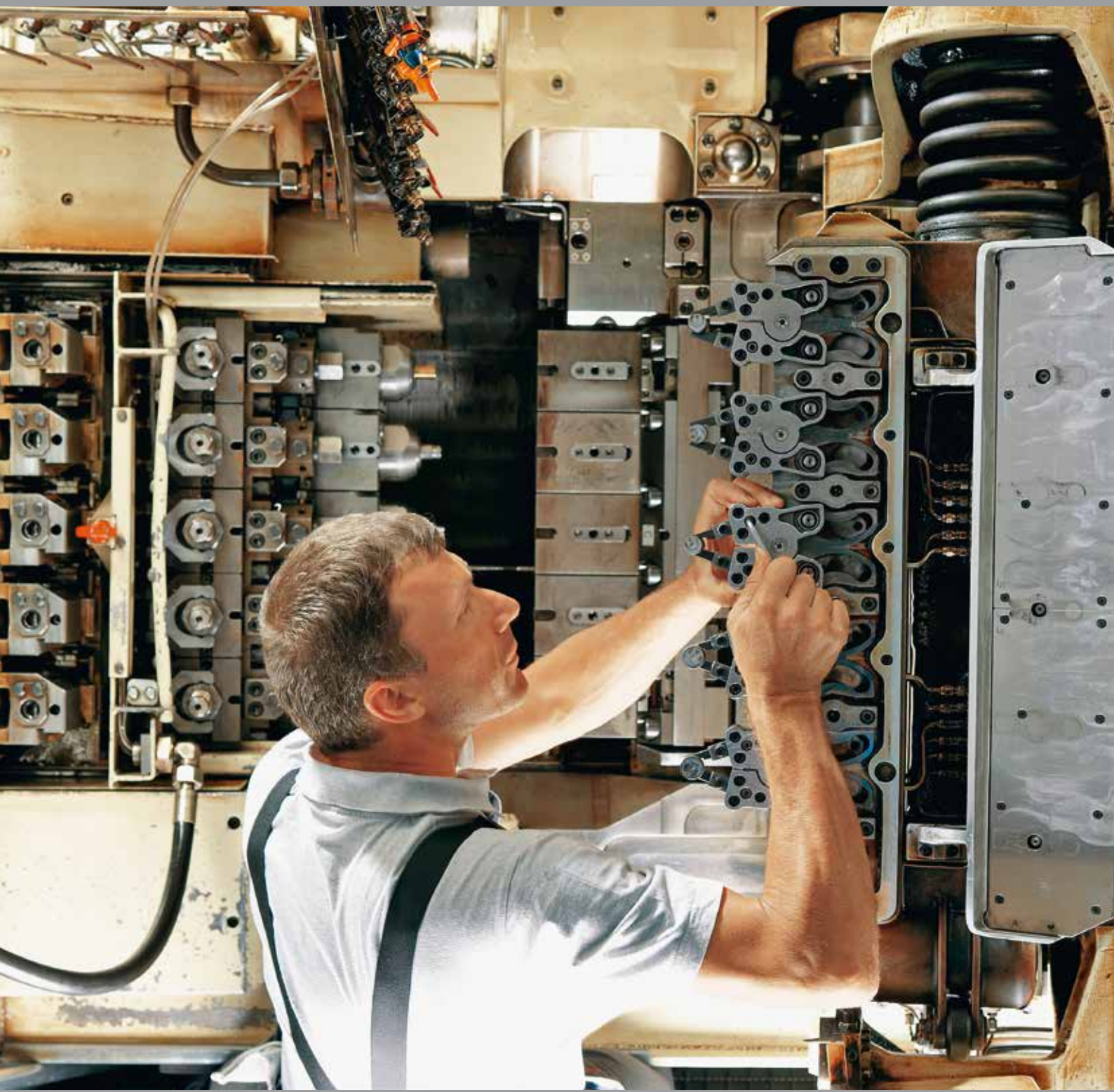
NETSHAPE

Hatebur magazine for horizontal cold and hot forming – **2/2016**



An employee from SFS Group AG sets up a Hatebur Coldmatic AKP 4-5 (view from above into the machinery room).

CEO'S VOICE

Dear business friends,

These days it seems everybody's talking about "electromobility". The changes taking place in the car manufacturing industry are a hot topic right now – not only for various manufacturers, but also in numerous sectors of the supply industry, in the media, for our customers and, most importantly, for us here at Hatebur too. The automotive industry is a very important line of business for us, and we are observing the various different (and sometimes conflicting) trends and developments within it with both optimism and astuteness.

Acquiring Carlo Salvi has enabled us to target new groups of customers, and the company as a whole now has better access to application areas in the aviation industry and other segments.

In this issue, we are delighted to introduce you to SFS Group AG, one of our long-standing customers in the cold forming sector.

Heading west to the USA, we have a report about Ohio Star Forge, which has produced over 400 million parts on its AMP 40 machine since it was installed in 1989 – a mind-boggling statistic!

We will also be presenting two machine concepts employed at our plant in Garlate, where they are frequently used to manufacture components for the aviation industry.

Producing equipment and system components that are tailor-made for our customers is one of the key factors behind our success. It is our great pleasure to introduce you to the team that makes this happen.

This issue comes full circle back to car manufacturing with an article on weight-optimized formed parts, describing some of our recent research in the field of processes and tools.

We hope you enjoy reading this issue and we wish you all the best for the new year.

Best regards,
Thomas Christoffel, CEO

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NEWS IN BRIEF – NEW HEAD OF SALES AND MARKETING

Reinhard Bührer, currently the Head of Hatebur Metalforming Technology (Shanghai) Co., Ltd. and a long-standing figure in our operations in the Asian market, will be returning to Switzerland in 2017. On January 1st 2017, he will take up the position of Head of Global Sales and Marketing, and will also be responsible for looking after our Asian subsidiaries. This move will strengthen the New Machines business unit while accommodating these increasingly promising sales organizations. As a member of the management team, Reinhard Bührer will be taking over this position from Christian Bürgin, who will continue being Head of Project and Product Management, Head of Production and a member of the Hatebur management team.

Reinhard Bührer is married, has two daughters and has been living in Shanghai since 2010. He has occupied various different roles for Hatebur during this time. Since the end of 2014, he has been tasked with establishing and developing tool manufacture in Shanghai (Hatebur Metalforming Technology [Shanghai] Co., Ltd. – see Netshape 2/2015 for more details). We wish him all the best with his return home and every success in his new position.

ALL CHANGE IN SALES – NEW REGIONAL SALES MANAGER FOR CHINA

Steve Bloch (top), the Area Sales Manager for China, transferred to the Project and Product Management department on November 1st. He has already been supporting the sales department for many demanding key projects in the past. Now he has taken over this function again. We are delighted that he will be continuing to apply his knowledge for our new machinery business line.

Christian Becker (bottom) is the new Area Sales Manager for China. He has already occupied a number of different roles for Hatebur over the years and has been a valued member of the Sales team since February 2016. We wish him every success in his new role and hope he enjoys many an exciting project in the Land of the Red Dragon.

CARLO SALVI S.P.A., ITALY – ARRIVEDERCI DR. SERGIO ZIOTTI

Dr. Sergio Ziotti, long-standing CEO of Carlo Salvi S.p.A., will be going into well-deserved retirement at the end of 2016. We would like to thank him for his tireless commitment to the company and wish him the best of health and happiness in this new stage of his life.

Renato Saglimbeni is the man who will now help us with the transition to new management at Carlo Salvi S.p.A.. We plan for him to be with us for one year. We wish him every success in his new role, as some exciting work lies ahead! We will provide a detailed report on the transition in the next issue of Netshape magazine (no. 1/2017, to be published in the summer).

OHIO STAR FORGE USA – 413 MILLION PARTS PRODUCED ON THE HATEBUR AMP 40 SINCE 1989

Johannes Eckert Matthias Aebi/Hatebur

Approximately 207 million kilograms or 23 500 kilometers of steel bars have been fed to the AMP 40 during the past 27 years at Ohio Star Forge, producing high quality parts. ... and this press is still hungry.

Ohio Star Forge boasts the only continuous line-up of Hatebur machines in North America for the 25 to 165 mm OD size range. It has the right machine for every part whithin this range. Its quality and delivery performance, in combination with its diverse product offering, make OSF the supplier of choice for numerous industries.

Ohio Star Forge proudly produces a wide range of parts for Tier 1 and Tier 2 automotive suppliers, as well as various bearing and industrial applications. It develops an array of fasteners, sleeves, collars and bushings for the oil, natural gas and alternative energy industries.

From its beginnings as a small shop with two forging machines, one furnace and a workforce of 23, Ohio Star Forge has gone on to become an industry leader with five forging machines, nine cold rolling machines, two furnaces and over 100 employees. And as its size has increased, so too have its market share, industry diversity, product capability and engineering expertise.

The crank house bores were re-bound for the first time since the AMP 40 is in production (1989).

1988 Ohio Star Forge is founded as a joint venture between Daido Steel (Nagoya, Japan) and Cooperwelt Steel (Warren, OH).

1989 Production begins in Warren, OH. Original equipment includes Hatebur AMP 30 and AMP 40. One millionth part is forced within one year.

1996 Second Hatebur AMP 30 is put into production. Cold roll forming department adds six machines. Jeffrey P. Downing named President & CEO.

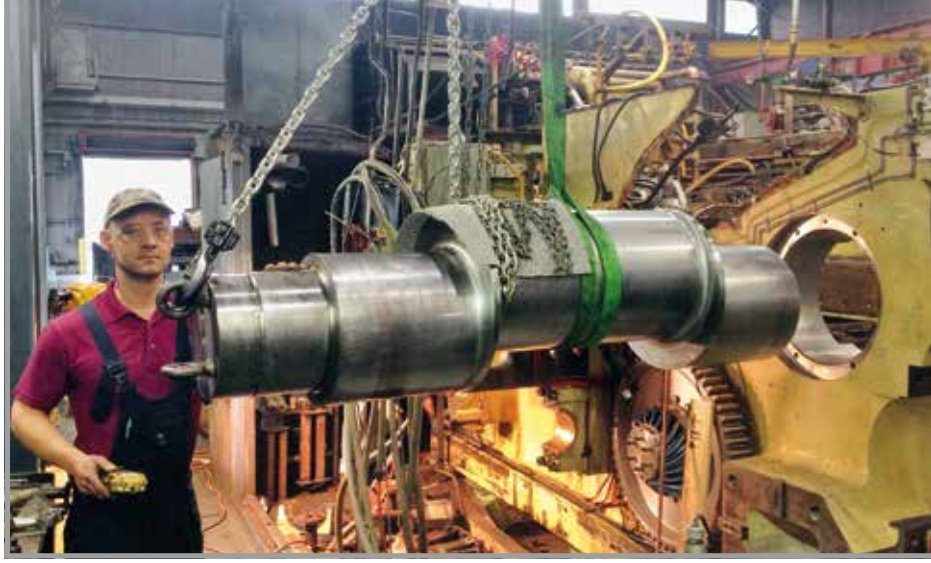
2004 Major forging equipment and facility upgrades completed.

2005 500 millionth part is forged at OFS.

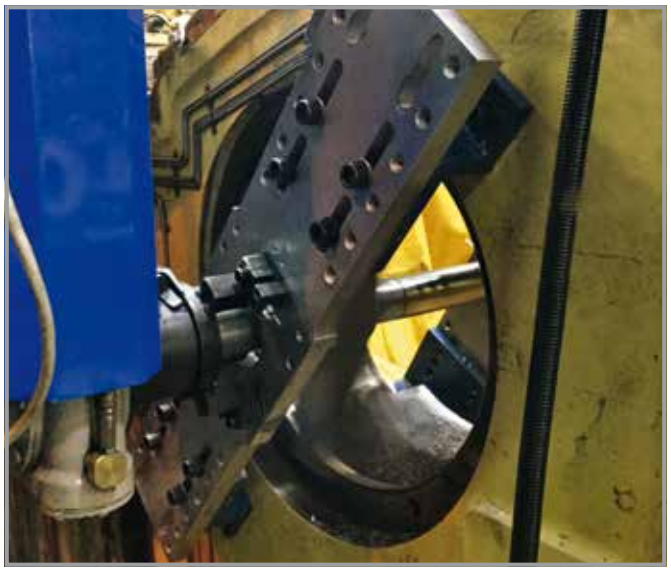
2006 Hatebur AMP 50XL HFE begins production, increasing size capability to 110 mm (OD by 100 mm [height]).

2013 OSF announces addition of Hatebur AMP 70 XL. Production to begin in November 2013. 25th anniversary of founding. On track to forge 1 billionth part in Ohio Star Forge history.

Ohio Star Forge has the only continuous line-up of Hatebur equipment in North America, enabling it to supply a wide range of products to a multitude of industries. Its engineering and forging expertise have ena-



Reassembly of the crankshaft by Ben Beaumont from OSF after machining the crankshaft bores in the machine frame.



Machine device for the machining of the 1st station crankshaft bore.

The five Hateburs at Ohio Star Forge				
Model	**AMP 30**	**AMP 40**	**AMP 50XL HFE**	**AMP 70XL**
Number of machines	2	1	1	1
Max. OD (mm)	25 (min.)	85	110	165
Max. height (mm)	10 (min.)	60	100	130
Max. forging speed (SPM)	140	150	100	80
Max. forming pressure (MT)	230	500	800	1500
Forming stages	3	4	4	4
Heating devices	Induction heater	Induction heater	Induction heater	Induction heater

Checking the clearance of the new intermediate gear wheel after reassembly.

Hatebur service engineer Matthias Aebi measures the fit between the crankshaft bore and the crankshaft sleeve on 4th station side.

bled it to continuously expand its product offering and open doors to new industries.

The AMP 40 at OSF is the second machine in this series which was built by Hatebur in Switzerland.

It started production in 1989, manufacturing bearings. Since then, more than 413 million parts have been produced on the AMP 40.

In March 2016 a major overhaul of the AMP 40 took place. After 24 days all the work had been done and the AMP 40 was put back into production.

CARLO SALVI S.P.A. ITALY – PRODUCTION OF SMALL AND VERY SMALL PARTS

Hatebur/Carlo Salvi Carlo Salvi

In April 2016, Hatebur announced the acquisition of the Italian company Carlo Salvi S.p.A. The product range of Hatebur was significantly expanded as a result. With more experience, more services and more opportunities, both companies now enjoy an even stronger position on the global market of metalforming.

The nearly 80-year-old Italian company has finally become part of Hatebur. With around 90 employees worldwide, the company supports its customers with machines, services and solutions for the cost-effective manufacturing of formed fastener, automotive and aerospace parts. Carlo Salvi is today one of the market leaders in multi-blow and multistage headers for producing formed special parts.

In Netshape 1/2016, the history of the company was shown and details of the many services the Italian team has to offer were explained. Today, the focus is laid on two of the company's important machines: the 1 die – 2 blow header (as for example the model CS 005) and the 2 die – 4 blow header (model 248 E).

Aerial view of Carlo Salvi in Garlate, Italy.

CS 005, 1 DIE – 2 BLOW HEADER FOR COLD AND WARM FORMING

The machine was especially developed and designed for the production of screw blanks as well as solid and semi-tubular parts.

Carlo Salvi has been manufacturing single die double blow headers for more than 50 years.Single die double blow machines are particularly suitable for manufacturing screws, rivets and components where the upset volume does not exceed 5 (or in some cases 6) times the wire diameter.

Typical applications for these machines are the manufacture of:
– Machine screws
– Self-tapping screws
– Conglomerate and dry wall screws
– Welding studs
– Aerospace rivets
– Solid rivets
– Semi-tubular rivets
– Fully tubular rivets
– Pins etc.

Type of machine	Specification
1 die – 2 blow headers	This kind of headers can be used to head up to six diameters of material and offers the possibility to produce components with complex shapes. Its main features are the high speed and precision production for heading screws, semi-tubular rivets, even with a shouldered shank, and tubular rivets, ensuring remarkable tool life and easy maintenance.
2 die blow headers	These headers can be used to obtain components with complex shapes which cannot easily produced on multi-station machines, where the part has to be transferred several times because the shank is very short or the head too big. The components which can be produced are screws, shaped semi-tubular rivets and tubular rivets with a large head.
Progressive headers	Progressive headers can be used for the high-precison production of special parts with very complex shapes, which are used in various fields of the market and particularly in the automotive and in the aerospace industries.

Parts produced on the Carlo Salvi machine model CS 001. Sequence of operation shown on the first picture (on top).

Carlo Salvi single die – double blow machines can be divided into three sub-groups as follows:
– machines for the manufacture of solid parts or screw blanks;
– machines for the production of parallel or tapered hole semi-tubular rivets as well as shouldered rivets;
– machines for the production of fully tubular rivets (also known as blind rivets or pop rivets).

The Carlo Salvi machine is the only 1 die – 2 blow cold header available on the market which can manufacture semi-tubular shouldered rivets and fully tubular rivets. The machines are toggle-driven.

THE TOGGLE OFFERS MANY ADVANTAGES SUCH AS
– in single die – two blow machines, a comlete working cycle can be carried out with a single revolution of the crankshaft. Therefore one revolution of the flywheel or crankshaft corresponds to one part produced.
– Heading takes place by means of progressive forming and not an instant impact, as is the case on conventional 1 die – 2 blow headers. The toggle moves quickly in the first part of the stroke and slows down dramatically at the end of the stroke, when the component is being upset;
– the time allowed for the heading is much higher and the result is a better tool life and a better molecular structure of the component. On single die headers, this is evident with recessed head screws, such as Phillips, Pozi, Torx etc. Punch life can be increased up to 30% as opposed to the punch life obtained with conventional headers;
– in single die headers, besides better tool life as mentioned above, the toggle has enabled a very efficient patented piercing system to be developed for semi-tubular and fully tubular rivet manufacturing;
– in conventional headers the crankshaft is subject to maximum load in the maximum heading position. On Carlo Salvi toggle headers, the maximum heading point is taken by the toggle and the crankshaft is in a virtually idle position. Therefore, the crankshaft is subject to much less wear, and heading flexion is minimized.

The complete line of the Carlo Salvi model CS 005.

LATEST MODEL: CS-SERIES

1 die – 2 blow headers are manufactured in several models ranging from very tiny to large items, able to handle wires with a diameter of between 0.8 and 14 mm. The latest models are those in the CS-series. The CS-series consists of a new range of machines.

The special features of these machines are:

– touch-screen controls to set up machine in-line with-screen troubleshooting
– computer controlled motorized adjustment of K.O. unit
– computer controlled motorized adjustment of wire feed
– product data saving and recall possibility for future production
– linear wire feed with universal grippers for all wire diameters inside the machine range. No need for rolls so less expensive tooling and quicker set-up. Better cut-off quality with no wire deformation and absence of possible marking, even on softer materials.
– tool set-up outside of machine while the latter is working by means of the quick change kit

The main specifications of the CS 005		
min./max. wire diameter	6 / 14	mm
max. cut-off length	200	mm
max. K.O. length die side	160	mm
max. speed	150	pcs/min.
max. head diameter	25	mm
max. heading tonnage	75000	daN
max. cutting tonnage	8000	daN
stroke of P.K.O.	18	mm
max. P.K.O. tonnage	1000	daN
installed power	37	kW
weight of machine	36000	daN

– possibility to produce super alloy special parts by means of an embedded induction heating kit.

The next step up is a model series called 246 or 248. These machines are 2 die – 4 blow machines.

248 E, THE 2 DIE – 4 BLOW HEADER FOR COLD AND WARM FORMING

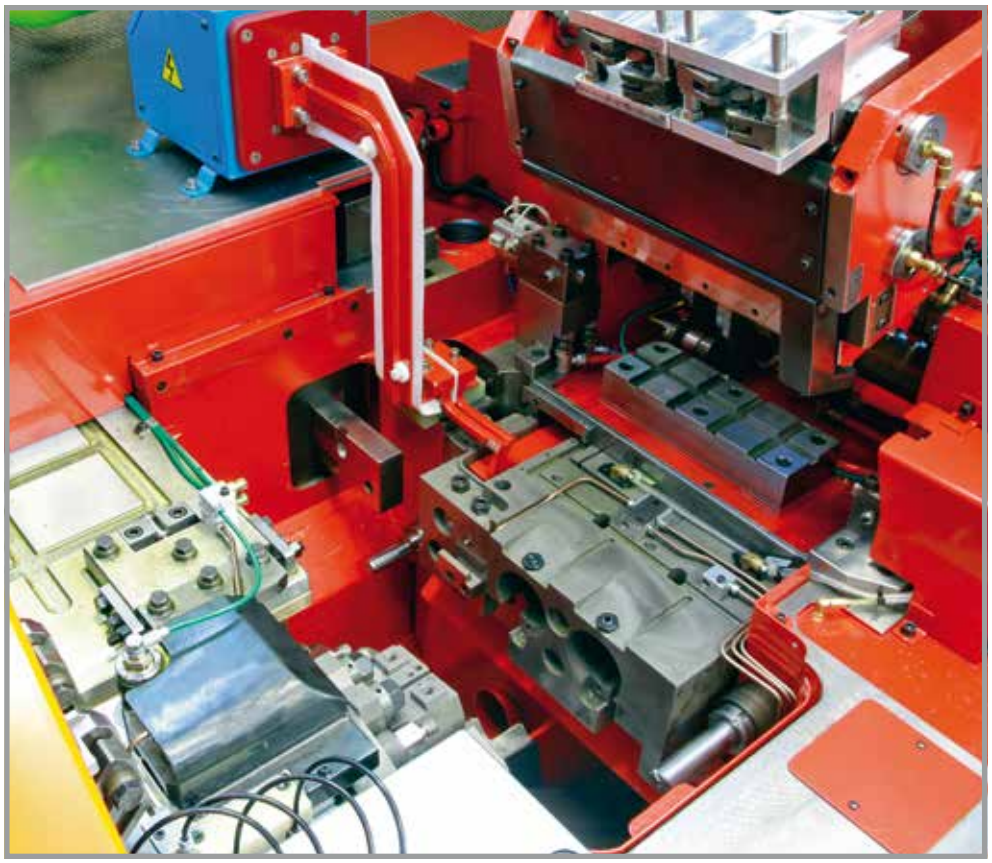
Carlo Salvi has developed a new motorized model called the 248 E, which is an enhanced version of the model 248 machine. The machine is complete with an electro-pneumatic clutch which allows maximum heading tonnage to be applied even when inching.

The 248 E header model is suitable for the manufacture of parts with complex shapes, whose heads have a very large volume, or of components where two dies are sufficient but a minimum of at least three blows are required, such as socket cap screws, trimmed components etc.

Another advantage of the machine is the minimized changeover times. Its technology and speed is such that it can be to run profitably not only with large volumes, but also with small batches.

The main specifications of the 248 E		
min./max. wire diameter	6 / 12	mm
max. cut-off length	115	mm
max. shank length	92	mm
max. speed	170	pcs/min.
max. head diameter	22	mm
max. heading tonnage	55000	daN
max. cutting tonnage	6500	daN
stroke of P.K.O.	20	mm
max. P.K.O. tonnage	1000	daN
installed power	35	kW
weight of machine	25000	daN

The E248 E Carlo Salvi cold-former for producing complex parts.



Open tool room of Carlo Salvi coldformer machine model 246 E WS.

Parts produced on the 246/248 E.

As well as the main standard features of this machine, the 246/248 technology offers:
– linear wire feed, without rolls and without wire-stop
– ejector on die and punch side
– motorized lifting/lowering of transfer unit
– discharge conveyor
– bad part discharge
– transfer fingers

OPTIONS AVAILABLE

The 248 E header model can be enriched further with some optional items such as the quick change kit, which includes: punch block unit, transfer unit, cutter holder unit, cutter centring jig, punch centring jig, transfer centring jig.

To handle material such as titanium and super alloys, which cannot be formed with the cold heading system, the header can be equipped with a pre-heating system.

The customer can decide to equip the 248 E header model with a heating system with a coil housed on the die holder, or with a resin-bonded inductor positioned in the bedframe. In the event of special production needs, it is also possible to envisage installing both kinds of inductors.

Thanks to these machines, the market for screws, rivets, studs, pins etc. is very well served. We look forward to providing you with further data about the capabilities of these machines (carlosalvi@carlosalvi.it).

The next Netshape magazine will present the progressive header models.

SFS GROUP AG – A STRONG PARTNER FOR COLD MASSIVE FORMING

Hatebur/SFS SFS Group AG

The partnership between Hatebur and SFS has been bearing fruit for over half a century. Working together to develop new coldformers benefits both companies and promotes understanding between the people who build machinery and the people who use it. The Hatebur Coldmatic CM 4-5*ECO*, which was first put into operation two years ago, is an excellent example of this.

The SFS Group AG is one of the world's leading players in mechanical fastening systems and precision formed parts. This globally active company employs a total of 8046 permanent members of staff, of whom 2245 work in Switzerland and 1775 in Europe (figures from June 30th 2016). Founded in 1928, the company works in the field of core technologies in various different export markets, such as the automotive, construction, coatings, electrical, electronics, aviation and biomedical engineering industries. This work often sees SFS collaborating with other companies, establishing long-term partnerships with the market leaders in the relevant sectors.

Precision is vital at all stages of the production process.

In addition to developing and manufacturing products under the brand names SFS intec, GESIPA and Unisteel, SFS also conducts trade and logistics activities under the SFS unimarket brand. Right from its very foundation, meeting its customers' needs has always been part of the culture at SFS. SFS's bespoke solutions help its partners to stay competitive, something that benefits their customers in turn. Hatebur wholeheartedly supports the fostering of this culture, which is just one of the reasons why the two have been partnered for over 50 years.

SFS is organized so as to make customer relationships as close as possible. The creation of clear areas of responsibility promotes good corporate governance. Operations at the SFS Group are divided into three segments that represent its three business models:

– Engineered components: Custom-made precision components, fastening systems and assemblies under the brands SFS intec and Unisteel.
– Fastening systems: Application-specific fastening and conveyor systems under the brands SFS intec and GESIPA.
– Distribution and logistics: Market-oriented product ranges and innovative logistics solutions under the SFS unimarket brand.

Hatebur systems are used for production around the world.

The company is headquartered in Heerbrugg (Switzerland) and generated a

turnover of CHF 1.376 billion in 2015. It has over 70 sales and production sites in Europe, North America and Asia.

SFS has focused on the advantages of cold massive forming since it first started producing parts back in 1960. The benefits of this technique are enormous, particularly in the series production of workpieces.

MULTITUDE OF HATEBUR MACHINES

SFS first opted to equip itself with Hatebur systems over 50 years ago, and today SFS's arsenal of machines, spread across its production sites in Europe, the USA and Asia, boasts more than 20 Hatebur production systems from various different series. The Coldmatic CM 4-5*ECO* – a joint development – was first put into operation in 2014. SFS's main priority here was to create a compact system concept with new solutions to ensure efficient production. This coldformer was therefore the perfect complement to the company's long-standing philosophy of lean production. The system is also important from a conceptual perspective because, thanks to additional purchases, it will be used in various SFS production sites around the world in the future. This purchase has made it possible to increase the production capacity of the plant in Switzerland.

COST-EFFECTIVE = COMPETITIVE

Key factors in SFS's decision to purchase the Hatebur CM 4-5*ECO* were its ease of use and compact construction, both of which were required for the production sites in Asia and the USA. The company was also looking for an economically competitive system that could satisfy its incredibly high demands – and Hatebur provided exactly that with the Coldmatic CM 4-5*ECO*.

The machine was not available "off the shelf", however, and the journey from the initial idea through to the purchase of the system took over two years. The project necessitated close collaboration between Hatebur and SFS (see the article in Netshape no. 1/2014 for more details). But this effort proved worthwhile, as the Coldmatic CM 4-5*ECO* has the credentials to meet both current and future requirements, no matter where it is installed.

View of a Hatebur Coldmatic in an SFS production facility.

The greatest challenge was creating a system that is slimline, efficient and cost-effective but that does not compromise on any of the advantages the Hatebur Coldmatic offers as standard. The new servo-assisted roller feed enables parts with a high cut-off quality to be produced.

Staff at SFS particularly like the model's optimized ergonomics and ease of use, paired with the fact that it is fully operational and compatible with existing Coldmatic machines. Furthermore, the reliability of the system and its high availability (very little maintenance work is required) help to boost production efficiency.

The SFS Group's production plants are utilized to full capacity. The machines run in shifts and are retooled several times a week. Since they were first put into operation, they have been producing parts without the need for any amendments. The logistics and flow of materials were also able to be retained, as the concept behind the CM 4-5*ECO* fits seamlessly into the existing production scheme.

Components of gearboxes, which are manufactured in high volumes on Hatebur coldformers.

A trainee at work.

The products manufactured on the Hatebur machine are used in the coatings industry or in vehicles in the form of seat belts, engines and brakes.

The need for the high demands that SFS places on quality becomes clear when you look at the components it produces. The majority are sophisticated components that need to perform their function in automotive assemblies that are relevant to safety. The systems used to produce them need to be able to fulfill the aim of finding zero defects in the several billion parts produced every year.

Hatebur presses are used to manufacture different products with varying requirements. Once forming is complete, downstream processes such as machining or the application of heat treatments and/or surface treatments are carried out. These processes are applied mostly to standard forming materials made of steel, but high-alloy steels are being used with increasing frequency now as well.

NO SPECIAL TRAINING REQUIRED

One of the huge advantages of using the Hatebur system was that SFS staff already had several years' previous experience of using other Hatebur machines to draw on. This meant that operators were able to get to grips with the new system quickly and without being given any special training. The Coldmatic is ergonomic and user-friendly, thus making it popular with staff. It goes without saying, however, that the most important factor was customer acceptance. As the tools are compatible with existing Hatebur systems, the parts they produce are guaranteed to be of top quality – something that is important with regard to revision and maintenance work, which necessitates switching the active production process to a different machine.

FUTURE OF THE FORMING MARKET

The unstoppable rise of digitization can be seen everywhere, and the cold forming sector is no exception. Anyone working in the industry must choose the right development strategy to follow. Systems are becoming more and more networked, and they will provide data not only about the forming process itself but also about the condition of the machinery in the production networks.

The demands for high-strength materials such as titanium and aluminum alloys to have complex geometries will become even more exacting, and Asian competition against the European industry will shape the future too.

It is widely acknowledged that globalization and its encroachment, as well as the dynamics of the Asian industry, have significantly increased the pressure on Europe over recent years. Europe has reacted positively to this: Old processes are being scrutinized and companies are looking to new technologies, tasking their development departments with making optimizations wherever possible. These difficult market conditions have spurred SFS on to become more efficient and more responsive too, which will make the company more competitive both in the medium term and in the long term.

JOINT GLOBAL SUCCESS DESPITE SWITZERLAND'S HIGH COST OF LABOR

Both SFS and Hatebur firmly believe that even Swiss companies can successfully hold their own in the international market. SFS's investment program of around CHF 30 million for the future development of heat treatments through to the year 2019 is proof of the company's positive outlook. Approximately three quarters of this sum will be invested in Switzerland.

Another important reason for this belief is having a highly motivated team that takes on new challenges every single day and carries out projects successfully. A huge part is also played by working with strong partners who, like Hatebur, all pull together to run projects with the utmost professionalism and make a concerted effort to achieve collective success.

View of a Hatebur Coldmatic at SFS.

SFS has resolved to continue along the path it has trodden and ensure that it remains competitive in Switzerland, despite the high cost of labor there. This goal is to be achieved through the following plans of action:

– Focusing on projects with a high degree of innovation, automation and capital intensity
– Ongoing staff training (occupational/professional training)
– Intelligent organization and processes (lean production)
– Constant focus of productivity and quality

Hatebur will actively assist the SFS Group in doing this and play a pivotal role in helping the company to achieve its goals through further development of its machines.

Components of gearboxes, manufactured on Hatebur coldformers.

Products for use in the automotive industry.

TECHNICAL DEVELOPMENT – SEVEN-MAN TEAM IN THE SERVICE BUSINESS UNIT

Hansjörg Gebhard Hatebur

Many companies claim that the customer is at the heart of everything they do – but at Hatebur this really is a solemn vow rather than just an empty promise. Staff entrusted with the technical tasks of fulfilling orders and preparing quotations see to providing the many distinctive technical features that customers need on their Hatebur hot and cold forming machines.

Company restructuring and reorientation at the beginning of 2016 saw the formation of a new team of specialists: The "Technical Development Service" business unit.

The team aims to work more closely with customers than has previously been the case, particularly with regard to meeting their individual technological requirements, developing solutions and solving problems.

Leader of the team is Wolfgang Müller, who joined Hatebur on February 1st, 2009 and since then has gained valuable experience working as a mechanical engineer for peripheral equipment, system planning, system setup (including layout planning), and various monitoring and handling systems.

His team comprises three electrical engineers and three mechanical engineers/ technicians.

ELECTRICAL ENGINEERING

Daniel Kuhn, Martin Schäuble and Markus Trillitzsch take care of everything to do with electrical engineering.

This primarily means designing, developing and commissioning the control systems for whatever new machinery is going to be installed.

The three engineers also specialize in devising technical solutions to the electrical requirements of alterations and modifications for pre-sales, as well as implementing and commissioning these solutions at customer premises.

From left to right: Wolfgang Müller, Can Cay, Martin Schäuble, Markus Trillitzsch, and Raphael Roth (the other two members of the team, Daniel Kuhn and Vanes Stabellini, are not pictured).

Regular team meetings help them look at customers' special requirements from all angles and find the optimum solution.

If electrical faults or problems occur with machines during the production stage, they can offer technical support over the telephone or in person.

MECHANICAL ENGINEERING

Vanes Stabellini, Cay Can and Raphael Roth are in charge of all things mechanical.

Their work focuses on dealing with and attending to all kinds of in-house repairs, primarily for modules such as the complete transfer unit on hotformers or the gripper housing on coldformers.

In addition, developing alterations and modifications in close collaboration with their electrical engineering colleagues is an extremely important part of what they do. Safety precautions and the guidelines provided by machinery directives must be followed when doing so.

They also work on projects to develop new systems, not only customizing standard machines and developing tailored foundation/installation layouts for customers but also working out requirements for peripheral equipment.

We believe that the close interplay Wolfgang Müller coordinates between the ever-increasing demands being placed on mechanical and electrical engineering (and particularly the latter) will play a key role in our long-term success. The close and regular coordination with our Engineering department is yet another guarantee that the considerable expertise of staff in both fields will be harmonized and pooled into further developments.

The team would soon like to be able to devote even more effort to our customers' wishes and, as far as is technically possible for Hatebur as a machine manufacturer, to implement even more bespoke solutions for them.

LIGHTWEIGHT COMPONENTS – SIMULATION AND FEASIBILITY ON HATEBUR MACHINES

Hatebur Hatebur

Making lightweight components will be a challenge in the near future. Vehicle development and the lowering of fuel consumption means that cars now need to be made lighter without losing any stability. This can be achieved either by using new materials or by reconstructing existing parts in a way that retains their functionality. Every gram counts!

TRENDS IN THE AUTOMOTIVE MARKET AND IN PRODUCTION

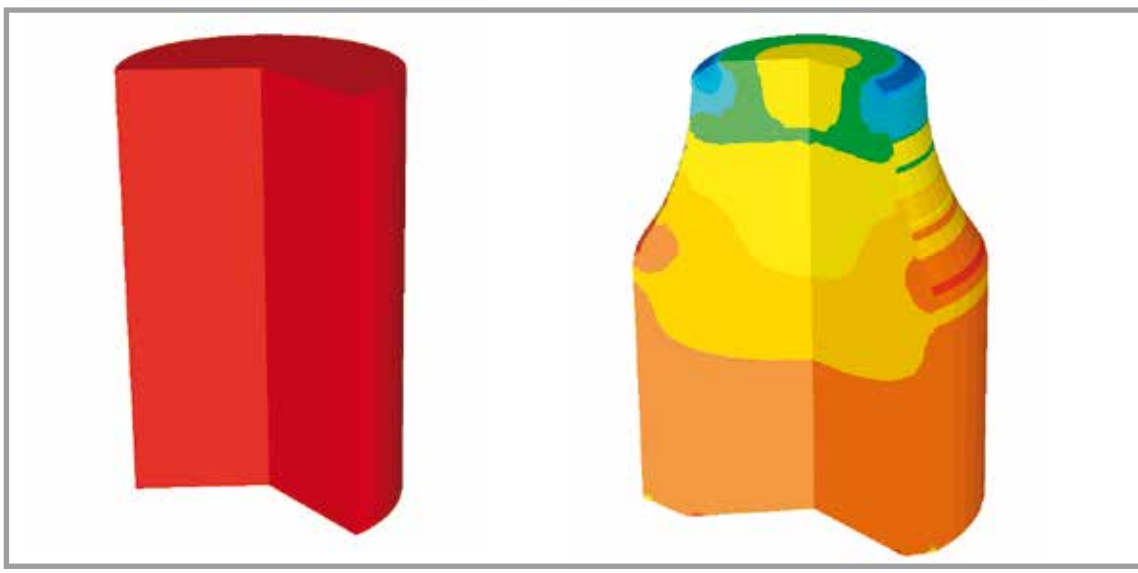
– The production and sale of passenger vehicles is set to increase by approximately 3.4% a year.
– Production sites will follow the markets.
– China, NAFTA and Europa will continue to be the biggest markets.
– The highest growth rates are expected in the small vehicles sector.
– The automotive industry's primary objective is to reduce CO_2 emissions.

Using innovative forged components made of steel to create a lightweight construction can demonstrably reduce energy consumption and CO_2 emissions. For example, fitting a passenger vehicle that has a 2.0 l turbo diesel engine, dual-clutch transmission and four-wheel drive with a lightweight drive and chassis can reduce its weight by up to 42 kg.

HOW CAN THIS BE ACHIEVED?

The focus of reducing the weight of forged components lies on the following two points:

– Creating a lightweight construction through the use of new and improved grades of steel (e.g. with a high strength of Rm > 550 N/mm², using specific grades of steel for heat treatment from the forming process)



Simulation of a cross-section of flange parts and stations one to three, showing the pressure.

– Creating advanced geometries for the forged components (reducing the amount of material in non-functional areas of the component, asymmetric shapes, reducing wall thicknesses)

EFFECT ON PRODUCTION

As you might expect, reducing the weight of forged components has a huge effect on how they are produced: The design of the tools needs to be modified, the way in which the components are handled needs to be changed and the cooling process must be redefined.

The influence of lightweight construction will most definitely be felt in the forming industry, whether it is the result of new and improved grades of steel or the use of complex, asymmetric component shapes and their geometries. The trend will lead to an increase in the amount of tool and process support needed at the machine.

PROCESS SIMULATION ASSISTS CUSTOMERS WITH LIGHTWEIGHT COMPONENTS

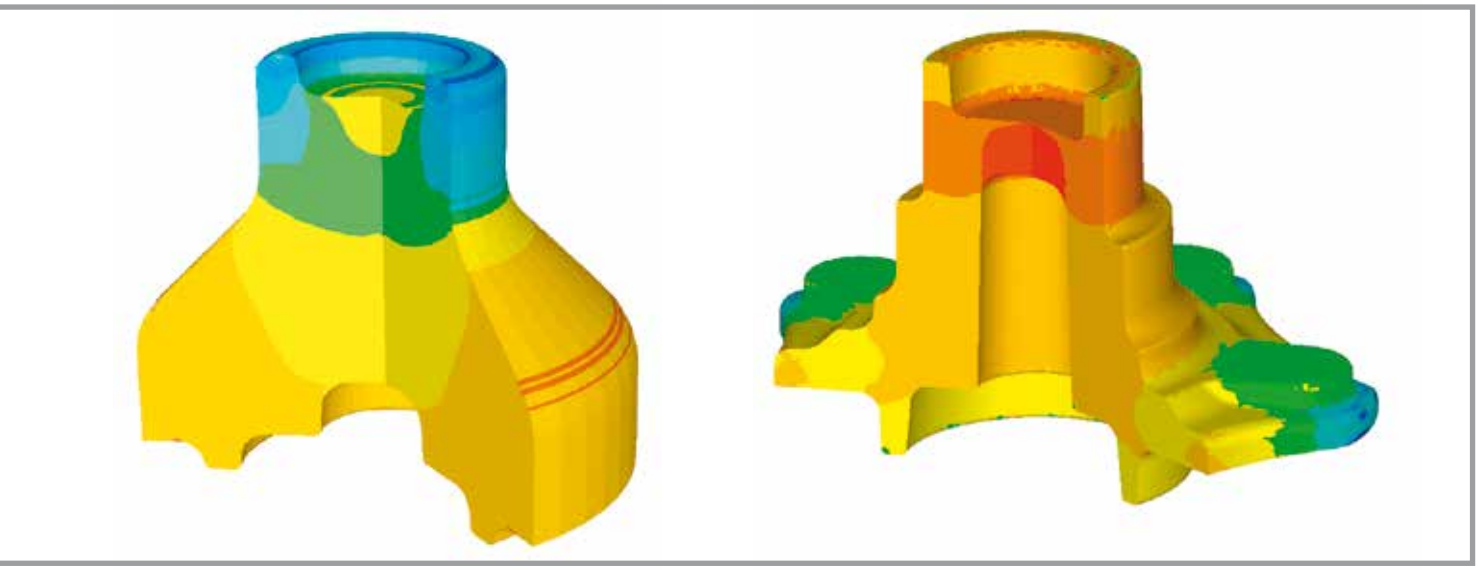
You can rely on professional assistance from Hatebur in precisely this area. Hatebur first launched the FORGE program back in 1999. The combination of this tool and the company's experience enables us to satisfy customers' ever-increasing demands regarding production complexity and quality.

Collaboration begins with meticulous analysis of the components. The simulation checks potential part shapes in order to ensure a cost-effective design for the forging process and the longest possible service life for the tools.

The longer the service life of the tools, the shorter the machine downtimes and, consequently, the lower the cost of manufacturing the components.

And the earlier Hatebur can assist you in the manufacture of your components, the better the forging process can be designed. This will help you manufacture parts at a lower cost.

Please do not hesitate to get in touch if you would like us to show you how you could potentially reduce weight and cut costs.



TRADE FAIRS/EVENTS

ACTIVITIES IN CHINA

The China International Bearing Industry Exhibition took place in Shanghai from September 20th to September 23rd. Hatebur (Shanghai) Technology Co., Ltd. was there once again with its own stand.

ACTIVITIES IN ITALY

The Fastener Fair took place in Milan from September 28th to September 29th. This was the first year in which Hatebur was represented with its own stand via our new subsidiary Carlo Salvi S.p.A..

ACTIVITIES IN BRAZIL

The annual Senafor conference in Porto Alegre was an important event for Hatebur agency EINS Soluções em Engenharia. With support from Switzerland, the company offered advice to customers and enthusiasts from October 5th to October 7th. A special talk by Hatebur gave visitors to the fair information on the highly topical issue of lightweight construction.

ACTIVITIES IN JAPAN

The sixth AsiaForge Meeting took place in Chiba-shi (Japan) from November 7th to November 10th. Supported by Switzerland, Hatebur Japan K.K. greeted customers and other interested parties at its own stand.

ACTIVITIES IN THAILAND

The Hatebur agency Munger Machine Tool greeted company customers and forming enthusiasts at its stand in the Grand Metalex 2016, which took place from November 23rd to November 26th. This trade fair welcomed exhibitors from over 50 countries, who presented roughly 3300 global machine tool and metalworking technology brands to over 100 000 visitors from the Association of Southeast Asian Nations.

VISIT HATEBUR

IN THE USA

Together with the agency Forging Equipment Solutions, Hatebur will be offering advice to customers and enthusiasts at the biennial Forge Fair in Ohio from April 4th to April 6th.

IN GERMANY

Hatebur will be taking part in the Hanover Fair (April 24th to April 28th) for the second year in a row. This event is a great opportunity for Hatebur to not only strengthen its relationships with existing customers and other interested parties, but also answer questions about all aspects of Swiss cold and hot forming machines.

IN RUSSIA

Hatebur is organizing the Russia Symposium in Moscow together with its agency LLC Ferrostaal Moscow and other sponsors for what is now the fourth time. This event will take place on May 16th, 2017 during the Metalloobrabotka International Exhibition in the Russian capital. If you come along to our talks, you're sure to be impressed with the range of topics under discussion.

IN JAPAN

We will be taking part in MF Tokyo together with Carlo Salvi S.p.A. and demonstrating one of our machines at our stand. This fair will take place in Tokyo from July 12th to July 15th 2017.