MITSUBISHI ELECTRIC

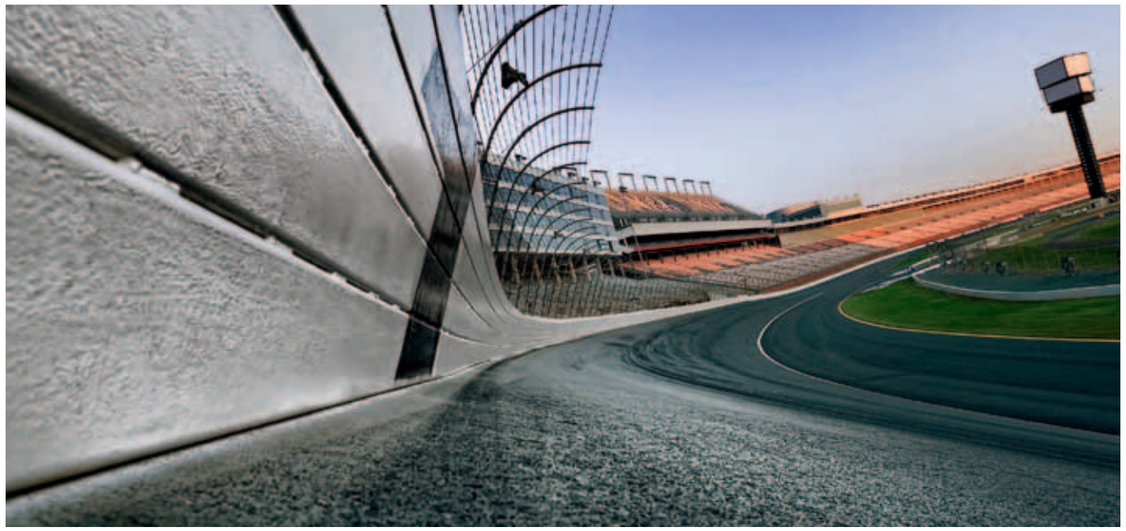
The smart magazine for users

Profile

Issue 01 · October 2012

Pssst! New machines are on their way as of September!

Contents



HANS-JÜRGEN PELZERS

Editorial

Gaining an edge with Mitsubishi

What do manufacturers Metabo (power tools), Arri (cameras and spotlights for Hollywood), Wenger (Swiss army knives) and Vorwerk (household appliances) have in common? Well, they all demand extreme precision and dependable erosion machines. And this is precisely the reason why more and more international brands are turning to products from Mitsubishi Electric. By producing its own CNC controls and using internally developed and manufactured generators and many other components from its own sites, it's able to gain an edge over the competition in vying for customers. And companies like Tek-Moulds Precision Engineering in Malta, a highly valued supplier to Playmobil, benefit from this edge.

So that you, too, can build on your competitive edge, the 117,314-strong team of the Mitsubishi Electric Group is right behind you. The result is outstanding machines that exploit their full performance potential thanks to assistance from our efficient and friendly after-sales service on your site.

Which brings me to a couple of questions I'd like to ask. Is there any other way we can support you? How can we help you to improve your competitive edge still further? Send us your ideas and suggestions to: edm.sales@meg.mee.com!

Best regards from Ratingen

Hans-Jürgen Pelzers
Distribution Manager Europe

Legal notice

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Newsflash

On the way up **for the 100,000th time**

Mitsubishi Elevator Asia Co. Ltd., the maker of lifts and escalators in Thailand, has passed a historic milestone by building its 100,000th lift/escalator system. The company builds lifts and escalators and sells them in 80 countries worldwide and occupies a leading position in Mitsubishi Electric's global production set-up.

New projectors from Mitsubishi replace interactive panels, even in the smallest rooms

Greater freedom for teachers, lecturers and speakers: with an interactive pen with a huge range of functions, you can replace an entire interactive board. These pens not only work like a remote control or a conventional computer mouse, but they can also, and more importantly, be used for drawing and writing on the projection surface.

MITSUBISHI ELECTRIC meets CNC Arena

Members' Meeting **on 28th September 2012 at Mitsubishi Electric Germany**

The CNC Arena Members' Meeting took place in the Rhineland in 2012. Mitsubishi Electric warmly invited the members to Düsseldorf and Ratingen to take a look behind the scenes at Mitsubishi Electric for a whole day and experience the world of innovative products at first hand. The day was closed with a trip on the Rhine.

Sustainable heating in the home

Progress in heat pump technology makes it possible to tap naturally available ambient energy and use it for heating one's own four walls. Mitsubishi Electric's Ecodan technology has been included in the Sustainia100 list, as announced at the Rio+20 summit in Brazil.

EDM and more

ProKASRO specialises in customer-driven solutions for sewer rehabilitation and has opted for maximum manufacturing depth – with the aid of wire erosion.

Advanced robots in operation below ground

PROKASRO MECHATRONIK

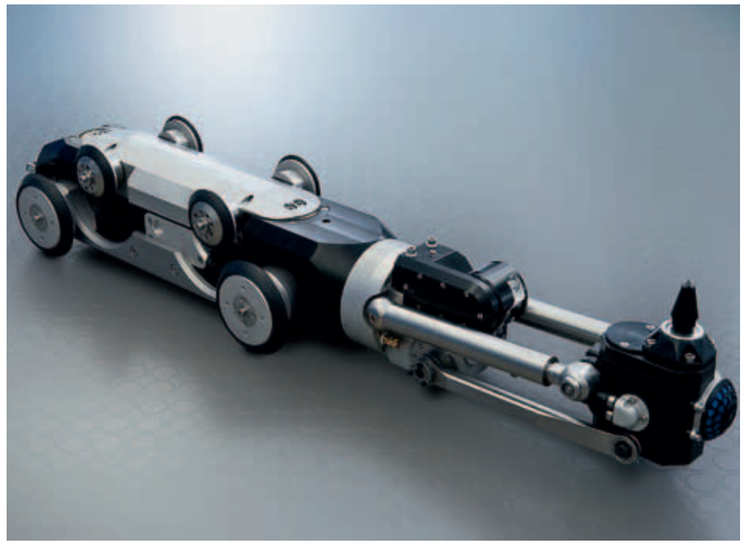
Intact sewer systems are an important aspect of urban infrastructure. The quality of drinking water, for instance, depends among other things on the exclusion of extraneous substances from water mains. Equally important is that waste water is not allowed to seep into the ground. It is in this context that the regular control and rehabilitation of sewers are so essential. ProKASRO, the German abbreviation for “progressive sewer rehabilitation robotics”, develops tailor-made solutions for precisely such tasks. “With the aid of our advanced products, many sewers can be restored to an excellent condition, and this is much simpler and less expensive than laying new pipes,” says Uwe Reinhardt, Managing Director of ProKASRO, explaining the advantages of sewer rehabilitation. The company thus safeguards underground supply systems and upholds ecological, hygiene and technical standards, he claims.

In August 2000, ProKASRO Mechatronik GmbH based in Karlsruhe took over from D.T.I. GmbH, a company that had embarked on the development and production of sewer milling robots back in 1989. Since takeover, ProKASRO has evolved into a full-range supplier in the sewer rehabilitation sector, equipping customers all over the world with its technology. Its product range covers innovative products for sewer rehabilitation, UV liner systems and camera inspection units. As a complete supplier, ProKASRO also operates an integrated production system with every conceivable form of machining. The most recent investment here was in the wire EDM sector. Production has been benefiting from an FA20-S Advance from Mitsubishi Electric since 2011.

The FA20-S Advance has markedly improved our wire erosion work.

Left Wire erosion permits superfine cuts and high precision so that even the tiniest grooves of the required quality can be machined into the workpiece.

Right After wire erosion the gearwheel fits tightly into its counterpart.



Sewer rehabilitation robots are versatile. This one is equipped with a camera and a milling device.

Rolf Dettinger (left), head of production, and **Sven Beuchle**, his deputy, appreciate the advantages of the FA20-S Advance: "It operates reliably and swiftly, and our flexibility benefits from this."

market position. The product range extends from fully equipped vehicles enabling the customer to work independently for several days through to small, mobile robot solutions that have their justification in a city like Strasbourg, as Reinhardt explains: "A large truck simply wouldn't make it through the narrow streets." For its various projects, ProKASRO can count fully on the experience and skills of its over 100 employees. "Our spectrum of activities covers everything from development through to product delivery," says the Managing Director, describing the company's work. Depending on the complexity and size of the order, delivery within eight weeks is possible.

This customer-driven approach is part of ProKASRO's company philosophy. This is not least because the company has built up an extremely high manufacturing depth over the years. "Farming out our work makes little sense, because we would at best commission small series – for jobbers, this isn't very attractive, so they're often unable to react flexibly enough," says Reinhardt. A multi-faceted assortment of technologies on a single site has huge advantages in this respect. Today, ProKASRO produces practically everything itself, from the robots and cameras to the gear fitted in the vehicles. The very few products bought-in are largely confined to CCD chips for the cameras and the vehicles proper. The technologies mastered by ProKASRO extend from conventional machining to die sinking and wire EDM.

→ ProKASRO's equipment comprises sewer robots and UV liner systems whose basic components are mutually compatible and combinable. This means that they can be used in all conceivable sewer systems with nominal widths of DN 100 to DN 1000 in circular or ovoid profiles. The tasks that sewer robots are capable of performing are manifold. They can mill, grind, fill, position balloons and install top hat profiles and liners for house connections, to mention but a few of the tool functions. In addition, UV liner systems and camera inspection units permit applications ranging from inspection and cleaning to milling work and pipe union rehabilitation.

Since its founding 12 years ago, ProKASRO has become established as the sole full-range supplier in sewer robotics and thus conquered a leading

Reliable wire erosion boosts flexibility

In the wire erosion sector, ProKASRO took a big step forward in 2011, when an old machine was replaced by a modern model from Mitsubishi Electric. "We're known for our innovative products and therefore also attach importance to progressive production techniques," says Reinhardt, explaining the purchase. Mitsubishi Electric's offer was impressive not least for its excellent price/performance ratio. "The FA20-S Advance has markedly improved our wire erosion work."

The FA20-S Advance from Mitsubishi Electric has been in operation in production at ProKASRO since 2011.

The reasons for the investment in a new wire EDM machine were manifold. Along with extending the companies technological possibilities, the emphasis was on reliability, productivity and user comfort. On the subject of reliability and user comfort, Production Manager Rolf Dettinger highlights the machine's dependable wire handling. "Automatic wire threading greatly simplifies everyday operations." Wire breakages have been banished to the past since the FA20-S Advance has been in operation. Productivity has also gone up, a fact attributable to the machine's powerful generator. "Performance can be adapted to increasing cutting heights so that cutting rate stays at the same high level," Dettinger adds. ProKASRO benefits from the productivity of the FA20-S Advance not least in terms of flexibility. "We can now handle single parts and small series at very short notice. For larger production volumes, we run the FA20-S Advance unmanned overnight," says Dettinger explaining how production is organised. If required, special jigs are built so that unconventional workpieces can be efficiently machined. The control of the FA20-S Advance has also proven to be a boon to Dettinger and his colleagues: "The Windows-based software and a user-friendly touchscreen are ideal because anyone can then quickly learn how to operate the machine." CAM programming is performed centrally in advance at PC workstation.

» Automatic wire threading greatly simplifies everyday operations. «

www.prokasro.de

www.prokasro.de

Name and place of company:
ProKASRO Mechatronik GmbH,
Karlsruhe, Germany

Founding year:
2000

Management:
Markus Lämmerhirt, Uwe Reinhardt

Number of employees:
Over 100

Core business:
Sewer rehabilitation

ProKASRO also handles the complete fitting of vehicles for sewer rehabilitation. The solutions here depend entirely on the customer's needs.

Sewer rehabilitation as business with a future

Business at ProKASRO has grown consistently. From the original 30 employees, the workforce has since grown to over 100. Engineers develop the complex equipment for sewer rehabilitation, and in production and assembly these plans are implemented to a high standard of quality to ensure customer satisfaction.

ProKASRO trains its own junior staff so that it has the capacity to cope with future business growth. Reinhardt views the future with optimism. "Progressive and innovative solutions for sewer rehabilitation are becoming increasingly important – after all, there are plenty of sewer systems in our cities that need regular maintenance."

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STEINKAMP MASCHINENBAU

High-wire **artist**

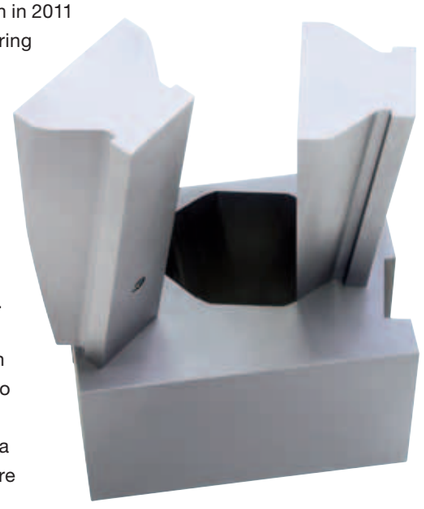
By switching to a custom wire EDM system from Mitsubishi Electric, Steinkamp Maschinenbau, maker of tools, moulds and special-purpose machines, is now a true "high-wire artist".

The modern approach of Steinkamp Maschinenbau GmbH & Co. KG, Espelkamp, Germany, is expressed by the façade of the company building. On entering the building, the visitor is introduced to the company's products, exhibited in a glass cabinet together with awards. In the office of Managing Director Lars Steinkamp, the latest issues of *Profile*, the Mitsubishi Electric customer magazine, area laid out on the table. However, Steinkamp doesn't regard this as a sign of his definitive commitment to his new supplier, as he's only been using his FA20-S Advance V wire EDM system since January 2012. "It's early days yet for a conclusive verdict. The machine hasn't been running for long enough. What's more, the machine operator still hasn't completed his training." However, Steinkamp reckons he's moving in the right direction. "If the wire-cutting machine does everything that we expect of it and what it has shown so far, I can well imagine purchasing all future wire EDM machines from Mitsubishi Electric."

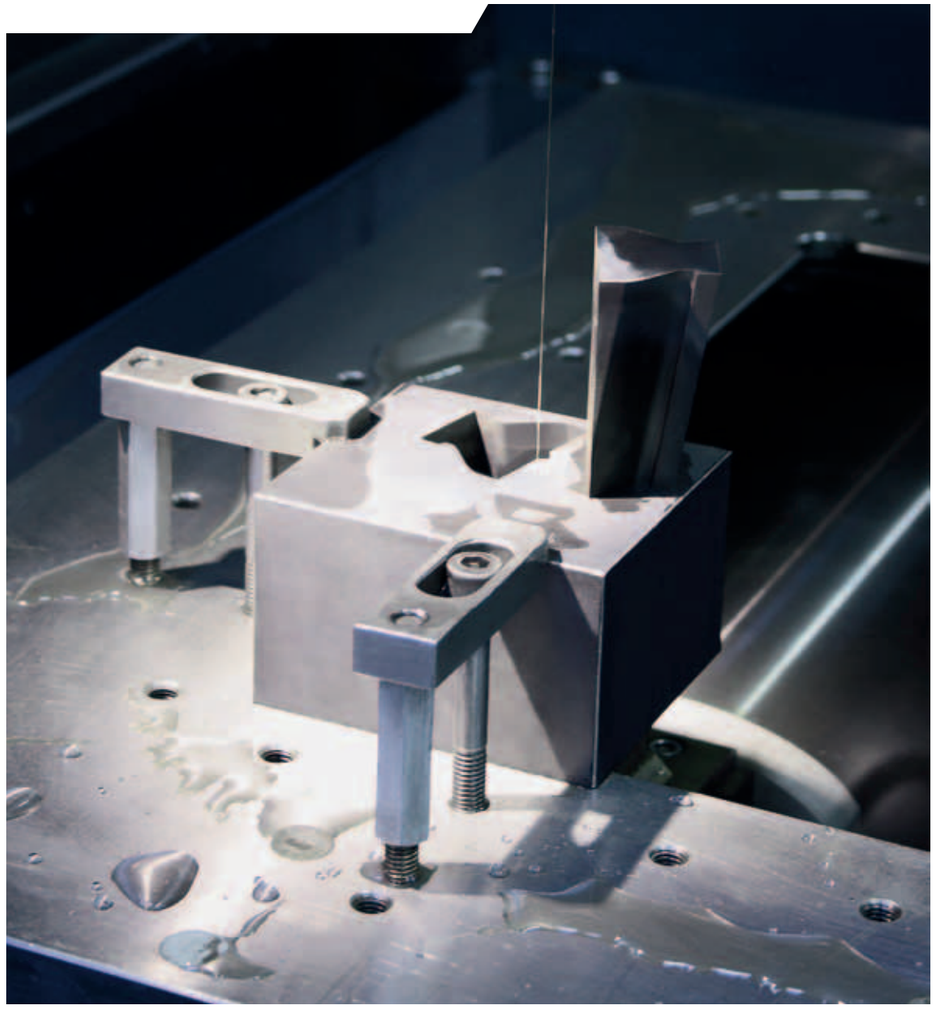
The family business was founded by Ingolf Steinkamp, father of today's managing director, as a tool- and mouldmaking firm in Espelkamp in 1970. The firm with 110 employees now ranks among one of the key suppliers to the automotive industry. Word has even spread as far as the USA, where the company opened a branch in Erlanger, Kentucky, in 1999. Lars Steinkamp gives his reasons for the company's success. "I attach great importance to good personal relations and, in our workforce consisting almost entirely of skilled staff, I encourage initiative." This is no mere lip service, for he invites his team every now and then to joint celebrations and thus encourages identification with the company.

This component destined for a mould is one of the first components machined by Steinkamp on the **FA20-S Advance V.**

This sense of belonging pays off. Sales of EUR 10.5 million in 2011 and orders in hand ensuring work for the next two and a half months are the proof. In addition to the German and American markets, Steinkamp has also achieved success in the UK, France, Italy and the Czech Republic. Business is booming in the USA, and production in Espelkamp is having to fabricate moulds for the American subsidiary for a transitional period. "We're



Steinkamp doesn't want to miss out on unobstructed access to the work area or to water bath technology.



→ excellently equipped, have a huge machine park offering every conceivable technique, and are therefore hard to beat in terms of quality and deadline compliance," Steinkamp stresses. "Our strategy results in slightly higher prices, but it also boosts customer satisfaction. And that's precisely what we mean by service."

» The Mitsubishi system achieves much higher parallelism and precision than our older wire EDM machines. «

The company certified to DIN EN ISO 9001 since 1997 focuses on the production of equipment for the automotive supply industry and mainly for rubber-metal injection and blow moulding. Steinkamp also produces entire special machines, which it also designs, builds, furnishes with CE markings and supports with service. These are joined by prototype construction and injection mouldmaking.

Delighted with the quality of the machine

In its job shop and prototype production, the company uses milling, turning, grinding, sinker and wire EDM machines. Lars Steinkamp goes to the Mitsubishi Electric wire EDM machine, whose Advance CNC control has a complex range of functions. "This is by far our youngest and most advanced wire-cutting machine – all the others are anything up to 25 years old."

The components that Steinkamp wire-cuts are mainly components for injection and foam moulds. His customers more rarely order prototype components. The material is 95 per cent hardened and unhardened steel and small quantities of aluminium. The sizes are as much as 500 x 200 x 30 millimetres. Depending on the size and number of penetrations, the operator quotes machining times ranging from 25 minutes to 30 hours.

Heinrich Wiebe, in charge of EDM, shows us a component produced on the FA20-S Advance V. "I'm delighted with the quality. The Mitsubishi system achieves much higher parallelism and precision than our older wire EDM machines. With a wire diameter of 0.25 millimetres, we achieve surface quality to within 0.2 micrometres. Once we've learnt the ropes, we also expect much higher output from the new machine than from the old ones."

The V package of the FA20-S Advance V operated in single shifts includes a high-performance generator that makes erosion rates of up to 500 square millimetres per minute possible. The high-speed XXL EDM system is a custom, "high-wire" version in this case. "Our machine has a cutting height of 420 millimetres and thus a suitably high flushing tank." Wiebe lowers the door of the fluid tank. "We don't want to miss out on unobstructed access to the work area – or water bath technology. Among our old machines, there's even one with coaxial flushing." Wiebe also draws attention to the auto-threading system that takes only ten seconds for the task; and to the 20 kilo wire station that has been installed in addition to the 10 kilo station supplied automatically with the machine.

At the machine terminal, Vitalij Marx, operator of the FA20-S Advance V, calls up the 3D drawing of the component due next for machining. For Steinkamp, the CAD drawing illustrates the complexity of certain parts. "To obtain the necessary EDM skills, you need to train as a fine mechanic or tool-

Right At the machine terminal, Vitalij Marx, operator of the FA20-S Advance V, calls up the 3D drawing of the component due next for machining.

Left The FA20-S Advance V used by Steinkamp is a custom, "high-wire" version with a cutting height of 420 millimetres and a suitably high flushing tank.

Sales of EUR 10.5 million in 2011 and orders in hand ensuring work for the next two and a half months.

→ maker. Because in mouldmaking you have to understand, among other things, the interplay of the finished components.” It is therefore essential that the company’s staff have a thorough grasp. The customer supplies them with a 3D model, which they process in the CAM system for EDM machining.

Positive experience

Steinkamp’s interest in wire erosion systems from Mitsubishi Electric was awakened by a neighbouring company that uses a machine from this manufacturer and was highly satisfied with it. The neighbour’s appreciation fell on fertile soil, and all the more so as Steinkamp was disappointed by his old supplier. When he then saw the FA20-S Advance V at a trade fair, he bought it straight off, encouraged by a trade fair discount. What’s more, the FA20-S Advance V was immediately available and therefore ready for use after only a month.

Despite the brevity of business relations so far, Steinkamp can already look back on positive experience with Mitsubishi Electric. “The technician that installed the machine had all the requisite technical knowledge, including that of the control equipment. This is by no means usual. And he performed all his tasks efficiently.”

www.stkm.de

1970
Family company founded by Ingolf Steinkamp

1997
DIN EN ISO 9001 certification

1999
Branch established in Erlanger, Kentucky, USA

2011
EUR 10.5 million sales

2012
110 employees and a high volume of orders

2017
A glance into the future: achieving higher output with fewer man hours

www.stkm.de

Name and place of company:
Steinkamp Maschinenbau GmbH & Co. KG, Espelkamp, Germany

Founding year:
1970

Managing Director:
Lars Steinkamp

Number of employees:
110

Core business:
Toolmaking, mouldmaking, special machine manufacture

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Germany

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Professionals in Profile:
Lars Steinkamp

Please describe in a sentence what Steinkamp Maschinenbau GmbH & Co. KG does.
With our expertise, we serve as the extended work bench for our customers.

How did you earn your first money?
With a holiday job in my parents’ business.

What motivates you?
Most of all, what can be achieved by using high-grade machines. For this reason and to achieve high customer satisfaction, I provide my staff with a modern machine park, the latest software and hence the best working conditions.

What’s different about how you do things now, compared to five years ago?
We’ve gone in for automation and automated procedures in a big way and thus shortened set-up time considerably.

Where do you see your company in five years’ time?
I hope that we can continue to stabilise our position on the market and will be in an even better position than today. I’d like to achieve higher output with fewer man hours.

What was your biggest business success?
Surviving 2009 and making a strong recovery.

What’s your favourite way to relax?
Spending a quiet evening after work.

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

How would you briefly describe your work to someone with no technical knowledge?
We get metal into shape with wire EDM, milling and turning.

EDM and more

KUNSTSTOFF-ZENTRUM IN LEIPZIG

Material of **the future**

The Plastics Centre in Leipzig makes its mark in research with its expertise, creativity and a wide range of technologies.

Compared to an old machine, die-sinking with the new machine offers the staff of the Plastics Centre entirely new opportunities.

With over 50 years' experience of plastics technology, Kunststoff-Zentrum in Leipzig gGmbH (Plastics Centre) develops innovative processing solutions for this widely used material. The success of its research projects with companies from industry is made possible by its scientific knowledge and technical skills. Technologically, the Plastics Centre is excellently equipped with hypermodern laboratories and a high manufacturing depth in all areas. The tooling department has been recently supplemented with a die-sinking EDM machine from Mitsubishi Electric as an extension to its range of machining methods.

"Plastics can be found in all areas of modern life. Today, they enjoy the status of high-tech materials whose development and processing are spurred on by innovation," says Jörg Michaelis, explaining what his work is all about. As the head of Tooling and Joining Techniques, he is responsible at the Plastics Centre in Leipzig for research projects that bring forth just such innovation. "In this context, we see ourselves as problem-solvers for industry." The Plastics Centre works on solutions facilitating the cost-effective realisation of new applications in plastics processing.

The Plastics Centre is broken down into four departments. Along with the areas that Michaelis is responsible for, Tooling and Joining Techniques, there are Processing and Testing. 40 scientific and 20 technical employees work hand in glove in meeting the needs of clients from industry. "We go in for research cooperation and work very closely with the companies that come to us for advice," says Michaelis, outlining the Plastics Centre philosophy. He also stresses the win-win situation for everyone concerned: "In these projects, we have the very latest technologies and laboratories at our disposal so that we can perform all of our tasks flexibly and without outside assistance." Along with funding from the German Ministries of Industry & Technology and Education & Research and Saxony's Reconstruction Bank (SAB), the projects, he claims, are a cornerstone of the non-profit organisation's business success. "60 per cent of our costs are covered by the ministries and the SAB, and the rest comes from projects from industry and from training courses," says Michaelis, explaining how the Plastics Centre obtains its income.

The customers of the Plastics Centre also benefit from the wealth of experience gradually accumulated since its founding in 1960. After reunification, the then "Central Laboratory for Plastics Processing" ventured into the

Jörg Michaelis and **Reiner Kluge** (right), Workshop Manager, appreciate the flexibility of the EA12-V Advance.

shot weights of less than 200 mg are injected for the production of micro-parts, conventional machines with a screw-type plunger run up against their limits," Michaelis explains. For this purpose, the Plastics Centre has developed a micro-injection moulding machine with plunger premelting and plunger injection. The engineer refers in this connection to the importance of the centre's clients: "As researchers, we're not a in a position to establish new products on the market because we lack the necessary service structures, among other things." In this particular case, a company called Desma Tec markets the machine under the name of 'formica Plast'.

Tooling – essential for plastics processing

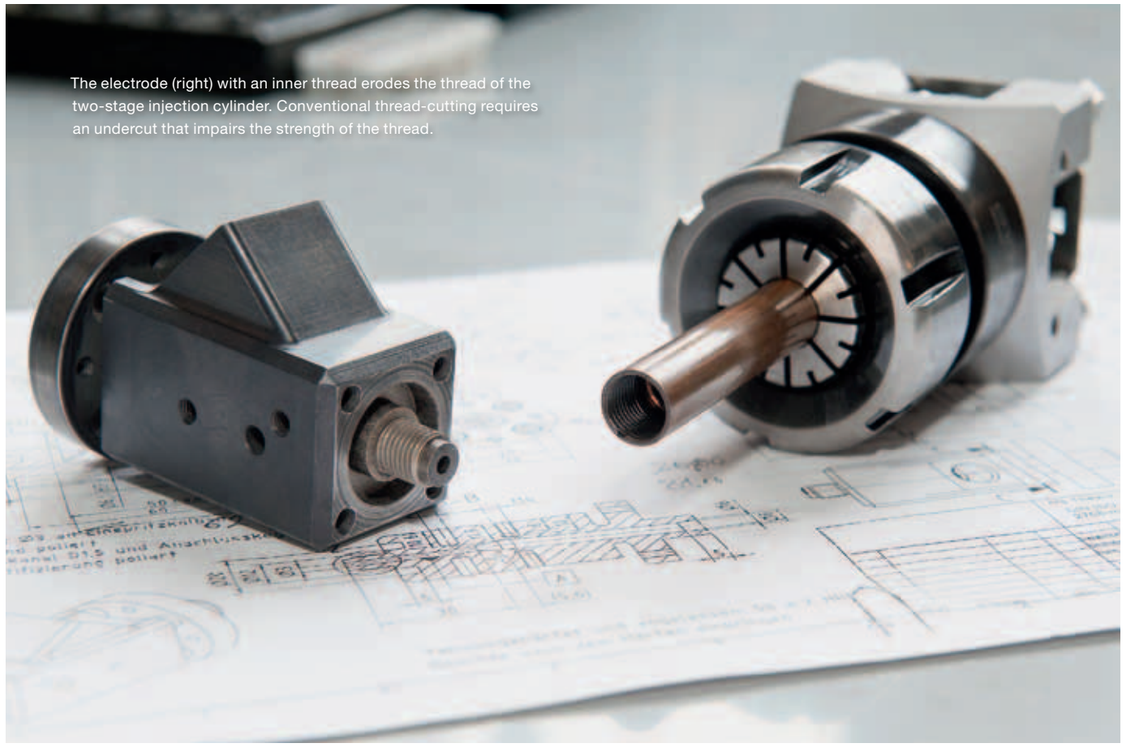
To efficiently handle 25 to 30 research projects per year, a high degree of flexibility is called for. And this is one good reason why the Plastics Centre aims for a high manufacturing depth in all areas. "It is simpler for us to handle complex tasks ourselves than to farm out work of this kind to subcontractors who don't have the same in-depth knowledge of the project as we do," says Michaelis, explaining this policy. A toolmaker by training, he turns to the centre's own toolmaking activities: "Even if we don't earn money directly with this department, it is still an essential means to an end." Along with milling and turning machines, the machine park has also been home to a die-sinking EDM machine from Mitsubishi Electric since 2010. In the metalworking sector, the new machine offers the Plastics Centre "entirely new possibilities", as Michaelis puts it, compared to an older machine.

The EA12-V Advance was ultimately chosen for a number of different reasons, Michaelis recalls: "It was the combination of good advice given to us by the distributor R+H Erodier-Technik and the technical features of the sinker EDM machine." In the end, the machine's excellent price/performance ratio tipped the scales in its favour. The compact model from Mitsubishi Electric is the perfect addition to the Plastic Centre's tooling department and offers a huge diversity of machining options. While the electrodes and workpieces for micro-injection moulding are relatively small, the EA12-V Advance is also capable of processing larger parts weighing up to 700 kilos. The machining range on the X, Y and Z axes is sufficiently large at 400 x 300 x 300 mm. The maximum electrode weight is 50 kg.

More important than the component dimensions for the Plastics Centre are the demanded complexity and precision. "The precision of the workpieces can be measured in thousandths, and the complexity is very high as a rule," says Michaelis. The EA12-V Advance comfortably satisfies these requirements and is impressively reliable in its operation:

→ uncharted territory of the free market economy, says Michaelis looking back. "So that we could operate as a non-profit 'GmbH', we needed a supporting body." This when they managed to attract such big names as Arburg GmbH & Co. KG and Bayer MaterialScience AG. The supporting body today has 84 members. Over the years, the focuses of the Plastics Centre's work have gradually taken definite shape. "Our core competences are polyurethane processing, joining techniques and particularly ultrasonic welding, and injection moulding with a focus on micro-injection moulding."

Micro-injection moulding is a good example of the Plastics Centre's engineering expertise. In this process, tiny parts in the milligram range are produced. Fine structures measuring micrometres are generated in this process. "When



The electrode (right) with an inner thread erodes the thread of the two-stage injection cylinder. Conventional thread-cutting requires an undercut that impairs the strength of the thread.

The plastics parts produced in the micro-injection moulding machine weigh only a few milligrams, yet their complexity is exceptionally high.

Installed in the micro-injection moulding machine, a machine nozzle is mounted on the thread of the two-stage injection cylinder.

» Workpiece precision can be measured in thousandths, and the complexity is very high as a rule. «

Innovation – the driving force behind research

→ “Even if we don’t have to achieve the same rate of productivity as job shops, the machine’s process security nevertheless enables us to stay sufficiently flexible.” The hotline is a big help if required, he says, and Michaelis views the future with confidence. He’s equally optimistic about the machine’s operating comfort: “The user-friendly control and touchscreen enable staff to familiarise themselves quickly.” This is an important factor, as Michaelis would like to have two operators available for each technology.

There are plans to expand the various technologies at the Plastics Centre. After the encouraging experience with Mitsubishi Electric, Michaelis is now also considering branching out into wire EDM: “With this process, we would again have an extra range of options for our tasks – tasks that at present are either impossible or can only be mastered in a roundabout way.” Research at the Plastics Centre in the quest for practical solutions means solving problems with creativity and passion. “In those areas where we really excel, we want to stay ahead with intelligent solutions. After all, innovation is our motivation and that’s how things should stay.”

www.kuz-leipzig.de

www.kuz-leipzig.de

Name and place of company:
Kunststoff-Zentrum in Leipzig gGmbH, Germany

Founding year:
1960

Managing Director:
Dr. Peter Bloss

Number of employees:
60

Core business:
Research and development in plastics technology with focuses on polyurethane processing, joining techniques and micro-injection moulding

Kunststoff-Zentrum in Leipzig gGmbH
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Professionals in Profile:
Jörg Michaelis

Please describe in a sentence what Kunststoff-Zentrum in Leipzig gGmbH does.
We do research and development in the field of plastics technology.

How did you earn your first money?
As a toolmaker.

What motivates you?
The fact that we’re given interesting and diversified tasks and solve problems for our clients.

What’s different about how you do things now, compared to five years ago?
Not much. It’s still important for me to have a good team around me.

Where do you see your company in five years’ time?
We want to continue concentrating on our core competences: injection moulding with the focus on micro-injection moulding, polyurethane processing and joining techniques.

What was your biggest business success?
Firstly, before I joined the company, the Plastics Centre in Leipzig successfully survived the period after German reunification; and secondly, we have achieved a stable position on the market with good staff and a number of patents.

What attributes do you value most in other people?
Honesty, the ability to work in a team, and helpfulness.

What was the best advice you’ve ever been given?
One must never get into a panic, but deal with a problem calmly and with composure. Also, one should always be able to stand by one’s decisions.

How would you briefly describe your work to someone with no technical knowledge?
We deal with plastics parts, ranging from Lego bricks to hearing aids.

Compared to the old system, the FA20-S Advance takes only ten seconds to thread the wire, which makes it 90 per cent faster.

BERKER

Quality control for ideas

What's feasible and what isn't? At the test laboratory of Berker, a manufacturer of high-grade electrical installation equipment, new ideas are constantly being tested.

But, if it's all about quality metals, plastics and glass, what's a cowhide doing here? Does this unusual material have anything to do with wire EDM? Andreas Krause, in charge of test lab CAD-CAM at Berker GmbH & Co. KG, Schalksmühle, Germany, smiles. "Indirectly it does. The die for the punch press we've cut the cowhide on was produced on our FA20-S Advance from Mitsubishi Electric." The outcome lying on the table is a cover strip for plug sockets. The product, which also has an interesting feel, is an exhibit specially designed for the next Berker fair stand.

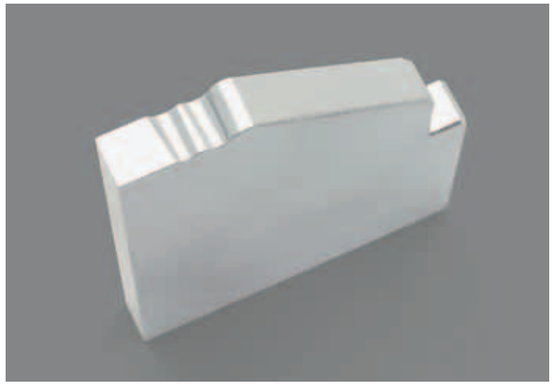
A cowhide cover obviously isn't one of the more usual jobs handled by the test lab. But isn't anything here standard? Krause shakes his head. "We're used to constant change combined with highly diversified and always new requirements. Because we test product ideas for their cost-effectiveness. The materials we process with wire EDM are mainly stainless steels, brass, copper and aluminium as well as specially alloyed steels. The machine's task is to cut these materials with extreme precision, process security and economy."

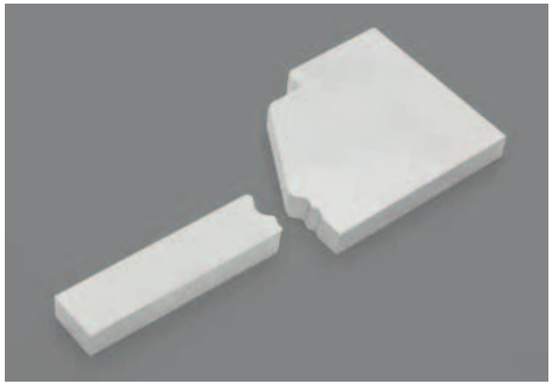
Four-axis geometries with precision contours

Precision to within three micrometres is called for when tool inserts consisting of a stamp and a die have to be eroded. Which is essential if the contacts and clamps that Berker punches and shapes with these tools have to fit snugly inside electric switches. In high-precision machining, we're talking in some cases about parallelism and precision of within two micrometres. High surface quality is demanded as well. Frank Weitzel, responsible at the test lab for CNC wire erosion, shows us a tool insert. "Such four-axis geometries with precision contours are a special challenge for wire EDM. So that we can leave nothing to chance and document our results, we control the quality of our work with a Zeiss microscope."

» Our products have won several design awards and can be found in some of the world's most exciting buildings. «

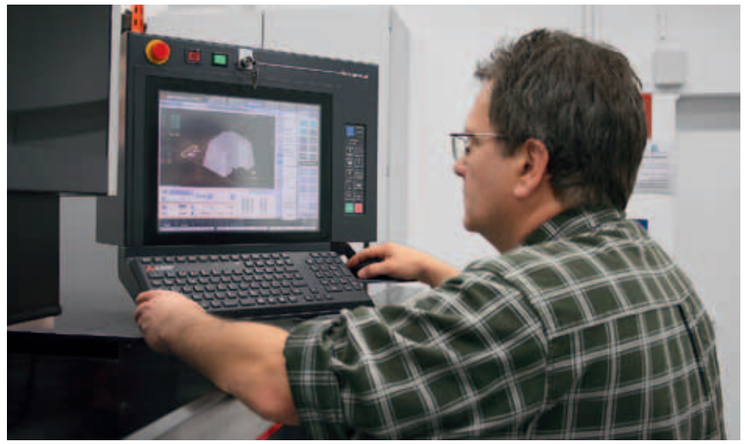
In view of these exacting demands, Berker has made a versatile machine park available to its test lab, with the FA20-S Advance from Mitsubishi Electric being the only wire EDM machine. When Krause talks about the 'right' process for a certain task, he often has the luxury of several options. "Some parts can be milled as well as eroded. The advantage of milling is its faster cutting rate, while greater





Bottom left and right Such four-axis geometries with precision contours, as on this tool insert, are a special challenge for wire EDM.

Frank Weitzel is satisfied with the low set-up and programming effort required by the FA20-S Advance.



→ precision and process reliability are achieved with EDM. What's more, the set-up and programming effort at a wire EDM machine is much lower and it can run unmanned for 23 to 24 hours at a time."

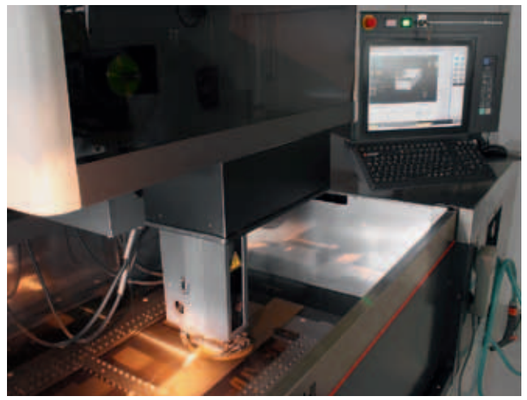
Concentrated expertise

The requirements come, for example, from Berker's Plastics, Production or Rapid Prototyping departments, which then participate themselves in the projects and supplement the five fixed members of the test lab with their own staff. There are plans for the test lab to be available for the entire Hager Group, Berker's parent company.

Alongside the Hager brand, the group pools the expertise of other acknowledged specialists. One of them is Berker, a pioneering manufacturer of high-grade, timelessly classical switches and intelligent building services. Krause pulls pictures of townscapes out of an envelope. "Our products have won several design awards and can be found in some of the world's most exciting buildings. It doesn't surprise me, because we use select materials for all of our products – glass, for example, instead of Plexiglas, and solid metal instead of coated inexpensive materials."

Noble and efficient

The premium manufacturer operates the test laboratory so that its products look noble, operate smoothly and can be produced efficiently – and because it wants to maintain control over its own expertise. The FA20-S Advance from



Right Using conventional 0.25 millimetre brass wire, the FA20-S Advance cuts practically anything from the simple to the highly intricate and at a cost-effective rate.

Mitsubishi Electric has been part of the machine park since November 2011. Its arrival coincided with the test lab's relocation to more modern and brighter premises. Weitzel stands in front of the wire EDM system. "With the Mitsubishi advertising banner over the machine and the large carpet in front of it, the room has something of a place of worship."

Berker purchased the FA20-S Advance, which is designed for maximum workpiece dimensions of 1050 x 800 x 295 millimetres, to replace a machine also made by Mitsubishi Electric and, at the age of 14 years, had reached the end of its useful life. The operator uses another system of the same make at another of its production locations. Weitzel points to the wire station of the FA20-S Advance. "Using conventional 0.25 millimetre brass wire, our new machine cuts practically anything from the simple to the highly intricate and at a cost-effective rate. By comparison, machines from other manufacturers achieve similar results only with coated wires that are about 30 per cent more expensive." Another advantage of the FA20-S Advance is that the new wire EDM machine has so far been running without a hitch. "The machine is in operation every day, and a breakdown would be a disaster," Krause stresses. "This is why high availability was one of our principal demands, and Mitsubishi Electric's global support was

Another advantage of the FA20-S Advance is that the new wire EDM machine has so far been running without a hitch.

Hager Group

The Hager Group in Blieskastel is a leading provider of solutions and services for electrical installations in residential and commercial properties and for industrial applications. The globally active family company has a roughly 11,200-strong workforce and generates annual sales of almost EUR 1.5 billion. The group's products and services extend from building installation and consumer units, cable ducts and house electronics to bus systems.

crucial for approval as a supplier to the Hager Group."

The user-friendly auto-threading system of the FA20-S Advance represents a quantum leap in wire EDM development. Weitzel shows us how it works. "Compared to the old system, the new one takes only ten seconds to thread the wire, which makes it 90 per cent faster. This saves us a lot of time – as does the flushing tank that can now be filled swiftly with dielectric fluid. In addition, the new threading system requires less maintenance and, like the FA20-S Advance as a whole, is dead easy to operate. Krause demonstrates the easy access to the control and maintenance elements. "We commissioned the machine after a one-day introduction. A course of instruction was only necessary for maintenance."

Breaking new bounds

By investing in the FA20-S Advance wire-cutting machine from Mitsubishi Electric, Berker has added to the efficiency of its test laboratory. Which means that, in terms of the machining of new electrical installation components, new bounds have been broken.

www.berker.de

With the Mitsubishi advertising banner over the machine and the large carpet in front of it, the room has something of a place of worship.

www.berker.de

Professionals in Profile: Frank Weitzel und Andreas Krause

Name and place of company:
Berker GmbH & Co. KG, Schalksmühle, Germany

Founding year:
1919

Head of the Berker test laboratory:
Andreas Krause

Number of employees:
Over 700

Core business:
High-grade electrical installation products

Please describe in a sentence what Berker GmbH & Co. KG does.
Manufacturing high-grade electrical installation products.

How did you earn your first money?
Andreas Krause: Washing cars and mowing lawns.
Frank Weitzel: Fixing brackets for balcony flower boxes.

What motivates you?
Andreas Krause and Frank Weitzel: The interest in new technologies and the associated challenges.

What's different about how you do things now, compared to five years ago?
Andreas Krause: We operate today with more advanced technologies that enable us to keep pace with rising demands in terms of speed and quality. The outcome is much shorter time for development.

Where do you see your test laboratory in five years' time?
Andreas Krause: We will then be fully integrated in the Hager Group and can keep our machine park constantly in line with technology transfer.

What's your favourite way to relax?
Andreas Krause: On a skiing holiday.
Frank Weitzel: Watching football.

What attributes do you value most in other people?
Andreas Krause and Frank Weitzel: Open and honest communication and being able to act flexibly.

How would you briefly describe your work to someone with no technical knowledge?
Andreas Krause and Frank Weitzel: We cut ferrous and nonferrous metals with a computer-controlled fretsaw.

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Germany

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info@berker.de

CALEFFI

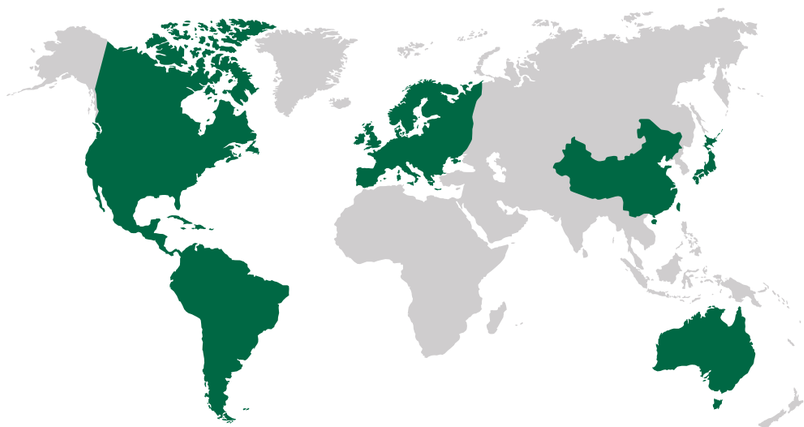
Full **quality**

For five decades, the Caleffi Group has been successfully specialising in the production of components "Made in Italy" for heating, cooling, sanitary and renewable energy systems. Key added value is generated by Mitsubishi Electric electrical discharge machines, and particularly the NA 2400 Essence.

More than a thousand employees, three production facilities in Italy, sales agencies and representative offices in Europe, America, China, Japan and Australia: these are the key statistics of Caleffi, a leading Italian Group specialising in heating, cooling, sanitary and renewable energy systems, for private and industrial users. Last March, the company celebrated its 50th anniversary.

In 1961, the company, acting as subcontractor in the valves sector, started business with the manufacture of connectors and accessories made of brass and steel. But, soon, thanks to a strong sales management, the product range shifted and the company served a different market. Caleffi branded finished products were sold by a sanitary wholesaler.

Caleffi has sales offices and representatives in Europe, America, China, Japan and Australia.



These five decades have been a period of success, risk, commitments and investments in manufacture, research and development, and communication. The corporate philosophy is still unchanged: being aware of its own possibilities and values, without forgetting its origins or identity. As at the beginning, its attention continues to be focused on quality (the original and updated versions of "UNI EN ISO 9001:2008", which came into effect in 2010), technical detail and innovation.

Five decades have been a period of success, risk and commitments.

Important investments

Every year is important in a company's history, but 2008 year held a special symbolic value for Caleffi: the new Research Centre was built and inaugurated, a link between tradition and innovation. The Caleffi Group has always carried out product tests as well as design and development, but since 2008 all the competences, equipment and evaluations have been accommodated in a single dedicated facility called "Cubo Rosso" (or Red Cube). Red in honour of science and Italian technology, as well as symbolising leading industrial brands and larger Italian technology centres: entrepreneurial activity and scientific research attract each other by aspiring to excellence. Red highlights the building structure in its local setting. A cube where the soundness of the firm meets the scientific nature of research, symbols embracing the essence of Caleffi's commitment to continuous improvement.

The latest innovation introduced by Caleffi has been MAV, the Italian abbreviation for Automatic Vertical Stores. Customers thus benefit from improved service and optimised logistical processes. Inventory management and handling and order management are executed fully automatically and reduce processing time and human error. Operating to full capacity since January 2010, MAV is a huge parallelepiped built close to Caleffi's head office in Fontaneto d'Agogna (in the Novara district). Consisting of self-supporting metal structures, it manages finished and semi-finished products stored in boxes or pallets.

A series of investments made in a not so prosperous period as evidence of a company constantly believing and investing in itself.

The Caleffi production department.

The huge importance of electrical discharge machines

A distinctive feature of the Caleffi Group is its complete autonomy in production. In fact, all the production steps take place on three Italian sites: from component design, mould development, and toolmaking through to detail moulding.

The Caleffi Group's workshop is equipped with high-speed machining centres, milling machines, lathes, multitasking machining centres, electrical discharge machines, welding machines and laser incision systems. Among the various technologies in the workshop, EDM is

"Cubo Rosso", the Red Cube.

50 years of growth – an Italian success story

In March 2011, the Italian industrial company celebrated its 50th anniversary and looked back on a successful business history. Its history is marked by constant change, growth and a consistent customer orientation.

Although the first business year generated sales of only EUR 3,573, the company amassed annual sales of EUR 252 million in 2010.

Caleffi first saw the light of day in March 1961 when Francesco Caleffi founded a small business with 15 employees for the production of valve sets, sleeves and accessories made of steel and brass. Thanks to growing demand, Caleffi grew fast. It soon had to set up its own sales organisation.

20 years later, Caleffi had established itself as a brand on the Italian market, and the first contracts with OEM customers followed (Vaillant, Bosch, Landys & Gyr).

It set up its first branches abroad in 1981, one of them being Caleffi Armaturen GmbH in Mühlheim am Main in Germany. The product range was steadily extended at the same time.

Marco Caleffi took over running the company as sole manager in 1999.

Caleffi now manufactures over 5,000 products on production space totalling 78,000 m², exclusively at four locations in Italy. In addition to sales on the important home market, these are exported to more than 70 countries through its own subsidiaries and trading agencies.

Two important milestones of recent company history are the "Cubo Rosso" (Red Cube) research centre inaugurated in 2008 and the fully automatic high bay warehouse (MAV) commissioned in 2010.

The NA 2400 Essence model in the Caleffi workshop.

» Only the NA 2400 Essence fully satisfied our requirement for high precision. «

→ of great importance because it ensures extreme tool precision, among other things. And this is why Caleffi has chosen machines from Mitsubishi Electric.

The most recent purchase in the workshop is the NA 2400 Essence, in operation since last December. “This new model,” Cristian Trunzo, engineering assistant in Caleffi’s workshop explains, “has replaced another Mitsubishi Electric machine. We carried out test machining on several wire EDM machines from different manufacturers, but in the end only the NA 2400 Essence fully satisfied our requirement for high-precision.”

The NA Essence occupies a position at the high end of the market and is the result of the combination of successful and reliable technology over many years with highly innovative developments. “The machine,” says Andrea Curti, responsible at Caleffi for mould design, “uses an optical servo drive system, combined with tubular shaft drives. This system is the ideal solution for slow but precise movements, as are typically required for high-precision wire EDM machining. This unique approach enables to get the highest dynamic response together with the highest precision.”

New digital generator concept

Caleffi workshop’s machining requirements relate to very small radii and extremely moderate roughness, e.g. Ra 0.1 µm. “Thanks to our new wire EDM,” Trunzo explains, “we are able to machine our tools completely, without the need for finishing on the grinding wheel.” The best roughness achievable with the Digital FS Generator is 0.05 µm Ra. This result obviously depends on the material and height of the workpiece and can be achieved by using a simple brass wire.

In addition to the D-FS Generator, the NA Essence series is equipped with a Digital AE II Generator, which controls the vertical discharge position and permits the attainment of outstanding workpiece parallelism. The X/Y/U/V axis measuring system is achieved with linear scales. The entire unit carrying the U and V axis is moved simultaneously together with the automatic threading device and with the upper head of the machine whenever the Z axis is moved. The Z-axis is directly controlled by the CNC and can move simultaneously with the other four axes. The tank permits the machining of workpieces 305 mm in height (submerged). “A further strength of the machine,” Trunzo points out, “ is ease of access to the working area thanks to the drop tank with its incremental adjustment.”

Picturesque Lake Orta near Fontaneto d'Agogna.

Diamond wire guide

To obtain maximum stability during machining and therefore to ensure minimum roughness even under the worst conceivable machining conditions (high depths and during taper machining), Mitsubishi Electric has conducted strict computerised tests on wire vibration. Based on the findings, the wire threader and wire guide have been optimised for the achievement of a virtually vibration-free process. Furthermore, the automatic wire threader has been analysed and adapted over the years for extremely high reliability, without compromising on the advantages of closed wire guides. “On the NA series, the new-generation threading mechanism enables us to save time considerably. A notable achievement here is 10 seconds’ cycle time for 100 mm depth,” says Curti.

www.caleffi.com

Name and place of company:
Caleffi S.p.A., Fontaneto d’Agogna

Founding year:
1961

President:
Marco Caleffi

Number of employees:
Over 1000

Core business:
Production of components for heating, cooling, sanitary and renewable energy systems, for private and industrial users

Caleffi S.p.A.
S.R. 229, n. 25
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Italy

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Fax +39.0322.863305

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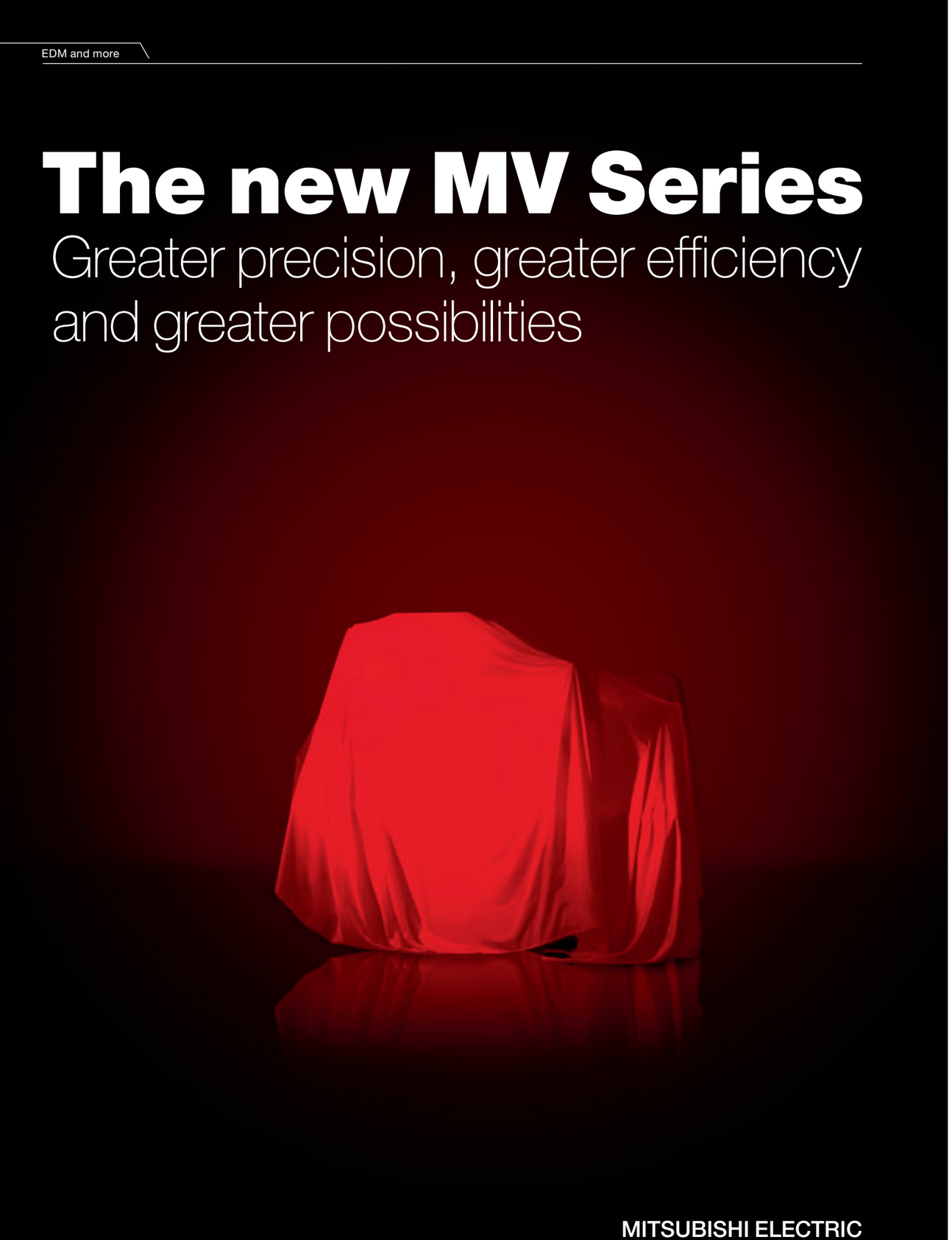
www.caleffi.com

The new MV Series

Greater precision, greater efficiency and greater possibilities



At the AMB trade fair from 18.–22.09.2012 in Stuttgart, Mitsubishi Electric celebrated a premiere. Mechatronics Machinery presented the new MV Series of wire-cut EDM machines from Mitsubishi Electric for the first time in Europe.

The MV Series has been developed for a large number of customer groups. These include automotive component suppliers, sheet and plate producers and medical technology manufacturers. This is because most products from these manufacturers are becoming steadily more complex. And this means that the expected standards of machining precision and productivity are also constantly rising.

With everything from technical precision and energy consumption through to operating costs, the new MV Series offers the perfect combination of enhanced efficiency in the machine's generation of overall value-added with the sparing use of resources. The benefits are manifold: higher productivity, falling piece costs and accelerated throughput and delivery times while easing the burden on the environment.

"The new MV Series offers maximum functionality, as it unites the traditional strengths of our spark erosion machines in terms of quality, flexible application and productivity with a totally new, unparalleled drive strategy. For the first time, this series enables our customers to afford high-end machines delivering the performance and quality previously reserved for a select circle of customers with large purchasing budgets. In short, the new all-rounder offers the customer such an outstanding price/performance ratio that the purchase pays off in the shortest time," says Hans-Jürgen Pelzers, Distribution Manager EDM Systems at Mitsubishi Electric Europe.

Maximum efficiency, and that's only for starters

Owing to the massive drop in power consumption and the considerable reduction in the use of wear parts and expendable materials, the MV Series is up to 42 per cent cheaper to operate than older, conventional machines.

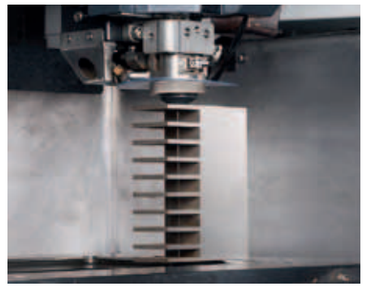
Cost savings can be achieved through the reduced consumption of wire, filters, ion exchange resins and other expendable materials. With the aid of new machine functions, dielectric preparation, for example, has been improved. New generator technologies ensure that the deposits of removed material are easier to filter. This means that filter service life can be significantly extended, and the consumption of ion exchange systems is appreciably reduced.

Benefits all round: the modern drive strategy with the tubular shaft motor and Optical Drive System (ODS)

Innovative tubular shaft motors are used as the drive on the MV Series. Used in the MV-S Tubular in the X- and Y-axes and on the MV-R Grand Tubular in the X-, Y-, U- and V-axes, these revolutionary drives ensuring totally cogging-free and extremely sensitively controllable motion. Accompanying the tubular shaft motors, new forms of data processing have been adopted within the drive system. Communication within the system is performed optically via fibre optics – quickly and efficiently for the best-possible machining results.

Ready for action: the new Intelligent AT automatic wire threader

Operational efficiency can be lastingly improved with the further-developed automatic threader for erosion wire. Whatever the threading task – re-threading in the dielectric, threading in the kerf or threading after interruptions in start-hole drilling – Intelligent AT has the solution. Jet stream on or off – the dependability and versatility of this system sets new standards.



The new all-rounder offers the customer such an outstanding price/performance ratio that the purchase pays off in the shortest time.

→ Getting there faster: high operating comfort with the Natural User Interface (NUI)

Mitsubishi has again enhanced the user-friendliness of the already exemplary Advance control. With simplified direct programming and easier technology parameter selection, the user can reach his goal in a smaller number of steps.

Communication at the speed of light

Remote control, remote diagnosis and active status messages – functions that have long been distinctive of EDM systems from Mitsubishi Electric can also of course be found on the new MV Series. The remote control is child's play to intuitively operate via an iPad – part and parcel of the mcAnywhere Control, the maker's name for the innovative remote control system. Remote diagnosis by the Mitsubishi Customer Service is also performed via precisely this function.

In addition, spark erosion systems from Mitsubishi Electric can themselves actively intervene on request: the machines automatically send status text messages to various mobile phone numbers. This optional function, known as mcAnywhere Contact, also includes an iPhone4 as standard.

Attention to detail: better performance with the Precise Finish Circuit (PFC)

Diversified applications and the use of different materials, varying priorities and ever-changing tasks under taxing machining conditions – the new technologies of the MV Series provide solutions for a wide range requirements. The new, highly integrated generator is the prerequisite for all erosion tasks. Combined with systems for improved discharge control and modified mechanical engineering details, such as the ceramic insulated work surface, the erosion process becomes more transparent with improved machining results across the board. The wave of improvements has even included the flushing jet – elaborate analyses of the dielectric flushing jet have been conducted under a wide range of conditions so as to achieve, even on this seemingly minor point, improvements that have a thoroughly positive effect on machining results. An extensive technology database, supplied as standard with all EDM systems of the MV Series, has answers for virtually every application. And when confronted with uncharted territory, the experts of the applications hotline at Mitsubishi Electric are never short of advice, and the machine's control makes modifying the machining technology child's play for the user.

Good for the environment and your pocket: conserving resources with the Long Life System (LLS)

With energy prices rising, the EDM systems of the MV Series reduce energy consumption. This is made possible among other things by the ODS (Optical Drive System making use of tubular shaft motors), new strategies for disabling unneeded functions, intelligent “sleep mode” management with systems that ensure readiness at the right time, and the inverter-controlled pump systems. Reduced dielectric circulation permits significant savings in filter cartridges and ion exchange media. Wire-running speeds adapted to different machining conditions reduce wire consumption by as much as 45 per cent over conventional EDM machines – lower wire consumption also indirectly means lower CO_2 output during the production of erosion wire. The intelligent design of multi-use wear parts additionally ensures the longevity of individual small components in this area as well – with a view to protecting the environment and cutting costs.

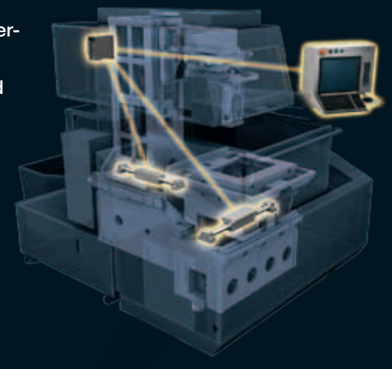
Solutions to problems inclusive – Mitsubishi Electric's efficient Customer Service

Whether the operator wishes to have access to his machine functions from all locations, has text messages sent to his smartphone or requires remote diagnosis or online support, Mitsubishi Electric has the matching solutions for customers who want to be able to rely on the trouble-free operation of their EDM machines. In the event of malfunctions occurring, Mitsubishi Electric has set up a free hotline. Outside business hours, the company also offers an on-call service. Swift assistance is thus ensured at all times. Mitsubishi Electric offers individual maintenance agreements covering annual machine maintenance and attractively priced parts. This way, malfunctions can be identified early on and breakdowns avoided. The customer benefits for many years from the high precision and availability of his machines and from the associated quality of his products.

www.mitsubishi-edm.de

The advantages of the new MV Series for customers **at a glance**

- Innovative drive strategy with the tubular shaft motor
  Advantage: super-sensitive control behaviour for superlative-quality workpieces
- Intelligent AT: new automatic wire threader
  Advantage: autonomy even under the most testing conditions
- High efficiency and low operating costs
  Advantage: reduced hourly machine rates for enhanced profitability
- Energy management and resource conservation
  Advantage: protection from rising costs and an improved competitive edge
- Excellent price/performance ratio
  Advantage: rapid payoff.



A result of **perseverance and discipline**

Life is not easy and this is never ignored at Tek-Moulds in Malta. Hard work and determination are the combined driving force of this success story.

EDM and more

Kevin Busuttil is in charge, a precision engineer by trade and a man with a vision. He guides this company in a complex and exciting market, where challenges are met with determination and the correct approach.

TEK-MOULDS PRECISION ENGINEERING

Company philosophy

Toolmaking is based upon good design, good practices and motivation. In this company people are proud to deliver tools that fulfil their customers' requirements and also set standards in product presentation. This attitude and philosophy shape every tool manufactured at TEK-Moulds.

From a niche market

Tek-Moulds has changed the toolmaking scene in Malta. Established in November 2003, Kevin Busuttil ventured on a project that very few could really understand. Way back then Malta's toolmaking industry was only present within established multinationals. From development and a repair service available on the island, Tek-Moulds moved a step ahead of its competition by producing tool parts like inserts, cores and sliders. The quality of the work provided instilled confidence in the market. Suddenly Tek-Moulds were faced with a new challenge – that of producing their first small tools with their own signature.

Customers started to realise that quality tools were now available a few doors down at the industrial park. This was brought in by Busuttil's experience in the toolmaking sector. Being a well-travelled engineer, he managed to learn and bring home with him some of the best practices he had encountered on his journeys.

Every day is an experience

Tek-Moulds made the correct decision by trusting in Mitsubishi Electric as its main machine supplier in the EDM sector. From the beginning, the company enjoyed exceptional support in both application and service. This put minds at rest at the Bulebel plant by ensuring efficiency and facilitating deadline compliance.

This company prides itself in giving to its customers the TEK experience; Kevin's philosophy towards product quality inspires the shop floor with a natural aptitude to discipline that makes their

» There is no match for the speed, accuracy and surface output finishing of this machine with minimum wear. «

products achieve high standards and economic viability.

Mission statement in practice

Tek-Moulds started up by investing in an EA8 die-sinker and an FX 20 wire-cutting EDM. The collaboration with Mitsubishi jump-started the firm's business projections and by the following year an FX 10 wire-cutting-EDM was added to the machine park. Encouraged by the results of the end products, the return on investment, and visits to the Mitsubishi Electric Europe showroom in Ratingen in 2010, Tek-Moulds decided to buy a top-of-the-range EA 12V Advance die-sinker. Mr Busuttil insists that, "There is no match for the speed, accuracy and surface output finishing of this machine with minimum wear."

Soon after that, Tek-Mould's natural progression encouraged Kevin to endow his company with two BA24s with fine machining cutting. Again these machines excelled in speed, quality, turnover time and quick response. Busuttil realised that he had discovered the way forward. "It has an astonishing automatic wire threader, which increases efficiency and maintains uninterrupted processes, especially when running a ghost tool room."

Building up moulds that inject two-coloured components was set to be a challenge! Three-coloured moulds are still an experience, although one must say that at Tek-Moulds these moulds are done with considerable ease. And after building four-coloured moulds, Kevin exclaimed in precisely these words: "I think we have become one of the top players in the industry."

Advancing into the future

His workforce consisting of twelve hard-working individuals and seven machines solely supplied by Mitsubishi produce an average of 50 to 60 injection moulding tools and progressive press tools a year. There can be no doubt that in the foreseeable future Tek-Moulds will feeling the need to acquire an EA28V advance die-sinker together with two more FA20-S Advance wire EDMs. The need for more precision machinery is prompted by the demand for Tek-Moulds' products within the sector. The discipline, attention and dedication of Kevin's crew are what this enterprise is famous for. This

The man with a vision and his team he chose to call family.

Left Kevin Busuttil at his EA12V Advance.

Right The boss and his employee showing full concentration.

Tek-Moulds is also at home in medical technology.

Tiny feathers for Playmobil Indians.

energy is channelled into the product itself and, together with skilled management, local and foreign customers appreciate Tek-Moulds' effort, competence and commitment. Time has proven Kevin Busuttil right. Dedication and tireless effort is what this man is all about. Customers that choose Tek-Moulds are after this kind of attitude, especially when requesting jobs.

The human experience

The machinery available at Tek-Moulds works in tandem with Kevin Busuttil's set programme of work, with the result that 85 per cent of the machine park operates on an impressive number of unmanned hours including weekends, therefore achieving a 24/7 optimisation level. Tek-Moulds prides itself on motivating and developing unmatched product quality, whilst taking the human element into consideration.

Professionals in Profile:
Kevin Busuttil

Name and place of company:
Tek-Moulds Precision Engineering Ltd., Malta

Founding year:
2003

Managing director:
Kevin Busuttil

Number of employees:
14

Core business:
Multi-coloured moulds, insert moulding and progressive stamp tools.

Please describe in a sentence what Tek-Moulds Ltd. does.
A unique company in the heart of the Mediterranean offering superb quality and ensuring deadline compliance – competent engineers capable of providing high-end products at the competitive prices found on main-land Europe. Our goal is to manufacture each and every mould so that it surpasses the customer's expectations.

How did you at Tek-Moulds earn your first money?
Repairing a tool whilst a machine was being installed, quite an easy job at the time and never got paid for it.

What motivates you?
Being present at every tool trail and seeing the satisfied smile on the cus-tomer's face.

What's different about how you do things now, compared to five years ago?
After tripling the size of our premises and employing 14 toolmakers, one thing remains constant. I still emphasise a hands-on approach to the job and making sure that everything runs like clockwork.

Where do you see your company in five years' time?
Expanding further into the European mainland market whilst providing our customers with high-end tools that ensure stable productivity.

What's your favourite way to relax?
Easy … playing rugby.

What are the attributes you value most in other people?
Staying calm in emergencies.

Tek-Moulds Precision Engineering Ltd.
B12A, Bulebel Industrial Estate
Zejtun. ZTN 3000 Malta

Tel +356.21808712

info@tek-moulds.com

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The new Kobold 140 with electric brush EB 360.

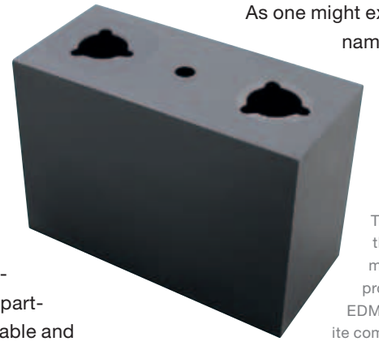
Our best **for the Vorwerk product family**

The toolmaking department of Vorwerk Elektrowerke serves all the products developed for the Kobold hand-held vacuum cleaner and Thermomix kitchen machine – from the original idea through to maintenance. For wire-cutting, it uses an FA10-S Advance from Mitsubishi Electric.

An air of nostalgia wafts through the toolmaking department of Vorwerk Elektrowerke GmbH & Co. KG in Wuppertal. The Kobold – on the market since 1930, for some an icon, for others an indispensable helper in the home – is omnipresent. The same applies to the Thermomix, which, thanks to its numerous functions, is capable of replacing twelve kitchen appliances. Diplom-Ingenieur Marc Alexander Popov, Appliance Plant Plastics Technology, head of toolmaking in L/TGEW, thumbs through a brochure. Referring to its content, he explains the product range of the family-run company established as a carpet factory in Wuppertal in 1883. “Our product portfolio includes not only high-tech household appliances and the Vorwerk Carpets Division, but also JAFRA Cosmetics, HECTAS facility services and the akf Group, a bank for leasing and financial services. What the business sectors have in common is direct selling, which opens the door to special relations with the customer.” Worldwide, Vorwerk employs over 623,000 people in 66 countries, almost all of whom work as sales advisers. In 2010, the company generated business worth EUR 2.372 billion.

Looking beyond the immediate horizons

Popov puts the sample of a new front attachment for the hand-held vacuum cleaner on the table. You can see the insides through the Plexiglas top. “We’re constantly refining individual components – the motor of this front attachment, for instance.” It’s all a question of an integrated approach. Immediately after the original idea and the design, the toolmaking department is brought to the table and assesses whether something of the given quality is technically feasible within the given time. It peers over the shoulders of the design engineers, communicates with the toolmakers and supervises the product through to series production and thereafter during maintenance and repair. “Unlike a normal toolmaker, we look beyond our immediate horizons. Because we have to live later with the tools,” Popov stresses.



The many materials that the Vorwerk toolmaking department processes with wire EDM include this graphite component.

As one might expect from the name of the department, it also produces the tools and moulds that

With the FA10-S Advance, the Vorwerk toolmaking department cuts parts for the Kobold hand-held vacuum cleaner and the Thermomix kitchen machine.

Vorwerk Kobold hand-held vacuum cleaner.

Vorwerk Thermomix kitchen machine.

Mitsubishi Electric provides outstanding after-sales service

➔ Vorwerk needs for the production of components for the Kobold and Thermomix kitchen machine. It also fabricates components for tools. It services tools in addition and conducts preventive maintenance on them. Then there are the repairs to the machines running on the plant site, a task that it performs even faster than an external service provider.

High-speed order processing

The technologies that the Vorwerk toolmaking department uses include wire EDM. “One of the main preconditions for our investment in the machine from Mitsubishi Electric was that it meets the requirements arising from the diversity of our materials.” Popov points to a graphite component resting on the frame of the FA10-S Advance. “The materials we machine are copper, graphite, brass, aluminium, steel and cemented carbide.” The material thicknesses range from 0.5 to 150 millimetres. With wire 0.25 millimetres in diameter and little post-cutting, the machine achieves the required surface quality of less than 0.7 µm Ra. On edges that have no function, quality to within 2.3 mm Ra is sufficient.

Popov folds open the front of the flushing tank of the FA10-S Advance that Vorwerk installed in April 2011 to replace the machine of a different make. “Our new wire EDM machine offers good access, simple operation and an attractive price/performance ratio. In addition, Mitsubishi Electric provides outstanding after-sales service.” Popov also appreciates the fact that the entire equipment was included in the base package price. Other companies offered him simply the bare machine, and he would have had to purchase the remaining equipment separately.

» The FA10-S Advance offers good access, simple operation and an attractive price/performance ratio. «

Nadja Suffa-Petri, the tool mechanic who writes the programs, generates geometries, and sets up and maintains the FA10-S Advance, opens the door to the neighbouring room. “This is where we’ve housed the cooling fan and the generator, as they can be detached from the machine. The machine is noticeably quieter as a result.”

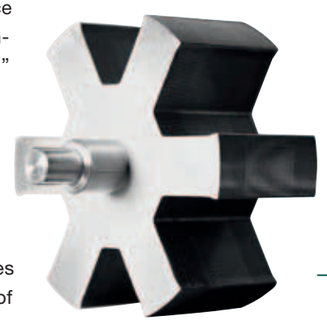
Asked about how wire-cutting benefits the Vorwerk toolmaking department, Popov highlights the speed at which his department performs its tasks. “We receive our jobs on call and handle them on the spot. This is essential, as it’s often urgently needed components that are involved. If the parts don’t arrive on time, production grinds to a halt.”

Better quality from wire erosion

Along with speed, high quality is demanded, e.g. when eroding ejector holes for injection moulds. Nadja Suffa-Petri shows us a part with a penetration for an ejector. “We’ve rough-machined it with a start hole drilling machine and then achieved the desired precision with the wire. The resultant surface is smoother and more precise than from milling, drilling or die sinking. The ejector can thus perform its task to perfection, and the component has a higher life expectancy.” This is an application for which there’s no alternative to wire-cutting, as the technology manages greater heights practically without loss of quality. These holes cannot be neatly milled, because the machining height would cause the cutting tool to bend. Further advantages of wire EDM are the very small or cylindrical and conical contours that the Vorwerk toolmaking department cuts as well as machining speed and economy.

Popov holds a stack of transformer sheets in his hand. “In a product’s development phase, we produce the prototypes ourselves. Among other things, we erode such precision parts for motors whose tolerance range is within two hundredths of a millimetre.” A challenging task for which the machine from Mitsubishi Electric is a match with its precision.

Suffa-Petri also stresses the operating comfort of the FA10-S Advance and demonstrates how more easily and quickly the wire is now threaded than on the previous machine. “I don’t have to stand around at the machine for ages each time. Productivity improves, and particularly when a lot of penetrations have to be cut.” This is an important point for the Vorwerk toolmaking department if it wants to perform jobs for the Kobold and Thermomix at the demanded quality and speed.



Rotor consisting of a stack of transformer sheets.

www.vorwerk.de

Foyer of Vorwerk in Wuppertal.

Professionals in Profile:
Marc Alexander Popov

Please describe in a sentence what your department of Vorwerk Elektrowerke GmbH & Co. KG does.
We keep our production department running smoothly.

What motivates you?
Our best for your family.

What's different about how you do things now, compared to five years ago?
We communicate more internally to find out what the customer needs. By this we mean both the end-customer and the customer on our own premises.

Where do you see your company in five years' time?
We want to look even further beyond the immediate horizons to find out which work processes can be simplified or combined.

Name and place of company:
Vorwerk Elektrowerke GmbH & Co. KG, Wuppertal, Germany

Founding year:
1883

Company management:
Walter Muyres,
Reiner Strecker,
Frank van Oers

Number of employees:
About 700 at the local plant

Core business:
Direct selling of high-grade products

Vorwerk Elektrowerke GmbH & Co. KG
Blombacher Bach 3
42270 Wuppertal
Germany

Tel +49.202.564 0
Fax +49.202.564 1301

vorwerk@vorwerk.de
www.vorwerk.de

Italian flair,
Japanese precision

In this Italian company's workshop, three high-precision Mitsubishi Electric wire EDMs are at work. These machines are able to reduce delivery times thanks to unmanned automated operation.

Quality and precision. These two words sum up the strengths of Papini Stampi srl, an Italian company specialising in making moulds and tools for Bihler punch-bending machines in Germany. The tools machined for punch-bending machines are used particularly in the production of precision parts, and mainly for the automotive, electrical or electronics industry as well as for household appliances.

Papini Stampi went into business in 1970, founded by the current owner's father who has passed on his love of mechanical engineering. The company, which employs nine people, is located in Calolziocorte in the Lecco province, an area with a strong presence of mould-makers.

Workshop without any manually operated machines

In Lecco, the company has its own workshop for the production of moulds and its own engineering department. "No need for external supplies and applications for moulds – heat treatment excepted," Giorgio Papini, the founder's son, explains. "This has big advantages in terms of quality, accuracy and delivery times. Customers appreciate our complete independence. The customer supplies a drawing of the part he wants machined and we study how to realise the tooling and, subject to the customer's approval, we start production."

On behalf of the customer, the company often carries out testing too, thanks to three Bihler machines in the workshop. "Testing," Papini tells us, "is a very important activity. We've been doing this for the last few years and it enables us to supply the customer with the finished product."

Calolziocorte

State:	Italy
Region:	Lombardy
Province:	Lecco (LC)
Coordinates:	45° 48' N, 9° 26' O
Altitude:	210 m above sea level
Surface area:	9.14 km²
Population:	14,315 (31 Dec. 2010)
Population density:	1,566/km²
Post code:	23801
Dialing code:	0341
Name of people:	Calolziesi
Patron saint:	San Martino

Papini Stampi works mainly in the Italian market, but also through a big company that has operations in various countries all around the world and manufactures small metal parts, springs and precision assemblies (more than thirty million small parts are produced every day).

Another important cooperation is with Bihler in Germany, which specialises in the construction of automatic punch-bending machines. Papini Stampi is Bihler's partner in the Italian market for machine equipment. "With these two important activities," Papini explains, "our order books are constantly full. We are a small industrial company and we prefer to make a reduced number of moulds. We follow the complete production process in order to supply the customer with a high-quality product."

Among the first in this sector with a wire EDM

Papini Stampi's workshop is equipped with machine tools that are perfect for the work they do. They are regularly replaced with latest generation of models so that the firm can stay competitive in the market.

Wire EDMs in particular are essential for Papini Stampi's production process. "Our company," Papini explains, "introduced wire EDM back in 1985 and we immediately improved the quality of our moulds compared to those made manually on the bench." Over the years, as EDM technology has progressed, further wire EDMs have been installed in the workshop, exclusively made by Japanese manufacturer Mitsubishi Electric.

"Before purchasing the first Mitsubishi Electric wire EDM," Papini assures us, "we did some machining tests that highlighted the machines' high standard of finish and high machining speed. Thanks to the reliability and ease of operation of these machines, our workshop is now equipped with three Mitsubishi Electric models (FA20, FA20-S, and FA10-S Advance) and we are soon getting our fourth one, another FA10-S Advance. On our Mitsubishi Electric machines, we make a wide series of components: guide plates, die-holders and die-plates for moulds, punches, dies, templates for grinding wheel dressing as well as prototypes."

"Thanks to our Mitsubishi Electric machines, besides having been able to reduce the total time for a mould

» For almost fifteen years, we have been using Mitsubishi Electric machines and we have never had problems concerning service. «

Bottom right: The FA10S Advance is preferred for the production of moulds, graphite electrodes, tools, profiles and also for one-off and series production.

Bottom left: The FA20-S wire erosion machine is distinguished, like all models of the FA series, by high precision and outstanding surface quality.

Components made by Papini Stampi on Mitsubishi Electric machines.

making, we have reduced delivery time too, because the wire EDM saves time, as it is even capable of unmanned machining. And this, in addition to customer demands for shorter delivery times, yields a significant advantage if we want to handle more orders and keep to tight deadlines."

High-precision solutions

During the visit to the workshop, Papini takes us to a FA10-S Advance, the most recent of the Mitsubishi Electric machines in his workshop. It is particularly suitable for making moulds, graphite electrodes, tools and profiles – as one-offs or production series. "Thanks to the FA10-S Advance," Papini points out, "we are able to machine punches with extreme precision."

Thanks to Mitsubishi Electric's technical specifications, FA-S Advance machines achieve a surface roughness better than Ra 0.15 µm, cutting rates sometimes exceeding 500 mm²/min and a total parallelism of 5 µm for 200 mm cutting height. The FA10-S Advance wire EDM, with X 350 mm, Y 250 mm, Z 220 mm, U & V ± 32 mm travel, is equipped with the Advance controller based on the Mitsubishi M700 CNC. It is operated at a 15" touch screen, with fixed-function buttons for more frequent operations, as well as with a mouse and keyboard.

Over the years, as EDM technology has progressed, further wire EDMs have been installed in the workshop, exclusively made by Japanese manufacturer Mitsubishi Electric.

These features make operation precise and simple even when the CAM function is employed.

As mentioned above, in Papini's workshop there are two other Mitsubishi Electric machines, an FA20 and an FA20-S, with a working range of X = 500 mm, Y = 350 mm and Z = 300 mm. The FA20 machine is mainly used for machining die-holders, whereas the FA20-S model is principally used for machining dies, punches and moulds. "An important feature of Mitsubishi Electric wire EDM," Papini asserts, "is the extreme flexibility enabling the operator to perform every kind of machining on any model".

Anti-electrolysis generator for high-speed cutting

Mitsubishi Electric wire EDMs are always equipped with the anti-electrolysis generator (HSS-AE) for high cutting rates. This generator, which is able to reduce the oxidation and molecular change of ferrous, sintered, aluminium and titanium materials, can be equipped with such optional items as the D-FS or V-Package. Digital Super-Finishing (D-FS), already adopted on the Mitsubishi Electric PA machine series, is now available on the FA-S Advance series. It is capable of achieving a surface finish of better than Ra 0.15 µm. The V-Package includes a high-performance generator for cutting speeds of up to 500 mm²/min. It includes a digitally controlled anti-electrolysis generator (D-AE), which incorporates all the functions of HSS-AE generators. In addition, D-AE offers a unique feature in that it controls the discharge position on the wire. As a result, the parallelism of thick workpieces can be improved, due to the fact that the decrease in the wire diameter is automatically compensated for during machining.

Service: key to competitiveness

Papini's satisfaction with the Mitsubishi Electric brand covers both the technological features and service. "For almost fifteen years, we have been using Mitsubishi Electric machines and we have never had problems concerning service. It's also for this reason that we have kept on purchasing Mitsubishi Electric machines. In fact, service is becoming increasingly the strategic key to competitiveness in every field of manufacture."

www.papinistampi.com

View of Lecco province.

Name and place of company:
Papini Stampi srl, Calolziocorte (LC)

Founding year:
1970

Managing Directors:
G. Pietro Papini, Elena Valsecchi, Giorgio Papini

Number of employees:
9

Core business:
Manufacture of moulds and tools for the production of high-precision parts for the automotive, electrical and electronics industry as well as for household appliances

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23801 Calolziocorte
Italy

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Fax +39.0341.646806

info@papinistampi.com
www.papinistampi.com

SPEMA

Progressive **production philosophy**

SPEMA, a French company that mainly produces tools for the cutting of steel and plastics, accords top priority to its own production philosophy. It's all about values, intelligent personnel management and new solutions for customer applications.

Dominique Renaudat, Managing Director of SPEMA, switches on his laptop and presents his company's key data on a wall monitor. “We've structured our operations so that we can respond quickly at all times and offer cost-effective solutions within minimum time. Management has the decisive task of motivating our employees and communicating our values to them.”

Strong commitment

The success of this philosophy is illustrated by an example from last year. This is when the company attracted a new customer by supplying products at short notice despite the input of 1500 working hours. And in the Christmas week as well. Renaudat is proud of his team. “We'd never have pulled of this feat without the wholehearted support from our staff. Their strong commitment is the result of our management philosophy and is one of our strengths.” For this order, a major project from the aerospace industry, the customer turned to SPEMA, although it hadn't had any previous experience with the company. The initial negotiations drew the customer's attention to more efficient production techniques that he was unaware of.

It was SPEMA's holistic approach that ultimately brought about the breakthrough. In June 2012 the customer placed a follow-up order and also chose SPEMA as its sole supplier. An outcome that underlines the positive trend that started in 2008 and has since gathered pace. Product quality has improved, good service is provided and the company's reputation throughout the industry has benefited as a result.

High productivity

On his laptop, Renaudat pages through the file showing his product range. “We've specialised in the design, production and assembly of prototype parts, small and medium series, tools and tool components, and injection moulds. This is where we achieve precision of up to 2 µm.” The tools are mainly products for cutting, made for instance of steel, stainless steel and plastics, and control tools. The materials SPEMA machines include magnesium, titanium, aluminium, graphite, medical materials, plastics and composites. With cemented carbide, a Rockwell hardness of 64 HRC is achieved.

In addition to wire-cutting, the company certified to ISO 9001:2000 and EN 9100 offers milling, turning, high-speed machining and flat, cylindrical and profile grinding. The wire EDM machines from Mitsubishi Electric, an FA20-S Advance and two FA10-S Advances, play a key role in production at SPEMA where they are principally used for the production of punches and dies. Using 0.2 millimetre wire, the company has machining times of 1 to 10 hours and operates a total of seven erosion systems, the three most advanced ones being from Mitsubishi Electric.

Renaudat stands at one of the wire EDM machines supplied by Delta Machines, Mitsubishi Electric Europe's French distributor in Morangis, and holds a component in his hand. “I regard wire erosion as an alternative to other methods because it achieves higher precision. What's more, it can be used for machining extremely hard materials and for machining tasks that would be impossible with any other method.” SPEMA also uses erosion systems for tasks originally conceived for milling machines and thus makes maximum use of its erosion capacity.

At the control panel of an FA10-S Advance, Renaudat peers over the shoulder of the operator keying in the commands. “The systems from Mitsubishi Electric are very user-friendly – much like a PC. Although we run seven machines in three shifts around the clock and also work on Saturday mornings, we manage with only four operators. This is possible among other things because the erosion machines run for 20,000 hours unmanned per year at night and at weekends and because the automatic wire threader rethreads the wire automatically in only ten seconds.”

» The systems from Mitsubishi Electric are very user-friendly – much like a PC. «

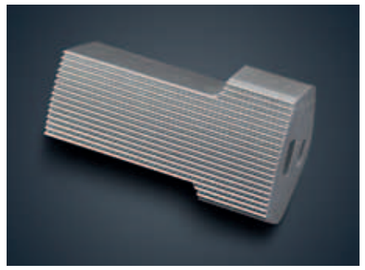
Everything from a sole source

The optional equipment chosen by the company includes digitally controlled fine finishing generators to achieve surface qualities with a surface quality of less than 0.15 µm Ra and, on the FA20-S Advance, a fully servo-controlled B-axis, which is essential for eroding sharply angled workpieces. Renaudat points to a cutting guide used in medical technology. “We decided at the time for the additional B-axis because we had been contracted to erode this part with incisions at certain angles.”

The systems from Mitsubishi Electric are very user-friendly – much like a PC, in SPEMA's view.

SPEMA invested in the first wire-cutting system from Mitsubishi Electric, the FA20-S Advance, in 2007 among other things because of the large machining range of 500 x 350 x 300 millimetres (X/Y/Z). Apart from this, the surface qualities demanded by one of its customers were unattainable with the machines of a rival manufacturer. The two FA10-S Advances were purchased at the end of 2010 so that it can cost-effectively machine complex smaller components as well. Furthermore, SPEMA needed extra capacity and machines with better

Cutting guide from the medical technology field with incisions at certain angles that SPEMA has wire-cut with the aid of a B-axis.



Centre Ejector
Bottom Punch

→ technical parameters at the time. What also swung the vote in favour of ME were the better price/performance ratio and the excellent service, competent advice and efficient delivery from Delta Machines.

One unfulfilled wish

Asked if he has any unfulfilled wishes, Renaudat, who took over SPEMA in 2002, nods. “In our region, there's a big shortage of staff. We've decided to take on people with a relatively low standard of training or well-trained but inexperienced. We train them in-house. If they show willingness to learn, they make their way in the firm. Otherwise they have to go. In the last ten years, I've only been able to keep 20 of our 45 new recruits. I therefore hope that this shortage will be overcome and that such selection procedures will be unnecessary in future.”

Leaving aside this problem, SPEMA is moving ahead strongly now that it has gained footholds in important industries. From a glass cabinet, Renaudat takes a component consisting of several seamlessly joined parts and manufactured for military purposes. “We've managed to attract armaments manufacturers and the automotive and aerospace industries as key customer sectors. In addition, we also serve producers of medical technology, plant manufacturers in the renewable energy field and the nuclear, food and mineral oil industries.” Most customers are located in France. However, SPEMA also works for French customers abroad and for clients in Algeria and Switzerland. Together with its sister company LASSERRE in Vierzon, the Group generates annual sales of some EUR 11 million, twice the figure of ten years ago. As for precision machining with wire-cutting and grinding machines using its own strategies, SPEMA is among the leading French suppliers. Since they supply everything from a single source and even contract the required component suppliers, there's just a single contact for the customer, from design and production through to assembly.

www.spema.com

www.spema.com

Name and place of company:
SPEMA, Issodoun in the province of Berry, France

Founding year:
1967

Managing Director:
Dominique Renaudat

Number of employees:
85 (together with sister company LASSERRE)

Core business:
Design, production and assembly of cutting tools and the production of parts of subassemblies, one-offs and small series

SPEMA
13, rue du Moulin de la Ville
36100 Issoudun
France

Tel +33.254.21 1685
Fax +33.254.21 7869

d.renaudat@spema.com

Professionals in Profile: Dominique Renaudat

Please describe in a sentence what your department does.
We achieve high precision in the machining of individual parts for tools and in pre-assembly.

What motivates you?
The personal and career development of our employees so that they can make their way in their company. And improving our organisation.

What’s different about how you do things now, compared to five years ago?
We attempt to diversify the customer sectors that we serve and produce precision parts. We thus take on and train staff appropriately. Ten years ago, we produced much simpler parts because we didn't want to risk more complex ones. Today we can say: the more complicated, the better, because this is the only way to improve.

Where do you see your department in five years’ time?
We'd like to see the total sales of the two companies, which are roughly the same size, grow to EUR 15 million per year. Another goal is to work for two top-level component suppliers to the automotive and aerospace industries. We're additionally aiming for an export share of 20 per cent.

What's your favourite way to relax?
Cycling.

What attributes do you value most in other people?
Above all enthusiasm, as it is more difficult to give than to take, and of course intelligence.

How would you briefly describe your work to someone with no technical knowledge?
Converting a piece of metal into an end-product that has a certain function.

SOGAMECA

Fast track for high precision

What has Sogameca got to do with the 24 Hours of Le Mans race? Firstly, the specialist in cutting tools and turnkey single-purpose machines is located within the race circuit. And secondly, speed and precision are two of its key quality attributes.

Lionel Bézannier, Sales Manager for single-purpose machines at Sogameca in Mulsanne, France, unfolds a map of the almost 14 kilometre long Circuit des 24 Heures and puts his finger on his company's location. “The high speeds that make motor racing so exciting are reflected in our machining and delivery times. In addition, we're also known for our high-precision products with superlative surface quality and can look back on over 40 years' experience. These are advantages that keep us ahead of the field.”

Single-purpose machines ready to go

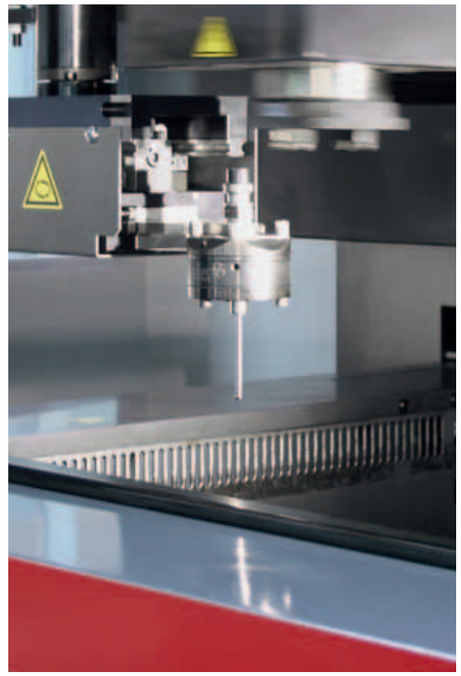
The user-specific single-purpose machines are an important source of business of the customer-oriented engineering company that, together with its Polish sister company, belongs to the French SERFRA holding company. So far, Sogameca has sold some 800 of these machines worldwide, which are supplied turnkey and hence ready to go in manual and semi-automatic versions. The company sees its main target groups in the automotive and aerospace industries, cosmetics manufacturers and general industry. If higher output is called for, the machines are integrated in production cells in which robots do the handling. An example of this is packaging machines for perfume samples.

With his right thumb, Gérôme Lenoir, in charge of machining parts to customer drawings, traces the complex cuts of a cutting tool that his department has developed and produced. “These tools are mainly used in the food industry for the manufacture of plastics packages and also for the production of cheque cards. They've enabled us to tap another source of business and also put ourselves in a unique position. The exceptional precision of such components made mainly of steel and stainless steel can only be achieved with wire erosion.”

This is why the company certified to ISO 9001, which operates 20 hours a day, six days a week, and achieved sales of EUR 9 million in 2011, has invested in two FA30-S Advance wire EDM machines and an EA28-V Advance die sinker machine from Mitsubishi Electric. In February 2011 and January and April 2012, these replaced older machines from a different manufacturer. These systems were supplied by Delta Machines, Mitsubishi Electric Europe's French distributor located in Morangis.

The EA28-V Advance can automatically replace its starting electrode with up to 19 other electrodes and thus also operate unmanned.

According to Sogameca, a high-precision erosion machine is not enough. You need a skilled operator as well.



→ Putting their foot down

During his tour of the business, Lenoir stops at a FA30-S Advance, which is equipped as standard with a high-speed generator. The erosion machine cuts the material with 0.25 mm diameter wire and achieves parallelism and precision of less than 2 µm and surface quality of 0.4 to 0.8 µm Ra. “Here again, it's all about speed,” says Lenoir, stressing an attribute shared with motor racing. “This is where we can really put our foot down. The operator can set up the machine more easily and faster because the door to the tank can be lowered and he has unrestricted access to the work space.

» The machines are simple to operate and offer easy access. «

In view of our workpieces with footprints ranging from 400 x 220 to 1300 x 1000 mm, we wouldn't want to be without this feature.”

As can be seen from the example of the retractable door, Mitsubishi Electric takes account of the factor of time in the development of its EDM machines. This also applies to the automatic wire threader of the FA30-S Advance. Lenoir opens the machine's side door and points to the 20 kilo wire spool. “With this in reserve and the automatic threader, which can be relied on to do its job in only 10 seconds, we can run the machines unmanned at night and at the weekends.”

Sogameca produces most parts by getting the desired workpiece into shape initially with die sinking and then cutting the material with wire EDM.

Staying ahead with automatic electrode replacement

On a wall board in the conference room, Lenoir sketches a die sinking process to illustrate what moved Sogameca to invest in two machines using different processes. “We produce most parts by getting the desired workpiece into shape initially with die sinking and then cutting the material with wire EDM. The EA28-V Advance can automatically replace its starting electrode with up to 19 other electrodes and thus also operate unmanned.”

Electrode replacement is indispensable for two reasons. Firstly, because the eroded surface of the workpiece has to be finished with a fresh electrode after the first machining step; and secondly, because of the wear that occurs on the electrode. Replacement is also executed smoothly in unmanned operation. As an electrode has a known service life, it is possible to program the replacement times. The user monitors these phases with the aid of Mitsubishi Electric's intelligent remote contact function that enables the machines to send test messages to selected phone numbers. It is ultimately in these ghost assignments that the company builds up a strong lead, to borrow a phrase from motor racing.

High-speed 'pit stops'

Patrice Jacquelin, Production Manager at Sogameca, calls up a page of test results on his laptop. “The EDM machines from Mitsubishi Electric came off better than the machines from two rival manufacturers, as they meet our expectations in terms of quality, reproducibility and price/performance ratio. The precision with which the workpiece can be positioned on the clamping table also satisfies our requirements. In addition to all this, the machines are simple to operate and offer easy access.” The employees therefore soon got the hang of the control and user interface. The CAD data for wire EDM are produced by the company's own design office. The operators then transfer the data from the company network straight onto the control of the FA30-S Advance. For the EA28-V Advance, the employee generates the CAD data himself.

A high-precision erosion machine is not enough. You need a skilled operator as well. And the service you provide also has to be good.

Lionel Bézannier sees the machines as only one of the prerequisites for immaculate production results. “A high-precision erosion machine is not enough. You need a skilled operator as well. And the service you provide also has to be good.” Bézannier can rely on this, because when the machine comes off the production circuit for a 'pit stop', the service from Delta Machines fully meets the operator's needs. This also applies to operator training, which is also performed by Delta Machines.

Victory for quality

Serge Hessemans, Sogameca President, opens up a folder and shows us a document. “As soon as a job is completed, we ask the customer to rate his satisfaction. We've produced this document for this and appointed a quality officer.” The company evaluates each document and takes any appropriate remedial action. Ultimately, it's a question of producing high-quality turnkey machines with a fully integrated strategy and getting them up and running smoothly. And, as in the 24 Hours of Le Mans, as quickly as possible.

www.sogameca.fr

www.sogameca.fr

Professionals in Profile:
Lionel Bézannier and Gérôme Lenoir

Name and place of company:
Sogameca, Mulsanne, France

Founding year:
1970

President:
Serge Hessemans

Number of employees:
80

Core business:
Design and production of tooling and single-purpose machines

Please describe in a sentence what your department does.
Gérôme Lenoir: We're on the fast track for high precision.

How did you earn your first money?
Lionel Bézannier: During a holiday job in a foundry.

What motivates you?
Lionel Bézannier: Inquiries from customers.

What's different about how you do things now, compared to five years ago?
Lionel Bézannier: With the aid of our customer satisfaction questionnaire, we give greater attention to new technologies for the customer's benefit. And we've taken on an employee who's concerned solely with research and development.

Where do you see your department in five years' time?
Lionel Bézannier: We'd like to make greater inroads into certain markets – in the health sector, food industry and aeronautics, for instance.

What's your favourite way to relax?
Gérôme Lenoir: With sport.

What attributes do you value most in other people?
Lionel Bézannier: Honesty and professionalism.

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AWEBA WERKZEUGBAU

A shining light
in tool- and mouldmaking

With superlative-quality tools and moulds fabricated by its skilled staff, AWEBA has advanced to become one of the shining lights of the industry. In the wire EDM sector, they trust among other things in two NA2400 Essences from Mitsubishi Electric.

During the tour, there's an encounter of a special kind in production at AWEBA Werkzeugbau GmbH, Aue, Germany.

Even Thomas Schlemmbach, in charge of production at the company in Saxony, is surprised by the sudden encounter with the heavy, packaged load suspended on a hook from a gantry crane. “Our second wire EDM machine from Mitsubishi Electric is just arriving. We've again chosen an NA2400 Essence.”

The importance of wire cutting for AWEBA can be seen from the fact that the time-honoured company uses a total of 18 wire erosion machines. Heiko Koller, production foreman, pages through a list: “We clock up 330,000 production hours each year in three shifts, and wire EDM accounts for 96,000 and hence almost 30 per cent of this.”

Extreme requirements

AWEBA, one of the biggest independent toolmakers in Europe, expects modern spark erosion machines to achieve extreme precision, surface quality, parallelism and contour trueness. The core competences of the company based in Saxony are in forming tools and die-casting moulds for the power train – products whose purchasers demand top quality.

» Compared to the competition, Mitsubishi Electric came out best in all tests. «

Suppliers to the automotive industry use the moulds for the production of sheet metal parts for transmissions, differential gears and generators and for internal combustion engines and electric motors. AWEBA, which works together with researchers in research institutes, universities and industry, is happy to take on such challenging jobs. Examples of this are combined forming and precision blanking in a mould set and the integral casting of inserts in the die-casting moulds needed for high-precision transmission components.

“Against this background, we spared no effort and exhaustively tested two NA2400 Essences in parallel for a good six months.” To underline this, Thomas Schlemmbach taps the frame of a wire EDM machine. “Mitsubishi Electric installed one of the machines in September 2011 so that we could test it in real-life conditions at any time until we decided to buy it in April 2012. The other one was in Ratingen. We achieved precision of less than three micrometres with both of them. This meant that we could precisely assemble our parts eroded for electric motor moulds (cemented carbide dies on one machine and cemented carbide punches and dies on the other). This suited us down to the ground, as we wanted to invest in two identical systems with the same high precision.” This precision is due in large part to the load-free tubular direct drive of the energy-efficient NA2400 Essence, which communicates with ultra-fast optics between the control, axis amplifiers and drives. An advantage resulting from the drives' highly dynamic response which, combined with its proven cast-metal construction, yields exceptional workpiece precision.

Exclusively employing skilled workers like Bernd Kehrer is one thing that makes AWEBA unique.

Above Replacement cutting punch. Reproducible tolerance 0.005 mm.

Left Cutting punch. Height 125 mm, parallelism less than 0.008 mm.

Right Gearing die and punch. Precision ± 0.004 mm.

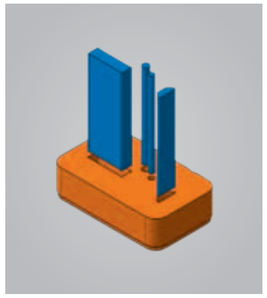
Coming out best on all counts

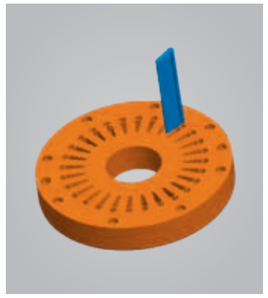
To stress component quality, Schlemmbach runs his fingertips over the surface of a component. “Compared to the competition, Mitsubishi Electric came out best in all tests. For instance, in terms of the minimum time that the NA2400 Essence takes to achieve the desired results.” The operator benefits from the machine's impressive machining speed mainly when the customer demands high surface quality, as this calls for more subsequent cuts.

Schlemmbach and Koller refer to a car body to illustrate just how varied the parts are that are produced with moulds from AWEBA. “Along with the power train, we've also made a name for ourselves with tools for other vehicle components,” explains Koller. “And right across the range of possible types of tools and moulds. These include cutting and precision blanking tools, follow-on composite tools, transfer and progressive press tools, and complex die-casting moulds inclusive of burring. “The components that we produce with them include air conditioners, exhaust gas systems, filters, pumps, electronics housings, mirrors and brakes. In view of this application-specific performance spectrum, it's no surprise that the automotive supply industry purchases 90 per cent of our tools and moulds. The remaining 10 per cent mainly goes to the electrical industry. For this sector, AWEBA has a long tradition of producing cutting tools and die-casting moulds for stators and rotors used in electric motors of all kinds, from the smallest motors to large-scale generators.

Positive environment

Schlemmbach and Koller take us through a high-tech machine park comprising 150 tool systems of all kinds and also into air-conditioned measuring and production rooms designed for high-precision processes with temperatures controllable between 20 and 22 °C. Then we continue past high-performance presses into the company's own hard-





Left Cemented carbide punch with parallelism of 0.003 mm.

Centre and right Steel parts.

In terms of reproducibility, deviation in the standard program is less than 0.003 mm and surface quality (mean roughness) is Ra 0.1.

→ ening shop. Like its tool and mould diversity and the principle of employing only skilled staff, this is something that makes the globally operating company unique. “Thanks to our equipment and the comprehensive expertise of our workforce, we create a positive environment for the construction of high-precision moulds and tools with long service lives,” says Schlemmbach. “Since we have all the machining technologies available on our own site, we can offer our customers high flexibility, fast delivery times and complete quality components from a single source.”

AWEBA, which is certified to ISO 9001 and by leading European steelmakers, also awards a replacement part guarantee for each tool, covering its entire working life. This ensures that the replacement parts are identical to the original components – and this even though they produce roughly 50,000 one-offs each year.

At the NA2400 Essence, Koller watches the operator change the 20 kilo wire reel so that the reliable AT4 wire threader can automatically thread the new wire in just 10 to 15 seconds. “The wire-threading system is essential for unmanned operation and hence indispensable for us. In addition, I'd also like to mention the machine's operating comfort and ergonomics. These are points that are just as important to us as the machine's easy integration into the live production process.” AWEBA optionally uses not only the larger wire station, but also the Telecontact monitoring function that makes it possible for the NA2400 Essence to send text messages to any phone number.

Competent and extremely trusting

The newly arrived NA2400 Essence has now reached its future workplace. Liberated from its packing, it awaits customer service, which is scheduled to arrive tomorrow. Looking at the new wire erosion machine, Schlemmbach discloses another reason for choosing Mitsubishi Electric as a supplier: “The man from Mitsubishi customer service served us competently and extremely trustingly from our very first contacts. By this I mean that he carried out a large number of tests for us over a period of five to six years without any assurance that we'd place the order.”

www.aweba.de

Andreas Lange benefits from the operating comfort and ergonomics of the NA2400 Essence.

www.aweba.de

Name and place of company:
AWEBA Werkzeugbau GmbH, Aue (Erzgebirge), Germany

Founding year:
1882 as a special factory for cutting and punching tools

Managers:
Udo Binder, Chairman of the Management, Rüdiger Drewes, Commercial Manager

Number of employees:
Over 400

Core business:
Toolmaking, precision parts

Interviewee:
Thomas Schlemmbach, in charge of production. Also in the picture Heiko Koller, production foreman (left)

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Fax +49.3771.273 353

info@aweba.de

Professionals in Profile: Thomas Schlemmbach

Please describe in a sentence what AWEBA Werkzeugbau GmbH does.
Our core competences are in forming tools and die-casting moulds for the power train.

How did you earn your first money?
During my school days in the holidays at AWEBA.

What motivates you?
I have a strong interest in helping the company advance because I owe AWEBA a great deal in terms of my career.

What’s different about how you do things now, compared to five years ago?
Not much. I still feel it's important to have a good team around me.

Where do you see your company in five years’ time?
We'd like to have developed an extra source of business by then.

What was your biggest business success?
That we as a former East German firm today rank among Europe's biggest independent toolmaking companies.

What's your favourite way to relax?
Sailing.

What attributes do you value most in other people?
Loyalty, a sense of duty, honesty and ambition.

User horoscope

Aquarius (21.01.–20.02.)

Put yourself first for a change! Thanks to Venus, palm frond wavers, massages and grapes – and a good drink – are suddenly available to you en masse. After this you'll have no trouble effortlessly achieving outstanding surface quality. Your partner also appreciates surface quality, so get back into the habit of shaving regularly!

Pisces (21.02.–20.03.)

The stars flatter you. You look good and you know it. Blow your workmates kisses or at least cut a few on your EDM machine. But be careful – with all these fantastic shapes, your aura is magnetic. Remember, your partner is waiting at home and looking forward to a romantic evening by candlelight. You don't want to disappoint her.

Aries (21.03.–20.04.)

Give yourself more time off in the next few weeks and keep stress to a minimum. Leave your wire-cutting machines to operate by themselves – no trouble! Concentrate on the truly important things in your life. Mercury rekindles your spirit of enterprise next month and sends you on an exciting trip – get ready for it!

Taurus (21.04.–20.05.)

You look distracted and your hair's sticking out in all directions. Don't let yourself be pressurised! See to it that you cut yourself a decent comb and get through the day burr-free. Wear resis-tance is important not only on your workpieces – so buy yourself a suit of armour and put on a show of strength with it. You'll command respect and your partner will find you irresistible.

Gemini (21.05.–21.06.)

Your performance curve is sagging dangerously, and you really must do something about it. Workwise, you cut positive angles and have an endless succession of inspired ideas, but in your private life you should lavish more attention on your partner. Come home and surprise her with flowers or chocolates.

Cancer (22.06.–22.07.)

With good ideas and convincing arguments, you soon acquire for yourself a cutting edge over your competitors. You're full of ideas and bursting with energy. Your partner also benefits from this. It's ages since you last witnessed such an exciting constellation of the stars for romance. You can sense the electricity as Cloud Nine approaches!

Leo (23.07.–23.08.)

Constructive criticism is always welcome, but don't overdo it in the coming weeks. Keep your opinions to yourself when you're with your workmates. The stars point to an excess of negative wire erosion. At home, on the other hand, everything currently looks better for you – a few words of affection, some flowers and Bob could well be your uncle.

Virgo (24.08.–23.09.)

Business is booming and your machining speed and quality of finish are legendary. But keep your feet firmly on the ground even if your company helicopter is already whirring to whisk you off to your next assignment. As an EDM expert, you're of course in bigger demand than ever – so give your most important team member, your NA2400, an approving pat every now and then. Show your partner a little more feeling. A plain black suit should do the trick.

Scorpio (24.10.–22.11.)

Your EDM machine's water tank sparkles in the colours of the rainbow – you'd love to dive in! But restrain yourself – it might annoy your boss. Invite your best friends to a dream holiday by the sea. You can afford it! But stay clear of your room neighbours – you don't want to overdo the generosity.

Sagittarius (23.11.–21.12.)

Under Neptune's influence, you wallow in the dreams of your subconscious. But watch out when wire-cutting! The sparks all come flying your way and, no, they're not glow-worms waiting to be caught. Your life partner is also sparkling with passion, so don't miss this opportunity. But caution is advised – your curtains are a bit thin and don't protect you from prying eyes.

Capricorn (22.12.–20.01.)

Give yourself and your erosion machine a chance for a short break. You've earned it. Maybe this is the moment to take that round-the-world trip you've been putting off. Or to launch your career as an international rave air guitarist. Don't worry – in a year's time at the latest, you'll return as a celebrated EDM specialist.

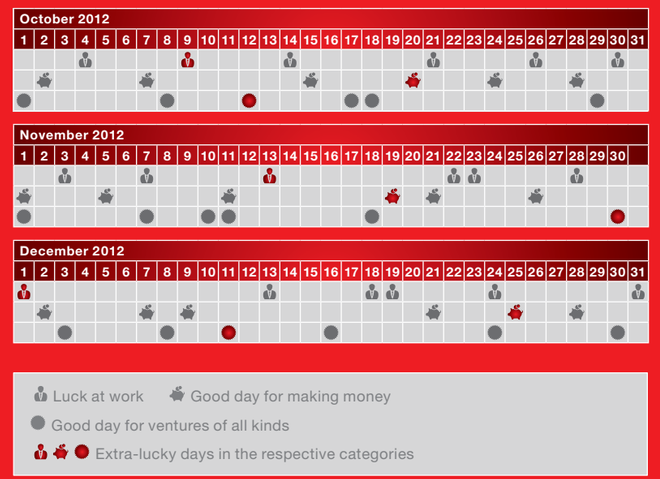
This month's horoscope

LIBRA

(24.09.–23.10.)

Believe in miracles! In the coming months, you set spectacular trends in the EDM industry – thanks to Jupiter. Don't let yourself be put off by the flashing cameras of your fans – just wear your shades when you go out.

Adapt your style of dress accordingly, and your partner will celebrate you as a sex symbol.



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