
Switzerland

Tel +41.55251.44-00
Fax +41.55251.44-09

pwr@pwr.ag

Ordering back issues and change of address

This is where, among other things, you can order back issues of Profile. Order now as long as stocks last.



Simply cut out and send off the coupon!

Mitsubishi Electric | Mechatronics Machinery | Profile Reader Service | Gothaer Strasse 8 | 40880 Ratingen | Germany

Order by fax +49.2102.486 7090

Back issues

Yes, I'd like to order back issues of the following *Profile* magazines (please enter desired number):

_____ December 2011 _____ September 2012 _____ August 2013 _____ December 2013 _____ Current issue

Address/Change of address

Company		Email address	Phone
Surname	First name	Yes, I would like Mitsubishi Electric to keep me informed of its special offers and campaigns by email.	
No., road		Date, signature	
Post code	Town, country		

Note: Your data will not be passed on to any third parties except companies involved in the processing of your order. You can terminate the storage of your personal data at any time by simply sending a fax to +49.2102.486 7090

 TYROLIA

Cutting edge

When it comes to wire cutting, TYROLIA, the trendsetter in ski bindings, places its faith entirely in the MV-R Series from Mitsubishi Electric.



HTM Sport GmbH and the TYROLIA brand have been synonymous with innovation in the ski binding sector for over 80 years. The company founded in 1847 as “Wiener Metallwaren-, Schnallen und Maschinenfabrik Ges.m.b.H.” in Schwechat, Austria, has been making ski bindings since 1928. With 1.1 million binding sets produced each year and a market share of over 30 per cent, HTM Sport is the world market leader. About 90 per cent of its output is exported to 32 countries around the globe. With a workforce of 210 employees, TYROLIA generated sales of EUR 40 million in 2012. In 2001, TYROLIA became the first company in the ski binding industry to obtain certification to ISO 9001/2000.

On the move

Of course, this did not happen overnight. Up to the present day the ski binding has undergone consistent development and refinement, making it the high-tech product well-known in the skiing world today. There is more to a ski binding than meets the eye. Well over 100 individual parts have to be assembled to produce a complete unit. HTM produces virtually all of the parts

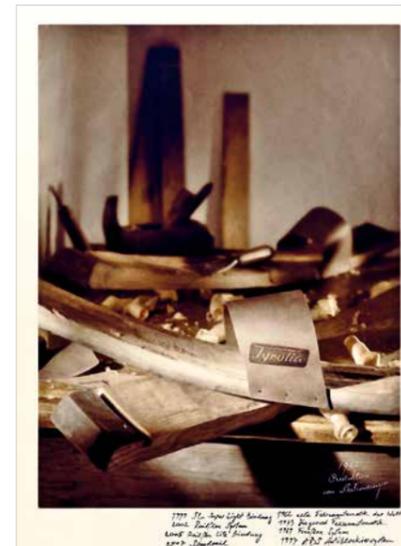
required for a ski binding itself – only the screws, bolts and springs are bought in. The resultant short distances mean that the company can respond swiftly to changes in the market and ensure smooth and cost-effective product development. “There are a lot of advantages in having our own modern toolshop. Our tasks include sample construction, cutting tools, jig & fixture construction and the production of injection mouldings as well as the supervision of other departments like the printshop and assembly activities in the Czech Republic,” explains Raimund Premauer, Toolshop Manager.

So that the Schwechat location can hold its own internationally and satisfy the requirements of such big-name brands as HEAD, FISCHER and ELAN whose products have been benefiting for years from TYROLIA’s knowledge and skills, several factors are important, Premauer believes: “Outstanding manpower and an advanced and flexible machine park are essential for our aspirations.” TYROLIA has been taking responsibility for the quality of its workforce for years, with a strong emphasis on the all-round abilities of its employees. “The workload of our toolmaking

capability has been steadily rising over the years. Contracting out surplus wire cutting jobs is not a good idea in our business,” says Premauer. This is why TYROLIA has been continuously investing in new machine technologies.

Revolutionary precision

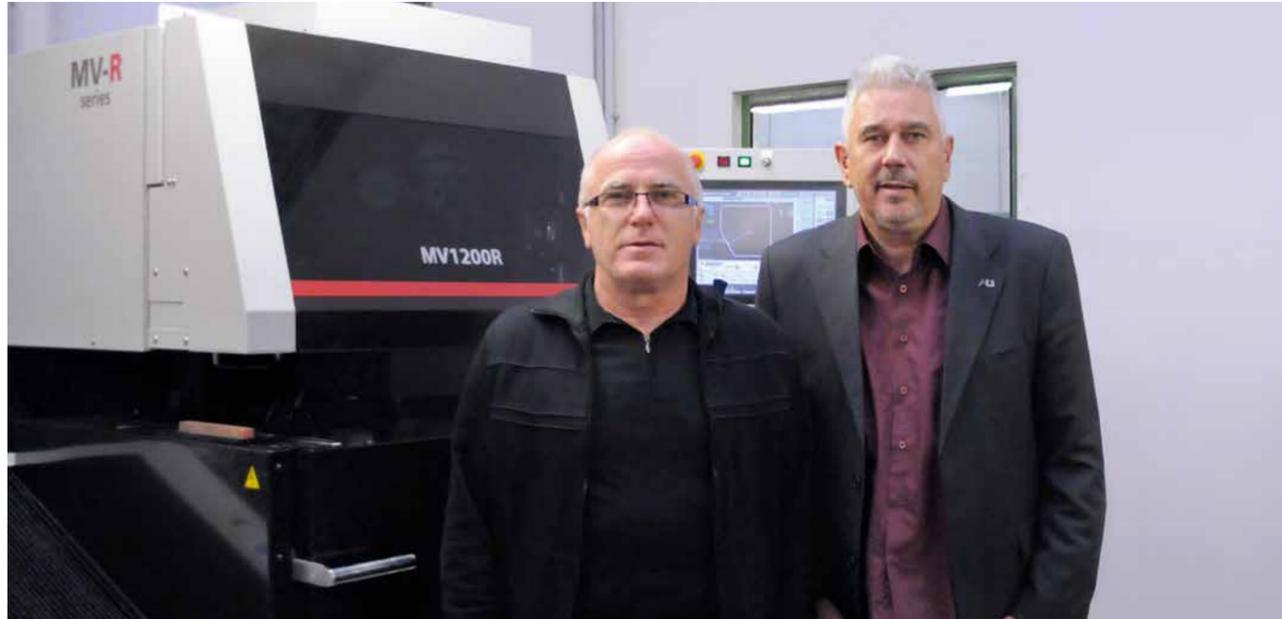
Since the tools for binding production are becoming increasingly complex and intricate, only the best and most advanced solutions are acceptable to TYROLIA. It therefore purchased two Mitsubishi Electric wire cutting machines of the MV-R Series (an MV1200R and an MV2400R) this summer that have immediately made their mark with their revolutionary features. “We’ve improved again on our already high precision by using the Optical Drive System in combination with the Tubular Direct Drives and the isolated, hardened tables. And, additionally, the new machines run much more efficiently and with lower resource consumption,” Premauer reports. This not only means faster wire cutting due to the elimination of a cutting cycle, but also significant savings in energy and consumables – a fact that is highly gratifying not only from the economic point of view,



The first ski binding was produced in 1928. Industrial production got underway ten years later.



The TYROLIA product range includes highly functional ski bindings with unique safety features – adapted to the diversified needs of skiers.



Raimund Premauer, Toolshop Manager at TYROLIA, and Harald Umreich, Managing Director of Mitsubishi Electric dealer Harald Umreich Ges.m.b.H, in front of the MV1200R

→ for minimised resource usage is also good news for the environment.

Strong support

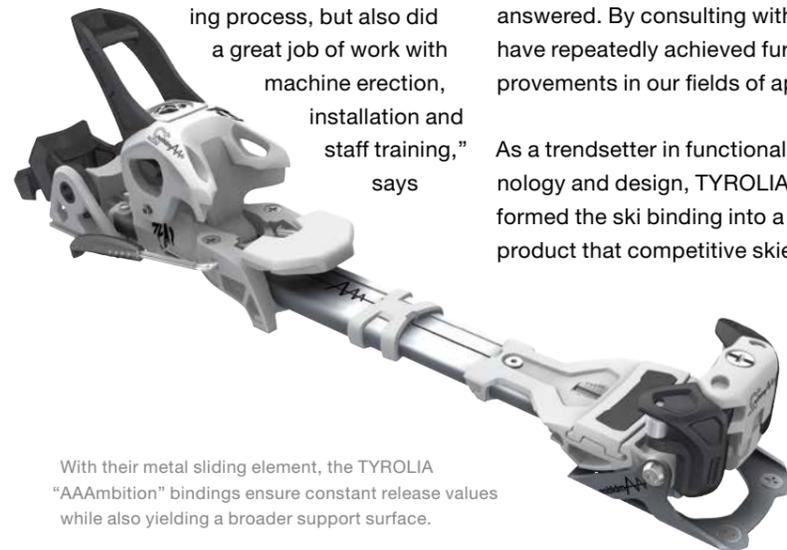
Another feature that TYROLIA also benefits from is the improved wire threading of the R Series that makes it possible to thread up to 100 mm without a water jet and hence to thread in the kerf. "Our dealer Harald Umreich Ges.m.b.H. not only gave us excellent advice during the investment decision-making process, but also did a great job of work with machine erection, installation and staff training," says

Premauer for whom the partnership with Umreich was an important factor in the achievement of the planned quality goals in wire cutting. "The guys have practical experience and really know what they're talking about, and any questions we had were reliably and competently answered. By consulting with them, we have repeatedly achieved further improvements in our fields of application."

As a trendsetter in functionality, technology and design, TYROLIA has transformed the ski binding into a high-tech product that competitive skiers pre-

» Outstanding manpower and an advanced and flexible machine park are essential for our aspirations. «

fer. Its claim to superlative quality and unique safety features like the diagonal toes and heel, the TRP toe system, ABS, Freeflex Pro System and integrated systems like PowerRail and LiteRail have secured TYROLIA's position as the No. 1 in the industry – and the company in Schwechat now also trusts in the technology and precision of the Mitsubishi Electric MV-R Series.



With their metal sliding element, the TYROLIA "AAAmbition" bindings ensure constant release values while also yielding a broader support surface.

www.tyrolia.com



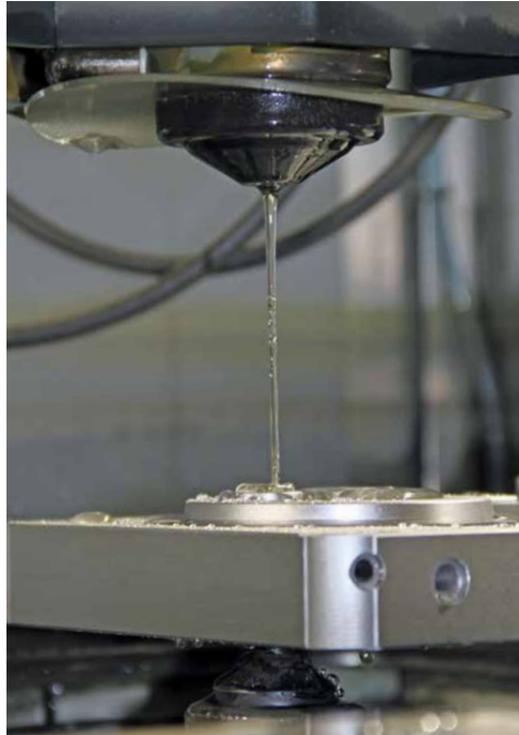
 WIESAUPLAST

Your car runs with Wiesaplast ...

... or at least your neighbour's does. Worldwide, one car in three is equipped with PET safety components from the world market leader. Wiesaplast attaches special importance to accuracy. For only a flawless injection mould can produce flawless plastic components that satisfy the highest standards and the needs of function and component safety. The company's own mouldmaking activities therefore play a crucial role. For production of the moulds, high-precision and dependable machines are required.

The architecture is in itself striking. The company Wiesaplast is located in a modern, light-flooded building surrounded by meadows and forests. "People simply enjoy working here," says Albert S. Sitzmann, Toolshop Manager and in charge of mouldmaking at Wiesaplast. But of course the work itself is also exciting. "The products that we make for our customers have to be highly precise

and for this we need immaculate moulds produced with extreme accuracy." Wiesaplast is the world market leader with sensitive PET safety components for brake systems and equips more than one car in three worldwide with high-precision plastic parts. For a mould for one of the roughly 60 injection moulding machines to be fabricated and complete all the rounds of approval, it takes all of



Precision counts at Wiesaplast.

Precision from the outset

The preconditions for the economic success, functional safety and series quality of a component are established right at its inception. Wiesaplast therefore works closely with the customer so that an optimally designed plastic part is the outcome. One of the most important activities in this context is in-house mouldmaking which not only makes use of hypermodern moulding machines, but also ensures the necessary exactitude. A fundamental prerequisite for this is the high level of automation in production, further processing and assembly. "This also applies to mouldmaking of course and hence also to the wire cutting machines," Zitzmann explains. Standardised interface modules, for example, are a sine qua non for Zitzmann. Most recently, the CAD/CAM systems in the company have therefore been harmonised to facilitate rapid and secure data interchange. Finally, the experience of the employees who have been working for the company for many years forms a further cornerstone of success.

Unbeatable price/performance ratio

→ 32 weeks. "Urgent inquiries are sometimes processed faster," says Zitzmann smiling.

Such a mould consists of up to 150 individual parts that have to fit together perfectly. So that the customers' high quality standards are complied with, absolute precision is demanded. "We have to get everything right, down to the tiniest detail," Zitzmann explains. "Many components and systems that we make later perform safety-relevant functions in the car."

The company manufactures among other things control housings for brake boosters, high-precision plastic parts for ABS and EPS systems as well as functional assemblies for air conditioning systems, clutch actuator housings and hybrid systems of metal and plastics. Another source of business is solutions for the automation industry and medical technology. Its functional parts and housing components can be found, for example, in subassemblies for outpatient medical treatment, such as syringe pumps for paediatric and neonatal applications. Another focus is on the development of solutions for the substitution of metal with plastics.

The company has been making use of the wire cutting process for over 30 years, and an FA30 from Mitsubishi Electric has been in action at the plant since 2004. "Obviously, it doesn't display the accuracy and speed of the new machine, but it is still running dependably and smoothly," confirms Harald König, who services this machine and the most recent addition. New to the machine park from summer 2013 is an MV2400R. The R variant comes with many exciting features. The hardened four-sided frame table ensures that large mould plates can be accurately clamped.

Asked about why this machine was chosen, König's reply is concise and to the point: "The price/performance ratio is unbeatable," adding: "What counts most for me is process security. It's no use to me if the machine runs perhaps a little faster, but the wire breaks every ten minutes." The high machining quality also speaks for Mitsubishi Electric. "The machine's accuracy and high erosion rate are equally important. This is where the Mitsubishi Electric really scores. Far fewer post-cuts are necessary and the surface quality of the workpieces has risen considerably." Compared to the old machine, one cut less is necessary to

Just one of the workpieces machined on the MV2400R



processed on the machine, ranging from hardened steel and aluminium to copper and graphite. In addition to slides and guides, copper and graphite electrodes are produced on the MV2400R.

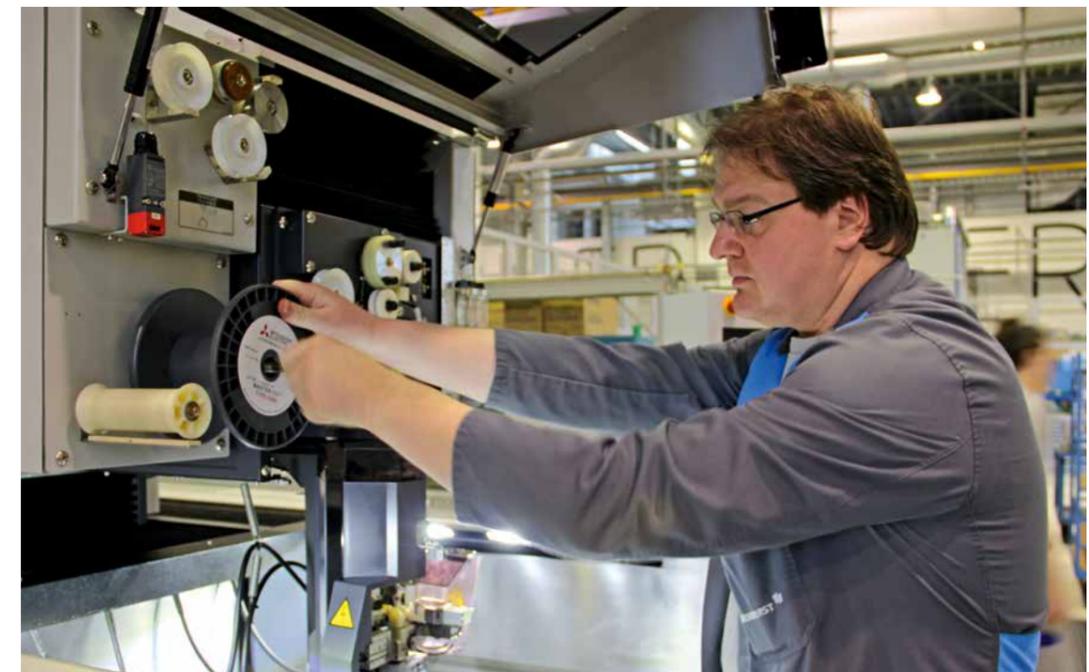
The drive system is also impressive: "It was important for me not to have any rotating spindles." The Tubular Direct Drives are positioned in the centre of the moving weight for smooth axis movement. The ideal positioning of the glass scales in the immediate vicinity of the working area ensures high precision. Thanks to the virtually loss-free annular magnetic field as the effective driving force, power consumption is reduced. The design permits high-precision axial movements without backlash.

achieve the same surface finish, König reckons. There are also savings in wire and power consumption. This where optimised wire running speeds for different machining conditions on the new MV2400R reduce wire consumption by as much as 45 per cent. A wide range of materials are pro-

» It was important for me not to have any rotating spindles. «

Wiesaplast is very taken by the automatic threading of the cutting wire.

Whatever the requirement – submerged break point insertion, threading in the kerf or threading after interruptions in start-hole drilling – the further refinement of the Intelligent AG threading system has surprised even seasoned users, as König admits: "Brochures can promise a lot, but this is



Harald König threading the new wire – no problem thanks to automatic wire threading.



Looks like new, but has been in operation since 2004: the FA30 is still highly treasured for its accuracy and reliability.

→ truly brilliant. I'm particularly impressed by submerged break point insertion. We used to lose a lot of time draining the water. But even threading in the kerf is quick. This is where we really save time."

Flying start

Acclimatising to the new machine took just a few days, as the operators were used to the old control system. "The control is easy to handle and we had a grasp of the process after two, maybe three days." They were helped in this by the quick and direct assistance from service in Ratingen. Mitsubishi Electric has once again improved the user-friendliness of the already exemplary Advance control. Direct programming and the choice of technology parameters have been simplified so that the user reaches his goal in fewer steps. But Wiesaplast also did its homework. As a result of the standardisation measures, data compatibility had already been achieved on the old FA30 – and this now proved

useful when transferring the CAD/CAM data to the new wire-cut EDM machine.

Conclusion

Wiesaplast is thoroughly happy with its new investment – the only point of criticism being the suboptimal lighting, in the mouldmakers' view. But that problem was quickly solved, with additional LED lighting being fitted during installation. The verdict of these precision lovers is unequivocal: "If the machine continues to perform so well, then there are good chances of our turning again to Mitsubishi Electric next time around," says Zitzmann.

www.wiesaplast.de

www.wiesaplast.de

Name and place of company:
**Wiesaplast Deutschland
GmbH & Co. KG, Germany**

Founding year:
1958

Managing director:
Hans R. Ammer

Number of employees:
330

Core business:
Production of injection mouldings
made of engineering plastics and
mouldmaking

Wiesaplast Deutschland
GmbH & Co KG
Am Industriepark 1
95676 Wiesau
Germany

Tel +49.9634.88-0
Fax +49.9634.88-55

info@wiesaplast.de

Professionals in Profile: Albert S. Zitzmann



How did you earn your first money?

As an apprentice to become a plant fitter with a monthly wage of 108 German Marks.

What is your source of motivation?

Having fun with my staff and the pleasure of dealing with people. I also enjoy jointly identifying challenges and working out solutions.

What's different about how you do things now, compared to five years ago?

I try to take a more holistic approach so that I can then work out the best solution.

Where do you see your department in five years' time?

I hope that the course that I've plotted will be successfully continued. The goal is to achieve even higher efficiency in the development of moulds.

What's your favourite way to relax?

Getting together with friends and during competitive shooting.

What attributes do you value most in other people?

A positive attitude and being able to think for oneself – coupled with cheerful composure.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?

I create the conditions in which my staff can produce better moulds.

FRAUNHOFER ICT-IMM

A good job of work

At ICT-IMM, potential users can find out about the advantages of different processes, e.g. wire cutting and die sinking.

The ink on the contract has dried and Mainz Institute of Microtechnology (IMM) is on its way to becoming an independent Fraunhofer Institute. And also involved is Mitsubishi Electric. At the institute's EDM Competence Centre, the company is one of the cooperation partners for micromachining in the wire cutting and die sinking sector.

Professor Dr. Michael Maskos, Director of Fraunhofer ICT-IMM and previously Managing Director of Institut für Mikrotechnik Mainz GmbH, is thoroughly satisfied with the planned integration. "For us at ICT-IMM, this is a watershed and proof that we've been doing a good job of work over the years." The way was paved by the Land Rhineland-Palatinate and the Fraunhofer-Gesellschaft to which the research and development institute launched in 1990 will be admitted. The goal is successful evaluation. Until 2018, integration will be actively supervised by the Fraunhofer Institute for Chemical Technology (ICT) in Karlsruhe-Pfinztal.

"The IMM was founded to satisfy the desire in the region for a pooling of precision machining expertise. Implicit in its founding was the intention to support small and medium-size companies that are unable to conduct research in this field themselves because of the associated high cost," says Maskos looking back. "Since our launch, we at IMM have been giving potential users the opportunity to find out about the advantages of different processes on our premises." This also applies to wire cutting and die sinking machines from Mitsubishi Electric that IMM has been using since 2007. This was when the institute established its EDM Competence Centre and invited Mitsubishi Electric to participate as an active cooperation partner for micromachining in wire cutting and die sinking. The goal is to expand the knowledge and technical possibilities of both sides and maintain the respective leading positions in the market. Above all, they aim to jointly help users to optimise existing standard technologies so that they can transcend their own production boundaries and thus expand considerably their range of products and services.

Quality rather than quantity

The branches of industry for which Fraunhofer ICT-IMM conducts development work in the microproduction sector include the automotive and aviation industry and medical technology. The institute wishes to refine technologies so as to shorten machining time and improve quality and process security. Quality rather than quantity is called for. With over 15 years of experience in micromachining, Fraunhofer ICT-IMM is able to achieve outstanding results in tandem with its high-performance partners. Maskos points up in the air:



Professor Dr. Michael Maskos, Director of Fraunhofer ICT-IMM, sees the planned integration in the Fraunhofer-Gesellschaft as proof of the good job of work that his team has done over the years.

"Components from our institute can be found on Mars – for instance, a parallelisation system for X-ray spectrometers." Microproduction technologies are required when it's a question of the efficient development and production of individual precision parts, subassemblies and complex systems. Fraunhofer ICT-IMM works with almost all types of materials, from plastics to high-alloy steels and hard materials. For this, the institute uses a broad range of production technologies, which it can flexibly combine in any order. Fraunhofer ICT-IMM can thus create a basis for the development of machining strategies and extending the scope for the production of microcomponents and -structures. In addition to this, by pooling research and development expertise on the one hand and production know-how on the other, the institute offers its partners access to customised microsystem technology solutions transcending commercially applicable standards. In addition, by combining methods and processes from different fields of technology, further and unconventional approaches can be explored for the development of applications. All in all, Fraunhofer ICT-IMM covers the entire spectrum of services – from advice, design and engineering through to production and assembly. A strict eye is kept on



Thanks to a livelier technological exchange, Mitsubishi Electric will also benefit from IMM's integration in the Fraunhofer-Gesellschaft.



At the institute's EDM Competence Centre, Mitsubishi Electric is one of the cooperation partners for micromachining in wire cutting and die sinking.

→ feasibility and cost-effectiveness at all steps in the process. A key contribution to success is also made by the experienced employees of the institute with their interdisciplinary outlook.

Successful technology partnership

"In our cooperation with Mitsubishi Electric, we have been engaging in a successful, close technology partnership for many years," Maskos stresses. "This has involved putting the company's new EDM machines through their paces before their market launch in Europe and, in the border area of microstructuring, technologically assessing the machines for their marketability and reliability in tests and applications. This is where we have worked at length on technology tables, explored the technological boundaries and, in a joint effort with partners from Japan, rolled these boundaries back. It's exciting to see the performance and precision that can be squeezed out of the machines outside standard applications with skilful process control." In 2013, IMM again reiterated its aspiration to be at the forefront of future

themes of relevance to society by establishing its competence area Microstructure Technology for Nanoparticles (Micro4Nano). "By taking this step, we are plotting a growth course. In other words, we are securing jobs for highly skilled people and possibly creating further new jobs in the medium term," Maskos explains. In the nanotechnology field, it is for Fraunhofer ICT-IMM primarily a question of nanoparticles in solutions. Reproducible results, achieved by the institute in specially developed processes, are a challenge in this field. One of the stepping-stones is micromachining. "But we're interested not only in inventing things, but also in putting the findings into practice," says Maskos. "We therefore make full use of the diversity of expertise in our team, which is one of the unique features of our institute." IMM can be proud of what it has already achieved. Maskos: "We are ahead of the field in many technological areas where high-precision parts are concerned. Examples of these are the components for a research satellite with a detection accuracy of 30 m which is due for launch in 2016."

» In our cooperation with Mitsubishi Electric, we have been engaging in a successful, close technology partnership for many years. «

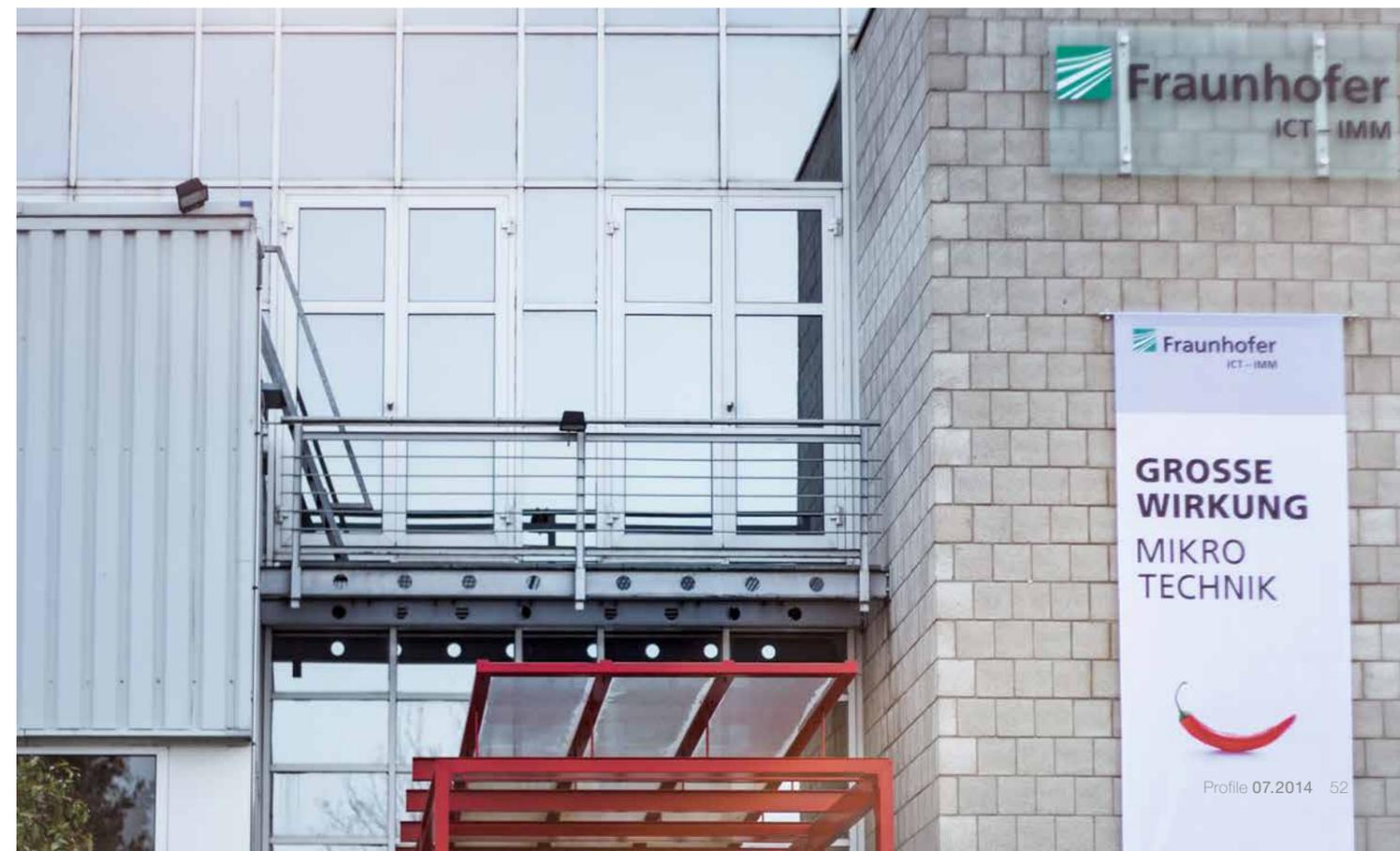
Proud of its achievements

Maskos emphasises that Fraunhofer has very strict rules for the admission of a new institute. So he is justifiably proud to see his IMM on its way to becoming a Fraunhofer Institute in its own right. "We've worked hard to build up the necessary confidence. For instance, by founding 18 new companies, 16 of which are still going strong. We establish start-ups from internal units as soon as they become profitable. This is how we, as a non-profit institution, also create high-grade jobs." Against this background, Maskos and his team are looking forward to integration. With the support of Fraunhofer and the Land Rhineland-Palatinate, the institute plans to extend its premises in 2016 and thus broaden its technical capability. They will then have more space for their work and will be able to achieve more in the EDM sector in the long term. All the partners of the institute also ul-

mately benefit from integration in the Fraunhofer-Gesellschaft. The advantages include a livelier technological exchange, an abundance of conceivable new cooperative ventures and the modernisation and extension of infrastructure. Maskos: "We are also extending our core competences and our spectrum of services to make us more attractive for new customers."

(The next issue of Profile will include a supplementary article on Fraunhofer ICT-IMM's cooperation with Mitsubishi Electric which will shed light on the technical aspects of cooperation.)

www.imm.fraunhofer.de





Roland Favre, Gilles Heritier and Alain Colomb (from the left,) in front of the MV2400S Tubular

 SALOMON

World of sport

When you visit Salomon, you enter a world of sport. You can marvel at the high-class products and glossy photos of athletes in action on show. And you can also marvel at a MV2400S Tubular wire-cut EDM machine from Mitsubishi Electric.

Here in Annecy in the French Alps is where it all began in 1947. Founded as a family business, Salomon initially crafted skis and later the matching bindings in a small workshop. Since then, Salomon has evolved into a sports equipment manufacturer that has made a name for itself mainly in winter sports. Gilles Heritier, in charge of wire EDM in Salomon SA's development department, runs his finger over the metal parts of a ski boot that have been cut on the MV2400S Tubular. "We use the machine for producing prototypes of the metal parts that we need for ski boots and bindings. Both of these are products of ours with a long tradition."

Back in the mid-Sixties of the last century, the company developed ski bindings with an automatic release, also known as safety bindings. This was an innovation that catapulted Salomon to world leadership in 1972 with sales of over a million bindings. For ski manufacturer Zai in Graubünden, the company listed on the Lyon Stock Exchange produces special ski bindings that are an astonishing 350 grams lighter than the conventional alternatives. The first Salomon ski boot was successfully launched in 1980. Today, Salomon is the world's biggest ski boot manufacturer. However, the lion's share, about 60 per cent, of the work on the MV2400S Tubular is for orders from Mavic, a maker of quality cycles and cycling accessories that, like Salomon, belongs to the Finnish Amer Sports Group.

The operator cuts small parts on it during the day. For bulkier workpieces, the company, which has also been producing summer sports equipment since 1984, runs the machine unmanned at night and at weekends. In addition to the prototype components for ski boots, ski bindings and cycles, the MV2400S also machines parts used in the fabrication of end-products. The workpieces measure anything from a few millimetres to the size of the machine's full work space.

High precision at short notice

The project manager places a precision part on the

table. "It's important for us to cut as accurately as possible. After all, we want to achieve high visual quality and above all safety for the athlete. In view of this, we attach importance not only to accuracy, but also to surface finish, parallelism and contour trueness. High machining speed is also important." A prerequisite for the desired precision is the machine's drive concept with its tubular shaft motors and the Optical Drive System (ODS). Within the ODS, data interchange is handled by an optical network. The advantage of this is that, by using optical waveguides, Mitsubishi Electric's ODS facilitates much faster and more efficient communication between the CNC control, servo boosters and Tubular Direct Drives.

» Mitsubishi Electric builds excellent machines. This is demonstrated by our tests in which the MV2400S came out on top. «

Gilles Heritier stresses another point that is important for him in his daily work. "We need wire EDM so that we can respond swiftly to urgent orders. We can master this special challenge with the aid of the MV2400S Tubular. We're consequently in a position to keep to the tight deadlines that we're confronted with on a daily basis and no longer have to farm out work." The tight deadlines mainly arise because of newly developed prototypes or because of modifications to these components that have to be implemented at short notice. And, as Heritier notes, the first manufacturer with a product on the market has an advantage over the competition.

Consistent further development

However, in choosing the most suitable wire-cutting system, Salomon took its time. The company invested in the machine to replace one from the competition, and the negotiations took over two and half years. The MV2400S Tubular went into operation at the beginning of December 2013 after all the competitors participating in the bidding process had been eliminated one after the other. Heritier taps the frame of the wire-cutting system. "Mitsubishi Electric builds excellent machines. This is demonstrated



The metal parts of this ski boot are wire-cut on the MV2400S Tubular.

→ by our tests in which the MV2400S came out on top. The decisive fact was that the manufacturer has consistently further-developed the machine and we benefit from the resulting refinements.”

Mitsubishi Electric has also systematically improved the automatic wire threading system. This is essential for a lasting boost in working efficiency – an advantage that reveals itself particularly under difficult conditions. For instance, when threading in the kerf on thick workpieces or threading after interruptions in start-hole drilling. Alain Colomb, operator of the wire cutting machine, loads a new spool of wire in the wire station. “Today, rethreading takes 15 seconds – a process that used to take two and a half minutes.”

Gear punch with wire-cut toothing



A difference like day and night

Heritier sees a difference like day and night in running costs, as they have fallen significantly thanks to significant savings on filter cartridges and ion exchange media as a result of reduced dielectric flow. Thanks to

this combined with the optimised generator technology that makes it easier to filter out the sludge, Salomon claims only a tenth of the former expense in this area. Deionisation costs and wire consumption have also been cut. And the operator is also highly satisfied with the high energy efficiency of the MV2400S Tubular that finds expression in energy consumption slashed by up to 55 per cent. Taking the operating costs of the wire EDM system as a whole, they are only about a fifth of those of its predecessor.

To clamp the workpieces, Colomb uses clamping accessories that Mitsubishi Electric supplies as optional extras. He now starts the cutting job for the component displayed on the monitor at the control panel. “I personally love working at the machine. It’s so much more enjoyable than writing CAD programs. I’ve got used to the MV2400S Tubular very quickly, as it’s effortless to operate.” Programming is also a straightforward process. Roland Favre, mouldmaking manager for ski boots and injection moulding, points to a monitor. “We use the CAD software Go2cam to write the desired cutting program on the basis of the drawing.” The finished program is then transferred straight to the totally digital ADVANCE CNC machine control. It is also worth mentioning that Favre, like all of his workmates, enjoys working for Salomon. For this is where employees can combine their work with sport and benefit from their allegiance to the company in their free time as well.

www.salomon.com

www.salomon.com

Name and place of company:
Salomon SA, Metz-Tessy, France

Founding year:
1947

Managing director:
Jean-Marc Pambet

Number of employees:
900

Core business:
Sports equipment

Salomon SA
Les Croiselets - Metz-Tessy
Cedex 9
74996 Annecy
France

Tel +33.4.5065.4141
Fax +33.4.5065.4260

Professionals in Profile:

Gilles Heritier und
Alain Colomb



How did you earn your first money?
Gilles Heritier: As a car mechanic.

What is your source of motivation?
Gilles Heritier and Alain Colomb: Sport.

What’s different about how you do things now, compared to five years ago?
Gilles Heritier: We’re more computerised than we used to be. The workplaces are more modern in general today.

Where do you see your company in five years’ time?
Gilles Heritier: As the No. 1 in all areas of sport.

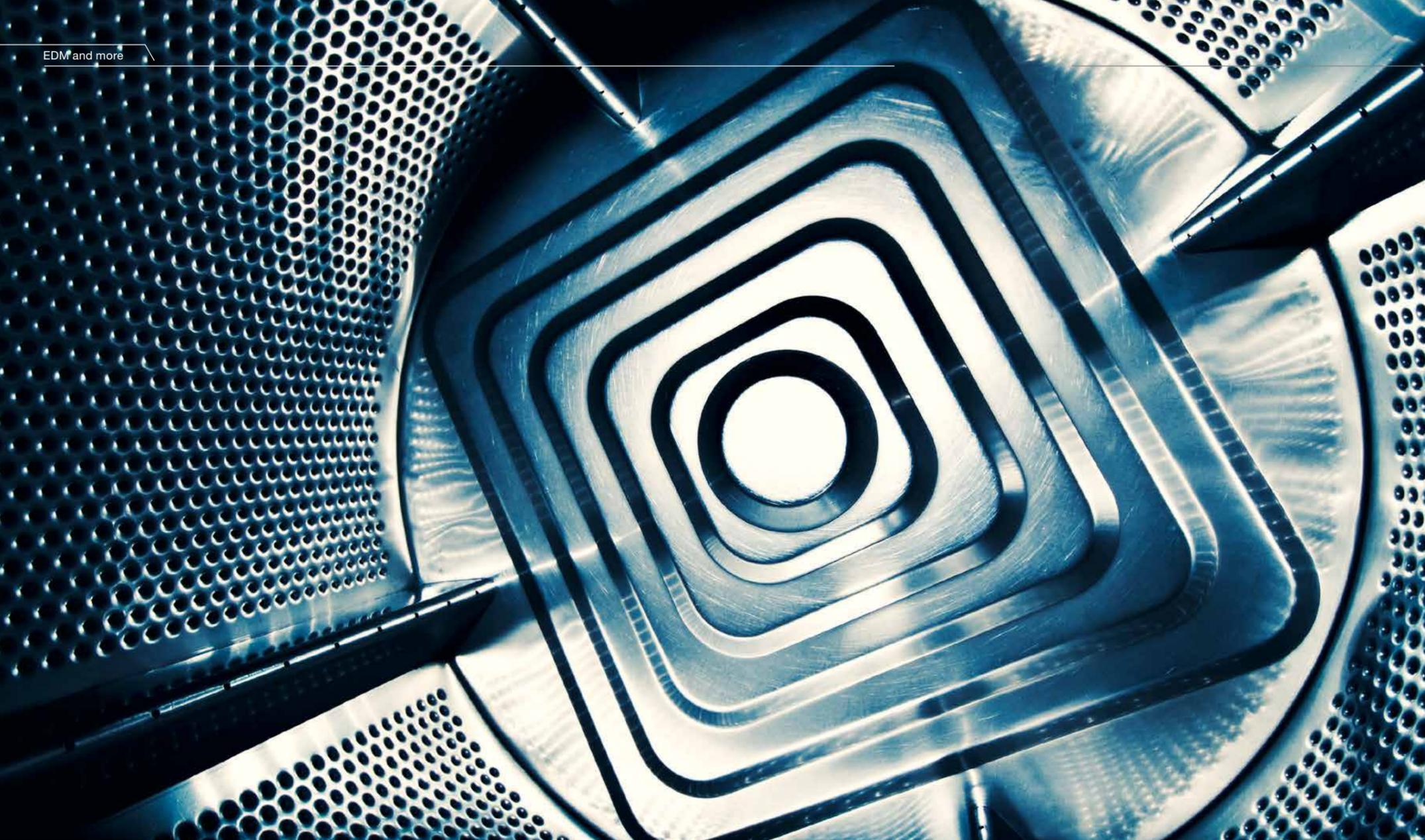
What was your biggest business success?
Alain Colomb: Having the chance to work for Salomon.

What’s your favourite way to relax?
Gilles Heritier and Alain Colomb: In the mountains.

What attributes do you value most in other people?
Gilles Heritier: Honesty.

What failings in others do you find easiest to forgive?
Gilles Heritier: Errare humanum est.

If you were asked what you do by a friend with no technical knowledge, how would you explain your work in a single sentence?
Gilles Heritier: We fabricate objects with electric sparks.



Valuable services

Washing machine doors and drums, coupling hooks, engine covers, stamped circuit boards, belt springs and seatbelt height adjusters, connectors, seat components (guide rails, backrests and seats): these are just some of the SAL's many products. The degree of difficulty involved in their production is moderate to extreme. The company strategy not only focuses on the supply of basic processes where the international competition is at its strongest, but also includes services with high value added because these are capable of giving its customers a competitive edge.

Davide Paolillo, Managing Director of the company in Lombardy, explains: "We're direct suppliers to almost all household appliance manufacturers and component suppliers to the automotive industry. To extend our offering, we have restructured the company over the years. We first established our own internal department for the development and production of the various moulds and tools that are necessary for producing, in cooperation with the customer, finished products and not just simple, stamped parts. After this, we sought cooperation with a specialist in the automation and robotics sector. This means that we can now offer sheet metal products as well as the tools required for this and even the automation of an entire production line. Or all three services combined. We are on the lookout for customers abroad, since little work is generated at home in Italy – the country is not currently attractive for investors. At any rate, in all these years, except business year 2013, we have recorded in some cases strong growth in sales."

To stay buoyant in an increasingly competitive market environment that almost paradoxically seeks the best quality and the lowest price, it is absolutely essential to respond attentively to customer needs. The quality management system of the Lombardian company thus extends to all departments – but not only to these. For external suppliers are also called upon to act consistently in accordance with this outstanding quality standard. "This is the only way we can master challenges at the highest international level. It is our claim to be a genuine, reliable partner that makes its often decisive expertise available to the customer for the development and refinement of its products. Our research covers everything from design to the creation of technology, project and process solutions. Our customers increasingly request the planning of all the required plant, which often encompasses entire production lines. We sometimes set up such a production line on our own site so that production can start without delay before the plant can be installed on the customer's premises."

 SAL S.R.L.

Bright sparks

When accuracy, durability and user-friendliness are demanded from EDM machines, numerous companies turn to Mitsubishi Electric in the certainty of obtaining heavy-duty and reliable machines.

SAL S.r.l. is a company in Besozzo, Italy that produces sheet metal parts for various branches of industry and particularly for the household appliances and automotive industries as well as for electronic equipment, electric motors and furniture components. The company has its own production department containing numerous presses and a shop in which moulds and tools are fabricated. SAL went into business in 1960, the year in which Italy achieved the highest GDP in its history, as SAL itself notes. Household appliances made in Italy were at the time the best-known and biggest-selling in Europe, and elsewhere. Today the situation is entirely different and production has been relocated to countries like Poland, Romania, Turkey and Russia. And it is precisely for these countries that the moulds developed and produced by SAL are destined. Exports account for over 80 % of sales.

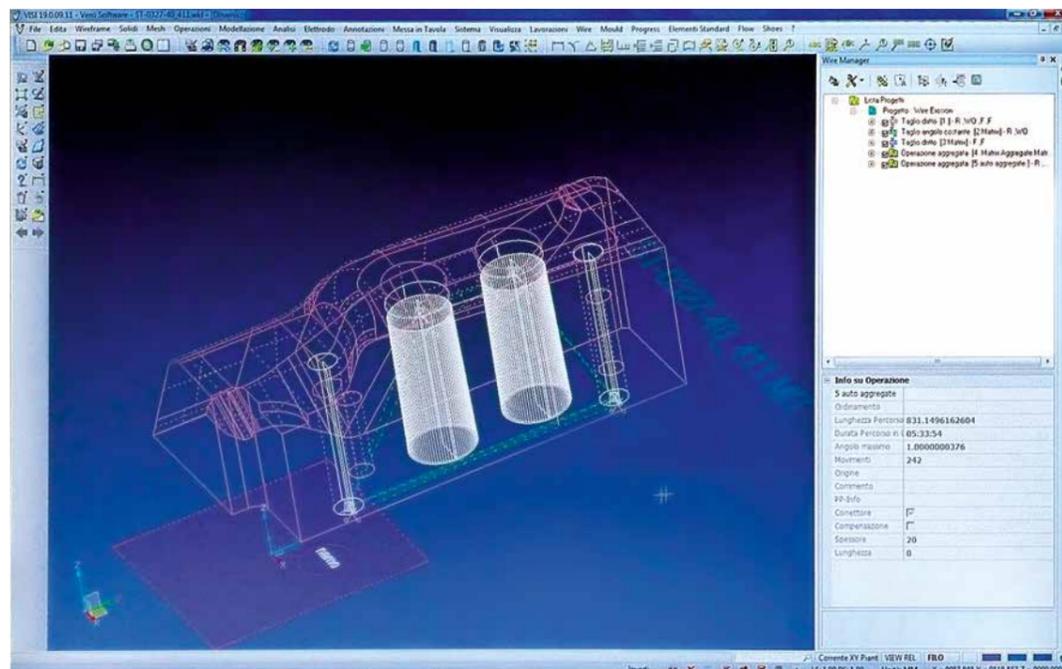
The Italian company also much appreciates the super-finish function that ensures a surface roughness Ra of 0.1.

Start to finish on a single production line

SAL's speciality is the development of follow-on composite tools. To optimise the production process, make better use of resources and technologies, simplify toolmaking and of course cut costs, the company has recently been targeting solutions that automate production as far as possible and eliminate the need for further production steps on other machines. This is the reason why follow-on composite tools are on the advance – complete systems with slides, ejectors and many other jigs and fixtures. The process starts with conventional stamping with follow-on composite tools, by means of which the sheet metal, without leaving the conveyor belt, is machined at a series of stations. Only the final machining stage, such as edging, perforating, beading etc., on the individual

item takes place on transfer lines. The company wants to specialise further in order to integrate this final step as well, creating a complete system in which a coil is fed in at one end and the finished product comes out the other. Automation can often include packaging. In such cases, the operator only has to monitor loading and unloading as well as the trouble-free operation of the machines that run continuously – during the day, at night, at weekends and on public holidays.

The SAL workshop is equipped with an abundance of machine tools of all kinds. One of the most frequently employed technologies is wire-cut EDM with which the various parts of the rams and bolster plates are produced. The company in Lombardy chose Mitsubishi Electric as its supplier for this technology many years back. "We selected this manufacturer and Overmach, its agent for



» The increase in productivity is truly remarkable. «

service and sales in Italy, because the tests that we have carried out with them over the years have all been successful – without exception. Time has shown that our loyalty was well placed because we've never had any problems whatever with this partnership. True to our principle of always using the latest state of technology, we recently installed the latest MV2400R model – a very heavy-duty, high-performance and flexible machine that is ideal for the machining of a huge range of parts. Yet again, all of the machine's pledged properties have been confirmed in our daily work."

EDM at its finest

The busy North Italian company benefits enormously from the automatic wire threader. Although the older-generation machines also had this function, it has been perfected on the MV2400R to such an extent that wire threading is now possible in the full dielectric tank. For SAL this means big savings of time. For the production of such components as washing machine drums, a large num-

ber of holes have to be cut. Thanks to wire threading in the full tank, one hole after the other can now be cut unmanned without the tank having to be emptied and refilled every time. "It's only a few minutes of saved time in each case, but they soon add up to hours. The increase in productivity is truly remarkable. This feature is something we really can't do without any more."

At a given speed, the machine also shows much improved precision compared to the previous version. The Italian company also much appreciates the super-finish function that ensures a surface roughness Ra of 0.1. The more precise and smoother the cut profile, the longer the tool's service life in the press. The lower the angular and surface accuracy, the blunter the edge (lack of sharp angles). This outstanding surface finish has been achieved thanks to better control of constant electrical discharge.

The new MV2400R also features a number of further technological characteristics. The housing made of Meehanite cast iron ensures a long service life and unchanging precision even on heavy

The MV2400R from Mitsubishi Electric in action



The province of Varese in Lombardy, Northern Italy

→ workpieces. The stainless steel tank displays superlative resistance to dielectric- and sludge-induced degradation. The linear technology makes use of the tubular shaft motors in which a high-performance, 360° magnetic field reduces energy consumption while the special configuration permits precise axis movements without backlash. The non-contact force transmission facilitates stable and accurate axis movements. The motors are situated precisely in the centre of the moving weight, thus permitting extra-smooth axis movement, while the position of the optoelectronic linear scale close to the work space ensures precision in all operating states.

The machine control is entirely digital. The Optical Drive System (ODS) uses optical waveguides for communication between the control unit, servo booster and motors for even higher precision. In short, this means higher productivity with the simplest handling. All of the features combined contribute positively

to energy savings and reductions in running costs. The running costs are much lower than those of conventional machines, from the electricity bill and wire consumption to – thanks to the automatic control of filtration – filter consumption.

A final word

Davide Paolillo sums up: “We’ve benefited from the innovations, which was why we bought the new machine. The other wire cutting machine from Mitsubishi Electric in our shop is the FA20S Advance that still performs flawlessly and is still highly efficient. We rarely have a need for die sinking. But in these cases as well, which call for precision and reliability, we trust in Mitsubishi Electric because our preferred supplier stocks machines from the Japanese manufacturer – even if it is not just around the corner.”

There are also no complaints with the technical service from Overmach.

“Most of the assignments were for other equipment. We’ve never had any problems with the wire cutting machines. Nevertheless, we’ve found the customer service to be excellent. We believe Overmach is one of the best providers of machines and service in machine manufacture.”

www.sal-italy.com

www.sal-italy.com

Name and place of company:
SAL S.r.l., Besozzo Varese, Italy

Founding year:
1960

Managing director:
Davide Paolillo

Core business:
Machine manufacture and plant engineering

SAL S.r.l.
Via Trieste, 81
21023 Besozzo Varese
Italy

Tel +39.0332.77761
Fax +39.0332.7776111

info@sal-italy.com



Not only tools

SAL also designs and produces finished products like mini-ovens and pasta cookers. In addition, the company has developed, marketed and patented an invention of its own called Ecodiger. This appliance is used for the disposal of residual waste (inclusive of biodegradable substances) in large undertakings (canteens, hospitals, restaurants etc.). It works on the electromechanical principle: “We developed the entire process ourselves, drawing our inspiration from nature but accelerating the process enormously mechanically and chemically (patented process). The compost resembling coffee grounds takes just a few hours compared to the several months in nature.”

SAL developed and produced this appliance without any outside support. “Many other countries would have funded such a project. Even the United States would have supported it because it qualifies as an ecological and innovative project. In Italy, on the other hand, there was not yet any appreciation of the project’s importance.”

User horoscope



♌ Leo (23.07.–23.08.)

EDM machining is not for every Leo. But once the King of the Jungle has been won over, nothing can tear him away from it. At present you claim the lion's share for yourself with your good manners and easy-going nature. But acting like a diva doesn't go down well with your workmates. Make a few more compliments instead and one or other of your mates will reveal himself to be a true friend.



♍ Virgo (24.08.–23.09.)

Make use of your impulsiveness and that of Pluto and Mars. With Mars behind you, you can now discard all the reject parts from your life. How about a short break or a wellness weekend? This will not only recharge your batteries, but will also revitalise your grey cells so you can concentrate better on your workpiece.



♎ Libra (24.09.–23.10.)

In the sign of Libra you can currently find Saturn a stone's throw below Mars. This brings you strength and energy as well as new challenges. Is promotion in the offing? Or is a new wire cutting machine on its way? Be ready, because even a balanced Libra can go lopsided sometimes. So treat yourself to a relaxing break every now and then and be sure to unwind when you finish your work.



♏ Scorpio (24.10.–22.11.)

You don't do things by halves. And certainly not as far as electrical discharge is concerned. Currently under the influence of belligerent Mars, you can be pretty poisonous from time to time. Try a little gentle precision and calm composure instead. This will delight your boss who will reward you for your industry. An unexpected opportunity may be coming your way.



♐ Sagittarius (23.11.–21.12.)

The Moon in the sign of Sagittarius ups your productivity. Your workpieces are a class apart. You're also unbeatable at wire threading – but not as deft in your dealings with people. Restrain yourself and get a bit more exercise. This burns off unhealthy excess energy and restores your concentration at the laser.



♑ Capricorn (22.12.–20.01.)

Don't just work, think! Best of all, about what makes you happy. Under the sway of Uranus, you examine your image and find out which of your features deserves recognition.

A pighead that shatters rock and masters the arc is called to higher things. Look for a challenge and move with the vibes of alternating current.



♒ Aquarius (21.01.–20.02.)

You're still full of drive. This may be due not only to getting plenty of sun, but also to working hard at your EDM machine. A live wire like you is always popular at company parties and with your workmates. But give your home life sufficient attention. A healthy work-life balance will sustain your energy levels.



♓ Pisces (21.02.–20.03.)

Pluto brings a breath of fresh air. Perhaps you can now uncover a

long-concealed truth. You're already aware that an EDM machine is not just any machine tool.

But filling the gap between the tool and the workpiece calls for more than "just" technical proficiency. Don't let anyone tell you otherwise!



♈ Aries (21.03.–20.04.)

The Sun now moves into the sign of Aries. And this gives you a new burst of vitality.

You're bubbling over with ideas. How about a new laser cutting system? You certainly know how to handle it. But always keep to your breaks – you don't want to burn out.



♉ Taurus (21.04.–20.05.)

Venus is currently responsible for plenty of sensuality and socialising in the sign of Taurus. Even though you as a skilled communicator always have friends thronging around you, things can get even better. But caution is advised! Too many sparks can cause a fire. So don't take risks with wire EDM and wear goggles when laser cutting. A surprise may await you at the end of the month. A new romance?



♊ Gemini (21.05.–21.06.)

Jupiter is currently in the sign of Gemini. You can now stop your enemies dead in their tracks and amaze them. Not only with your incredible laser cutting abilities, but also in your treatment of the workpiece.

Make use of the power of Jupiter outside work as well and broaden your horizons. How about yoga, meditation or Tai Chi?



This month's horoscope

CANCER

(22.06.–22.07)



The Moon as your ally restores sufficient peace and security to your life. With brief visits from the Sun and Venus, you can well and truly relax. But you should still maintain your concentration. And don't skimp on cleaning either. Thoroughness has helped many an EDM machinist to keep his gear in perfect shape.



- ♈ Luck at work
- ♌ Good day for making money
- ♍ Good day for ventures of all kinds
- ♎ Extra-lucky days in the respective categories