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NetShape

02 | 2019



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www.hatebur.com

HATEBUR

Personal



Spettabile partner, cliente, fornitore, ...

... is how I would greet you in Italian, dear business partners, as a little bit of Italy also forms part of our identity. In mid-September, we were able to celebrate the 80th anniversary of Carlo Salvi, our Italian subsidiary, with a wonderful party. Celebrating an 80th anniversary is not a given nowadays, particularly in the current challenging market environment and the macroeconomic and political climates. This makes me all the more proud of the fact that, together with our employees and their families, we have passed this milestone.

To mark this anniversary, this current edition of NetShape focuses on Carlo Salvi.

You will discover the exciting story of the company's founding years, including the company founder's return from the USA to a Europe devastated by war, as well as a fascinating interview with Matteo Panzeri, one of our employees of many years.

Do you know how the Champions League and FC Basel are connected to Overhoff? Read on to find out more about this exciting customer story. You can also learn about how the CS 001 range of heading machines is setting outstanding standards in production with simple yet extremely economical blanks.

This edition is rounded off with news from Reinach about a modification for the AMP 20 and AMP 20 S, our new service for shearing blades, and facts about the near linear in-feed.

To conclude, we invite you to look back on our participation at a trade fair in Tokyo.

I hope that this edition of NetShape offers some exciting stories and is a great read.

Or to put it in Italian:
Vi auguriamo una lettura entusiasmante.

Kind regards,

A handwritten signature in blue ink, which appears to read 'T. Christoffel'.

Thomas Christoffel, CEO

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Cover image: Overhoff Verbindungstechnik GmbH, Germany

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Latest news

Carlo Salvi anniversary celebrations in Garlate, Italy

On Saturday 14th September, Carlo Salvi employees celebrated the company's 80th anniversary with a large party, which was also held to thank employees and their friends and family. After the formal part of proceedings, which included various speeches and a video, those attending then enjoyed a varied and amazing show.



Demonstration center in Reinach

Until now, we have used the COLDMatic AKP 3-5 model at our headquarters in Reinach for trial, test production and demonstration purposes.



In spring 2020, the COLDMatic CM 725 will replace the COLDMatic AKP 3-5 and be available to use at the demonstration center. Please get in touch if you would like to see the machine in production or tests are to be conducted on your behalf.

New company clothing for Hatebur employees



Various Hatebur employee function groups will be given new work clothing in March 2020. This clothing was selected after an extended evaluation phase and has also been adapted accordingly after its recent appearance. Employees in China and Japan will also receive this new clothing.

Apprenticeships at Hatebur



Over many years, Hatebur has successfully trained apprentices as designers for the engineering and technical sectors. Hatebur also participated in a mini careers fair held at schools in Reinach in October, demonstrating the opportunities provided by receiving training at a machining company. The four-year training program at Hatebur is a varied and exciting apprenticeship.

At the Swiss "Nationaler Zukunftstag" (national day for the future), Hatebur gave employees' young sons and daughters the opportunity to get to know their parent's workplace and the various groups of professionals at Hatebur. The day was focused on turning a page, with the girls and boys learning about areas of work and life which are not stereotypically associated with their gender. The intention of this was to promote gender quality with respect to career choices and life planning.

Facts and figures Italy

25
car
manufacturers

9
production sites
in Italy

> 160,000
employees in the
Italian car industry

Italy at a glance

● Capital city: Rome ● Regions: 20 ● Carlo Salvi headquarters: Lecco

Independent small states:

- San Marino
- Vatican City

Area:
301,277 km²

Inhabitants:
60,626,000
201 inhabitants per km²



Largest cities: ● Rome ● Milan ● Naples ● Turin ● Palermo



Economy in 2018

Top five exports

1. Machines, mechanical equipment
2. Tractor units, motor vehicles
3. Electrical machines
4. Pharmaceutical products
5. Plastics and goods made from plastic

1757
GDP, in billions
of euros

Imported goods,
in billions of
euros 424

Exported goods,
in billions of
euros 462

Vehicles

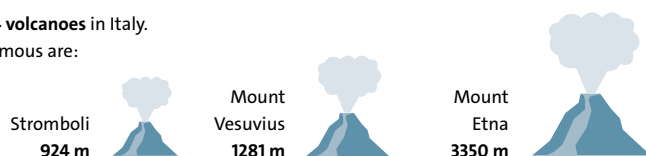
The four most well-known Italian sports car manufacturers:



One large manufacturer of commercial vehicles: **IVECO** (founding members: Fiat Veicoli, Lancia Veicoli, OM, UNIC, Magirus-Deutz)

Volcanoes

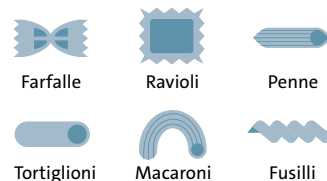
There are 24 volcanoes in Italy.
The most famous are:



The country of pasta

Producing 3.45 million tons a year, Italy is by far the largest producer of pasta in the world. Almost 60% of this is exported.

Different types of pasta > 400



The average Italian eats

26 kg

of pasta a year. By comparison, in Switzerland, this figure is 9.2 kg a year.

Language



“Pizza” is one of the few words that is understood by almost everyone in the world.

Italian is the mother tongue of 65 million people. Italian is also the official language of classical music.

Innovation after innovation: the 80 eventful years of Carlo Salvi

Text: Bernhard Hagen

Illustrations: Carlo Salvi S.p.A., Bernhard Hagen



Company: Carlo Salvi S.p.A.
Location: Garlate, Italy
Employees: 100

Carlo Salvi, a leading company in the wire forming field, is well-known worldwide thanks to the reliability, top quality and excellent performance of the header machine. 80 years of experience: a dynamic company that is always looking to the future, but still with the same passion of the founder to this day.

Garlate Today, Carlo Salvi is a globally leading technology company focusing on the production of header machines for cold and warm wire forming, under the umbrella brand of Hatebur. The world's best fastener manufacturers use the innovative Carlo Salvi machines to optimize productivity in various industries, from automotive and aerospace to electronics.

New York City, 1907

It is surprising that the long and eventful story of the enterprise has its initial starting point on the US-American East Coast. In 1907, Carlo Salvi was born in New York to Italian emigrant parents. Eight years later, when the First World War had already plunged Europe into chaos, the young family decided to move back to Italy.

Milan, 1939

Times were turbulent and chaotic again, when Carlo – now a 32-year old man – founded his own company together with his wife Eufemia in Milan in 1939. He had met some talented engineers, saw a market opportunity and started an enterprise with the purpose of building machines to process iron and stainless steel into screws for fasteners. Starting a company at the outset of the Second World War was a bold and risky move,

but as a proverb says, “the world belongs to the courageous”. In the 1940s, the Carlo Salvi company started the production of flat die thread rollers, which soon became well known in the market thanks to their high quality and affordable price. In Europe, the flat die thread rollers were a truly innovative step, significantly improving manufacturers’ productivity.

Escaping the bombs

But the success of the young company was soon brought into jeopardy: in 1945, air strikes destroyed the Carlo Salvi workshop in Milan, forcing the entrepreneur to look for a safe and strategically favourable location. The company moved to the eastern shore of Lake Garlate, 50km north-east of Milan, but suffered another bomb attack shortly there-



The founder: Carlo Salvi and his wife Eufemia.




after. In 1946, Carlo Salvi finally relocated the production facilities to the west side of the lake, to the village of Garlate – the site of today's company headquarters.

“Super Veloce” – the first machine

In 1952, Carlo Salvi introduced its first single-die double-blow cold former, underlining its status as a technology leader in the industry. The Carlo Salvi 550 SV was designed for the efficient and fast production of screw blanks with a diameter of 5mm and a length of up to 50mm. The “SV” in the name stands for the Italian term “super veloce” – high speed. And it is true to say that no existing machine could match its speed of 400 parts per minute. The 550 SV was a breakthrough innovation. It quickly attracted the attention of end users. The first market that appreciated the new machine was Germany, which became the most important market for Carlo Salvi for the coming 20 years.



The first single-die double-blow Carlo Salvi cold former, introduced in 1952. 

Productivity revolution

In the 1970s, after the inquiry of an Italian customer, the engineers of Carlo Salvi developed and introduced a line of headers for the production of semi-tubular and fully tubular parts. This technology completely changed the market: in the past, the solid parts needed to be pierced with a drilling machine manually, one by one. With the new high-tech one-die two-blow header, it was suddenly possible to manufacture semi-tubular and fully tubular parts at high speed, fully automatically. The output speed of 400 to 600 parts per minute represented nothing less than a productivity revolution in the workshops of Carlo Salvi customers. Production speed was multiplied and costs were lowered substantially.

Lady Liberty

Thanks to the growing demand for innovative high-tech machines, the United States became increasingly important for Carlo Salvi and overtook Germany as the biggest market in the 1970s. Today, more than 1,000 Carlo Salvi machines are in operation in the USA. When the world-famous Statue of Liberty in New York City was retrofitted in the 1970s, all 30,000 copper rivets were manufactured on a Carlo Salvi cold header model RF 550 SV.




All 30.000 copper rivets for the renovation of Lady Liberty were made on Carlo Salvi machines. (Photo: Bernhard Hagen)



Diversification

In the 1980s, the R&D team at Carlo Salvi introduced the first two-die four-blow and progressive multi-station headers. While the earlier Carlo Salvi headers were designed for the efficient production of rivets and screws, the new machines were more flexible and capable of producing very complex shapes of various parts. That opened new markets like aerospace and automotive. Today, machines with this technology are responsible for 60% of the company's turnover. Over the years, the machines were optimized and further automated. In 2000, new technologies such as induction systems were added, improving efficiency and enabling the processing of a wide range of materials, including titanium. These high-tech machines are used to manufacture parts for a true Italian icon – the Ferrari!



Boosting productivity: Carlo Salvi CS 663 machines as far as the eye can see. 




A major honor: Carlo Salvi became Cavaliere Della Repubblica Italiana (Knight of the Italian Republic). 

A new leadership

In 1994, the company founder Mr. Carlo Salvi passed away at the age of 87, after leading the enterprise for 55 years. It was his vision, his management skills and his contacts to outstanding engineers that helped to navigate the company through turbulent times and establish Carlo Salvi as an innovator and technology leader. After the death of her husband, Ms. Salvi, who had co-founded the company and played a leading role throughout the decades, continued to serve as President.

Dr. Sergio Ziotti, a friend of the Salvi family who had been in the company since the 1970s, was entrusted with the executive management. He changed and modernized the leadership philosophy, appointed managers and streamlined decision making processes. After Ms. Salvi passed away in 2012, Dr. Ziotti became owner of the company as well.



Dr. Sergio Ziotti, CEO of Carlo Salvi  from 1994 to 2016

Expanding...

Carlo Salvi founded its own subsidiary in Toledo, Ohio, in 1998. The objective was to better serve the existing and potential customers in the market, and to meet the growing after-sales demand. Toledo, located only 95km from the automotive capital Detroit and the General Motors facilities, was an ideal location. The step was an immediate success: With the local presence, Carlo Salvi was able to continue to grow in the USA and serve the market more efficiently.

...innovating...

A year after the establishment of the US subsidiary, in 1999, Carlo Salvi launched the first one die two blow header equipped with linear wire feed, quick change kit and electronic interface. This was a major step in an ongoing innovation process, making the machines more flexible and efficient. Changeover times were reduced considerably, the work at the machine was simplified, production processes were quickly and easily repeatable. The addition of the induction technology further improved the versatility of the machine. Due to these features, the Carlo Salvi machines got more and more popular among manufacturers in the aerospace industry.

...and growing

To facilitate research, development and innovation, the company was reorganized, and the production area and offices were enlarged in the early 2000s. Carlo Salvi transformed from a mere manufacturer of machines into a full-service problem solver and solution provider. More engineers were hired, R&D was expanded, the service spectrum was enlarged, customized solutions were offered, tooling know-how was broadened. The 2004 acquisition and integration of Multipress S.r.l., a manufacturer of progressive cold headers, played right into this

development: more employees, more know-how, more customization.

In 2011, Carlo Salvi opened a subsidiary in the South Chinese city of Guangzhou. Again, Carlo Salvi responded to market demand for provide service and sales, and capitalized on the huge potential of the Chinese market. In highest demand in the “Middle Kingdom”: the most high-tech full-option machines for state-of-the-art production! A year later, Carlo Salvi also opened a daughter company in Telford, UK, to further develop this market, which was already important.

Integrating software solutions

The takeover of Marelli s.n.c. in 2014 and the vertical integration of the company was another key step on the way to become a one-stop shop and full-service provider of automated header machines. Marelli had developed software for the electronic components of Carlo Salvi machines before. With the takeover, Carlo Salvi was now able to take care of the technology development in-house, manage the customization and development of machines from start to finish, and offer best customer service from a single source.

The Carlo Salvi Ferrari

In 2014, Carlo Salvi launched its new CS 001 header model, a super-fast machine that can produce 660 semi-tubular or solid parts per minute. It is the fastest such machine in the world, the “Ferrari” among Carlo Salvi headers. The single-die two-blow cold forming machine offers impressive electronic feed and adjustment functions, boosting the efficiency of manufacturers. It is designed for the production of small and very small parts.

At the same time, the output of the R&D department continued to pick up steam: in 2015, the new two-die four-blow header CS 248 was launched. This model is especially successful in the aerospace industry and can produce 170 highest precision parts per minute. In the same year, the development of the progressive header model CS 668 E started.

Forward together

In 2016, Carlo Salvi joined the Hatebur family, laying the foundation for further growth in the future. The owner Dr. Ziotti was looking for sales possibilities and at the same time wanted to ensure the positive further deve-

lopment of the business. Hatebur was the ideal partner and took over Carlo Salvi, combining the strength of two innovation and technology leaders in the industry. The merger has united what logically belonged together: two companies with brands and products that complement each other perfectly.

Marco Pizzi, Chief Commercial Officer at Carlo Salvi: “It was and is a win-win-situation. The history of both companies is similar, the philosophy is similar. Now we operate as two companies under the same umbrella, we can pool the know-how of both R&D teams, we take advantage of each others expertise and network, and embrace the future.”

Speaking of which: the Carlo Salvi R&D engineers are currently working on new technologies and a new, innovative machine, which should to be revealed in 2020.



660 parts per minute: the super-fast Carlo Salvi CS 001.

The Carlo Salvi team in Garlate – altogether, the company has 100 employees.



Overhoff Verbindungstechnik GmbH has confidence in the reliability of Carlo Salvi machines

Text: Jürgen Fürst, SUXES GmbH

Images: Overhoff Verbindungstechnik GmbH



Hemer

Hemer, Germany — There is Champions League action at the Overhoff Verbindungstechnik GmbH factory facilities.

Exceptional expertise is required to manufacture billions of screws and connecting rivets in a reliable and precisely repeatable manner. This is because, ideally, components that are joined together should not become loose again. This means that there are equally considerable challenges for the machines when they manufacture connecting parts – and this rises to extreme levels when stainless steel is processed. Overhoff has recognized this and, for decades, has opted for the robust machines by Carlo Salvi, which apply their power in an impressively gentle way. In the meantime, it has emerged that

Champions League football clubs are in action at Hemer.

Football fans' eyes light up when they hear the names of AC Milan, FC Basel, Arsenal, FC Bayern Munich, Borussia Dortmund and Real Madrid. These names are brought up on a daily basis at the production facilities of Overhoff Verbindungstechnik GmbH in the town of Hemer in North Rhine-Westphalia. The 22 "players" which set about their work are in fact all Carlo Salvi production machines. They produce millions of connecting parts in a reliable and precisely repeatable way. This forms the stock which Overhoff supplies to its customers year after year. To clearly identify the machines, managers at the company have named them after European football clubs.

Material feeding, forming precision and speed are required to manufacture very small connecting pieces. These characteristics are fulfilled by Overhoff's latest acquisition, the Carlo Salvi CS 001 RF single-die double-blow heading machine, which is also known as "FC Basel".



80% of products for demanding applications are made from stainless steel

Solid rivets, semi tubular rivets, self-piercing rivets and screws are produced every day and around the clock over the course of two manned shifts and one unmanned shift. For example, these components connect knife handles to their blades, ice hockey skates to their runners and connect together the individual parts of quick-release mechanisms, locks, fittings and hinges. For electronic components, robust Overhoff connecting parts are used to connect very small parts, to hold the shells together on cases in the field of view and to secure tarpaulins, housing or steps to trucks. As these are all very demanding applications, 80% of the connecting parts are made of stainless steel.

“This means that producing our products is particularly challenging,” highlights Frank Odenhausen, one of the managing directors at Overhoff Verbindungstechnik GmbH. Together with the three other Odenhausens – all managing directors and members of the family that owns the long-established small-to-medium sized company – and around 40 employees, Frank Odenhausen has the daily objective of keeping the process speed and the number of OK parts as high as possible.

What started in 1991 has grown into a trusting partnership that continues to this day

Since the first of the robust Carlo Salvi machines was purchased in 1991, humans and machines have been reaching their objectives increasingly effectively. Frank Odenhausen knows the reason for this: “There are almost no comparable machines that work in a manner that is as reliable and precisely repeatable as those by Carlo Salvi.” It is therefore no surprise that, to date, the number of these Italian machines at Overhoff has increased to 22.

Whereas passing accuracy, possession and fast counterattacking are required in international elite football, material feeding, forming precision and speed are needed when it comes to manufacturing what are often very small connecting parts. These qualities are possessed by Overhoff’s latest acquisition, the CS 001 RF Carlo Salvi single-die double-blow forging press, which is named after FC Basel football club. Like its twin, “Atalanta Bergamasca Calcio”, which was purchased in 2014, this machine is specifically designed for the highest level of productivity when cold forming wires with a thickness of 0.6 to a maximum of 3 mm into very small parts. With a press load of 60 kN, it reliably forms up to 660 parts a minute. “We use it to manufacture very small connecting parts, solid rivets and semi tubular rivets, as well as small screws, predominantly for assemblies



in the electronics sector,” explains Frank Odenhausen. One die and two punches are used to machine cut-offs, which are a maximum of 35 mm in length, using a shank, which is a maximum of 22 mm in length. The tensile strength is 600 N/mm².

There are almost no comparable machines that work in such a reliable and precisely repeatable manner as those by Carlo Salvi.

The number of OK parts is consistently high

If larger parts, such as screws, stair parts, semi tubular rivets and bolts need to be machined, “Real Madrid”, “AC Milan” or “Borussia Dortmund” take on the work. The Carlo Salvi 246 TR models are two-die four-blow presses which, with a maximum press load of 260 kN, can coldform wires with diameters of up to 8 mm at a rate of up to 250 parts a minute.

A total of 22 Carlo Salvi production machines manufacture millions of connecting pieces a year in a reliable and precisely repeatable manner.

Regardless of which of the 22 Carlo Salvi machines at Overhoff are used to manufacture the relevant products made from stainless steel, tempering steel or lightweight metal, they all have one thing in common, as Odenhausen explains: “They are characterized as being highly reliable. We leave some of them running unmanned overnight.” It was different before 1991 when other machines were still used at Overhoff – “and often were not operating. But since we opted for Carlo Salvi machines, they have been running without difficulty, mostly without any interruption, and the number of OK parts is consistently very high.”

Gentle power application thanks to toggle lever technology is good for the tools – particularly for demanding materials

“This is also because the CS machines detect whether cut-offs are suitable for forming when the raw material is fed in,” says Marco Pizzi, Chief Commercial Officer (CCO) at Carlo Salvi. As a result, unsuitable cut-offs are diverted before they potentially jam in the machine. This ensures that only suitable raw material is processed. “This is particularly important for our main material, stainless steel,” highlights Odenhausen.

He adds that there is another reason for the particularly high rate of OK parts for stainless steel: “The Carlo Salvi machines apply power in a gentler way. It’s more like kneading than it is giving a blow. Our tools last considerably longer.” “This is because of our presses’ toggle lever

technology,” says Marco Pizzi. “Indeed, this causes significantly less tool wear, particularly for demanding materials like stainless steel.”

Thanks to the toggle lever technology, there is much less tool wear.

“Three-man formation” of Milan, Basel and Hemer

The three machines – CS 663 E “AC Milan”, CS 001 RF “FC Basel” and CS RF 635 SV “SG Hemer” – embody the close partnership between Carlo Salvi, Hatebur and Overhoff and also their sites in Lecco (near Milan), Basel and Hemer. This is particularly pleasing to Hatebur CEO Thomas Christoffel, who personally arranged the FC Basel badge for Overhoff’s latest machine. It remains to be seen which machine “team” will win the Champions League title this season.

To clearly identify the machines, the Overhoff team have named them after European football clubs. The “Arsenal” and “Juventus Turin” Carlo Salvi machines in the background.



Interview



Name: **Matteo Panzeri**
 Position: **Mechanical Engineer**
 At Carlo Salvi: **since 2005**

Garlate _____ **Have you always been in this function or did you previously have other jobs at Carlo Salvi?**

I started as an intern while I was attending university and then Carlo Salvi hired me in 2005. Since then I have always worked in this position.

Are you married and do you have children? If yes, how many at what age?

Yes I'm married, and I'm going to have a baby in few months.

What do you do in your free time, do you have an interesting hobby?

I like trekking in the mountains and practising kick boxing.

Have you always wanted to work in an international company?

It has never been a key factor, but I think it is useful to help me improve my English and allow me to share more points of view with different people thanks to their various experiences.

If you could travel to one of the countries in which a Carlo Salvi machine is running, which country would you like to go to?

Definitely the USA.

How long have you been working for Carlo Salvi?

Fourteen years so far.

Did you know Carlo Salvi and their machines before you started to work in Garlate?

Yes, because I lived in Garlate once before. And there everybody knows Carlo Salvi's company. Especially when I was a child, I remember Mr & Mrs Salvi supporting the local football team I played for.

In your opinion, what is special about Carlo Salvi machines?

The best features, in my opinion, are their flexibility along with their reliability. With a Carlo Salvi machine a customer can switch from one product to another in a very short time and with minimum effort.

Which part of your job do you like best?

Designing new machines, where you can test new devices and give space to your own creativity.

Please describe your main daily tasks.

I spend most of my time working with CAD and doing calculations. But also supporting the production department and following customers needs.

Are you in contact with customers or agents?

Yes, but not very frequently.

Do you have a chance to bring in your own ideas about the machines or about your work?

Yes, but in a new project we tend to share opinions between colleagues from the technical department to find the best way.

If you could change something related to your job, what would it be?

I would spend more time testing new prototypes and in R&D.

What will your next project or special task be?

I'm working on new machine features that will save time and costs for the customer.

How would your colleagues describe you?

Willing to cooperate with them and dedicated to the various jobs.

Which of your strengths is particularly helpful for your job?

I think the willingness and the curiosity to always learn new things to improve my knowledge and the ability to work in team.

When are you particularly successful at your job?

I form a good team with my colleagues and am flexible about carrying out different kinds of jobs.

How high-tech features make the CS 001 super efficient

Text: Bernhard Hagen

Illustrations: Carlo Salvi S.p.A.

Garlate With a speed of up to 660 parts per minute, the CS 001 is the “Ferrari” among the Carlo Salvi headers. A look at the most outstanding technical features.

The CS 001 header model was introduced by Carlo Salvi in 2014. The super-fast machine can produce 660 semi-tubular or solid parts of the highest quality per minute and is the fastest such machine in the world. The single-die two-blow cold forming machine is designed for the production of small and very small parts. It has convincing electronic feed and adjustment functions and a number of other outstanding technical features that boost the efficiency of manufacturers.

Toggle drive

One of the main reasons for the success of the CS 001 is the toggle movement, a typical

feature of Carlo Salvi machines. The toggle unit brings a range of advantages: the heading is actuated via soft, progressive pressure and not an instant bang as is the case on conventional headers. This helps to improve the longevity of the tools. The machine produces one part on each revolution of the flywheel, while with conventional headers, the flywheel makes two revolutions for each part produced. That makes Carlo Salvi machines especially efficient. “Also, the feed of the finishing punch is about half as high compared to the coning punch. This leads to better material deformation and a better tool life”, explains Marco Pizzi, Chief Commercial Officer at Carlo Salvi. Especially with cross-headed punches it is possible to reach an approximately 30% longer life compared to conventional headers. Thanks to this heading system, the tool life of dies, punches and piercing pins can be improved significantly.

Quick change for small batches

Thanks to its speed and efficiency as well as its minimized set-up time, the Carlo Salvi CS 001 is also profitable for small quantities as low as 5,000 parts. The machine is easy to change and to operate. Mr. Pizzi: “Our engineers developed a quick-change system that allows tools to be changed using jigs. The tools can be set up beside the machine while the machine is running, which minimizes downtimes.” The changeover and set-up times are truly outstanding: the cut-off length can be changed in 30 seconds, the complete changeover from flat head to round head with the same wire diameter can be achieved in 10 minutes or less. If the wire diameter is different, the changeover takes a maximum of 30 minutes.



The Carlo Salvi “Ferrari”: the CS 001

Maximum rigidity

The frame of the machine bed is made of cast iron and houses all the main mechanisms, including the die block, heading unit, crankshaft, connecting rod, toggle system as well as the side shaft which drives the cutter unit, transfer unit, oscillating head and the punch locking unit. The heading slide is case hardened and slides on very long guides to ensure maximum rigidity during heading. The guides are made from a special bronze alloy, and all shafts are made from alloy steel. The die holder and the punch holder are made from hardened steel, while the crankshaft and connecting rod are made from forged steel.



Specially developed lubrication circuits

The engineers at Carlo Salvi have also designed a sophisticated lube system that incorporates two circuits: a continuous circuit and an intermittent circuit. The continuous circuit ensures efficient lubrication of all the main parts of the machine. It is controlled by a flow switch, which will automatically stop the machine in case of insufficient lubricant quantity. The intermittent lube circuit ensures the lubrication under pressure (20 bar minimum) of all machine parts that cannot be accessed

Key features of CS 001

- bushing cut-off
- linear wire feed: no wire feed rolls, no wire stops
- cut-off length displayed on touch screen
- shank length displayed on touch screen
- double set of wire straightening rolls, one horizontal and one vertical
- P.K.O.s on coning punch and finishing punch
- transfer centring jig
- cutter centring jig

High-quality cut-off

The cut-off unit incorporates a solid bushing knife. It is driven by a desmodromic cam, free from any clearance between the cam and cam follower, which ensures a very high cut-off quality. The cutter unit can be set up on a bench while the machine is working.

Another technical highlight of the CS 001 is the transfer unit. “The transfer unit incorporates a set of fingers, which transfer the wire from the cutter quill to the die. The transfer unit can be set up on a bench as well, optimizing machine productivity”, adds Mr. Pizzi.



Wire feed

The wire feed is secured by two grippers installed on a movable lever. These transport grippers cover the entire diameter range, with which the machine can work.

Wire alignment unit

On the unit, the wire is aligned by two brackets, which are positioned at an angle of 90° to each other. Each bracket comprises five rollers.



visibly. It is controlled by a pressure switch, which will stop the machine whenever the pressure drops under the minimum pressure allowed. All machine stops due to such malfunctions of lube circuits are displayed by LEDs on the control panel for easy trouble shooting.

Thanks to all these innovative features, the CS 001 is perfectly suited to the manufacturing of micro components that are used in many different industry fields, ranging from furniture, automotive and aerospace to the mobile communication sector.

COLDMATIC CM 725 – with a new servo-electric linear infeed

Text: Achim Pracejus

Images: Hatebur

Reinach In addition to the *Coldmatic* AKP series' well-known mechanical linear infeed, Hatebur's range also includes the servo-electric roller infeed. The servo-electric roller infeed system has proven equally successful with the *Hotmatic* forging press and the *Coldmatic* CM4-5eco. Due to more stringent customer requirements, there was a discussion with the development approval of CM 725 about whether it would be possible to use a completely new system to combine the advantages of both tried-and-tested material infeed systems.

The idea

This first step of taking up an idea and then specifying targets from this was then made more concrete. For example, points of focus when developing the technical specifications included highest volume consistency, minimized surface defects even for soft alloys, low maintenance, high operational stability, precise path measurement, low setup requirements and omitting a bar stop.

The new servo-electric linear infeed was presented for the first time at the WIRE 2018 trade fair in Düsseldorf. With this technology, Hatebur is taking a new approach in order to meet the highest requirements in cold forming.

Implementation

What is striking about the *Coldmatic* CM 725 model is the fact that very little of its technology is visible. Two hydraulic units are located above the infeed system. These units are positioned above the clamping jaws and, in accordance with the hydraulic switching times,

initiate the required clamping forces via the clamping jaws in milliseconds. The mechanical coupling to the driveshaft has been omitted because of the servo technology used. Positioned opposite a roller infeed, which works with a specific power transmission, the clamping jaws with a linear contact offer further advantages to ensure that wires are fed in reliably and without marks. Moreover, adapted round shaped jaws can be used for soft non-ferrous alloys.

Actual clamping occurs between the clamping jaw (coming from above) and the guide jaw (from below). The guide jaw's design is similar to that of a prism. The wire is constantly guided by two precisely angled surfaces. In operating mode, the clamping jaw presses the wire on the guide jaw, resulting in three precisely positioned contact lines which secure the wire evenly over a length of 100 mm.

Infeed

Once the wire is secure, the actual servo-electric linear movement can begin. The movable part of the hydraulic cylinders and clamping jaws unit, which is connected to two linear motors at the rear, starts to move with a moderate operating speed of approx. 1.2 m/s. The second unit – hydraulic cylinder and clamping jaws – is firmly connected to the frame and is designed to secure the wire or to open when feeding the wire, in accordance with the operating mode.

The new servo-linear motors are located on the carrier base plate and determine the reliable infeed of the wire. The system can feed



in a wire measuring up to 125 mm long, almost moving without producing any noise. In this process, the unit works in such a precise and repeatable way that an accompanying measuring wheel on the wire can be omitted. Instead, the clamping unit's position is monitored by a precise ruler and the hydraulic pressure of the clamping jaws is also monitored.

Movement

The processes of starting up, accelerating, decelerating and stopping the servo-linear motors follow programmed curve functions that have been tested and optimized via various development steps in practical testing.

The quick movement operation that is brought about by the unit requires a new cooling concept at this specific point. An independent cooling circuit has proven to be the best solution. The circuit keeps the servo-linear motors above all working areas in a specified temperature window in a uniform manner.

Changeover

Only a few movements must be carried out to change over to a new wire diameter. After the wire has been retracted from the machine, the operator replaces the clamping and guide jaws with a modified wire diameter under the two hydraulic cylinders. The operator only loosens a few screws and can then easily replace the guide elements. Specific adjustment tasks are not required.

The specified pairing of the clamping and guide jaws ensures that each wire diameter is central in the clamping units' operating axis. For different wire diameters, the pairing of the clamping and guide jaws is designed for gradings of max. 1 mm. This means that a clamping pair can process a wire diameter of 12–12.99 mm, for example. The next pair then goes from 13 mm up to 13.99 mm and so on.

Maintenance

This system is extremely low maintenance. Even after millions of strokes in the high double digits, there are no signs of wear.

Shearing blades – The basis for optimum forging

Text: Kim Weber

Images: Hatebur

Reinach Cut-off quality is an important basis for optimum forging. Using high-quality shearing blades by Hatebur, this basis is provided for a bar diameter of up to 90 mm.

Hatebur forming machines are always fitted with two shearing blades: One stationary blade and one movable blade, which ensure that the shearing surface only fractures slightly. The bar stock is sheared to the required length in one process step, then transferred to the first forming station and formed into the forging over the subsequent steps. The base element of the shearing blade is made from a high-strength tempering steel. A hard stellite layer is then welded on to the area where the hot bar material comes into contact with the blade.

This combination of materials results in a long tool life. At the same time, the blades can therefore be replaced with other wear tools from the respective forming stations. This results in substantially reduced machine downtime.

Our first-class tools, perfectly adapted to our innovative process technology.
Your advantage.



From left to right: The movable blade and the fixed blade of the Hatebur *HOTmatic* HM 35.



From left to right:
The movable blade
and the fixed blade
of the Hatebur
HOTmatic AMP 30 S.

As the shearing blades must be regularly replaced because of wear, Hatebur offers the series production of new shearing blades, particularly in the *HOTmatic* range. Depending on the agreement, various tools can also be directly retrieved from storage, which considerably reduces the delivery time.

The high Hatebur measuring standard has been achieved in different machine types thanks to tests and measurements. These blades stand out thanks to their attractive price and long tool life.

The original standard parts for the infeed and shearing process in the *HOTmatic* series are shown in the “Hatebur *HOTmatic* infeed

shearing process” catalog and are easy to order. The “Swiss Quality” catalog components are produced cost-effectively for delivery around the world at the in-house tool shop in Shanghai. Hatebur manufactures individual requirements according to customer standards.

Hatebur therefore relies on a tool standard that provides high efficiency with excellent flexibility and low inventory levels. This is how we have supplied customers with the right tools over many decades.

We have the right solution for you!
Please get in touch for more details.

Our performance. Your advantage.

Hatebur has decades of experience in designing tools for forming machines made in Switzerland. We work intensively on the production parameters, machine kinematics and part requirements.

Thanks to the careful adjustment of tools to the process technology, this produces solutions for the ideal production process.

Heinz Stutzmann Tool and process developer

Heinz Stutzmann has been a specialist and expert in the field of forming for more than 37 years. He is responsible for evaluating parts, designing sequences of operations, designing tools, providing customer training sessions and testing tools, whether in Reinach or at the customer's premises. He is your expert contact partner for process-specific questions about the *HOTmatic* series.
heinz.stutzmann@hatebur.com



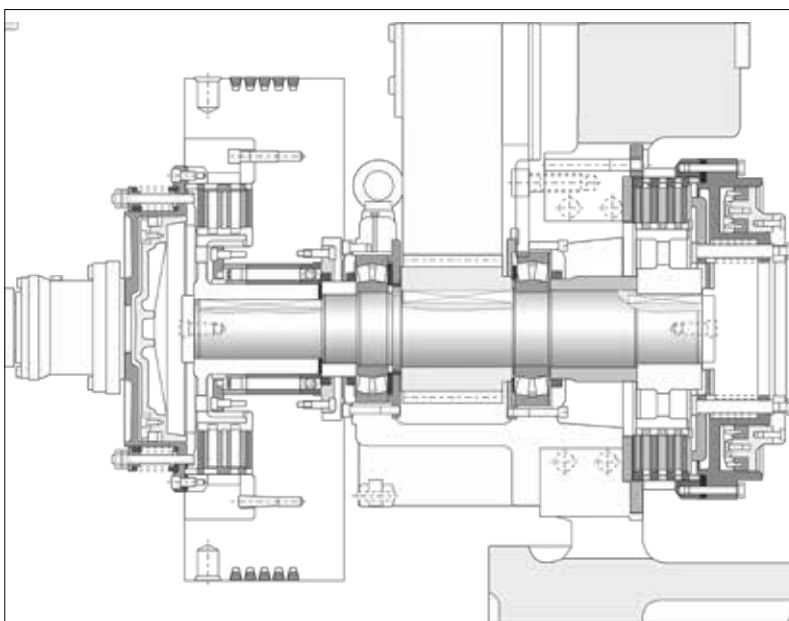
Modification – Clutch/brake combination for AMP 20 and AMP 20 S models

Text: Reiner Imgraben

Images: Hatebur

Reinach As part of developing the AMP 20 to the AMP 20 N models, the flywheel shaft compound, among others, was analyzed in more detail. The assembly was fundamentally redesigned, not only because of various technical requirements but also due to difficulties in procuring the clutch and

the brake. In particular, the flywheel shaft bearing, the clutch and the brake needed to be redesigned completely. The reworked assembly was incorporated into the latest version of the AMP 20 S and can now be offered for all existing AMP 20 and AMP 20 S models as a modification and upgrade.

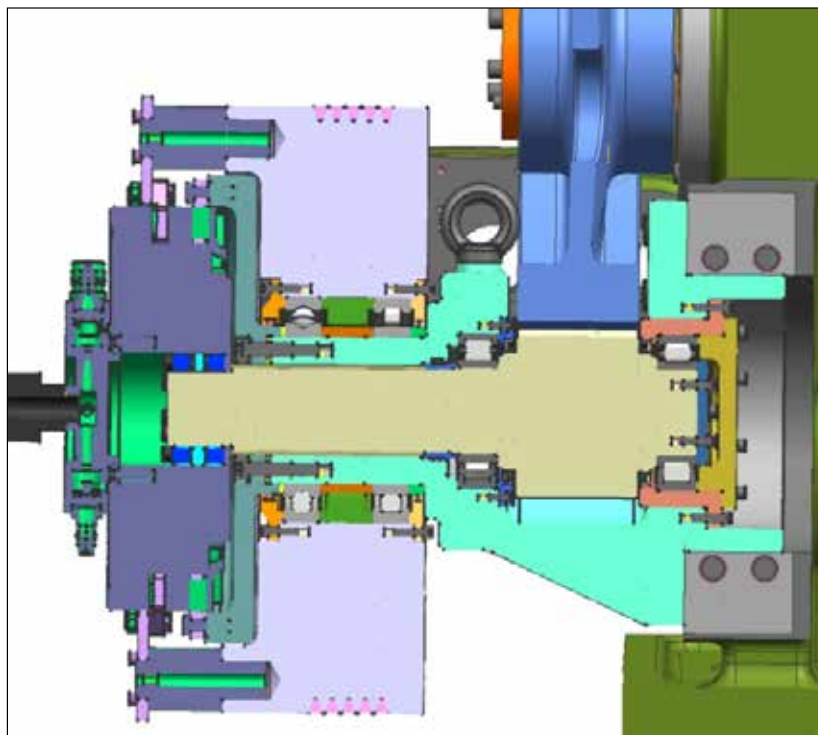



Previous design of the flywheel shaft compound

In the previous design, the clutch and the brake were physically separated from each other. The compound was controlled via a 3/2 directional control valve and the flywheel was mounted indirectly on the flywheel shaft.

New design of the flywheel shaft compound

A new clutch/brake combination is fitted, where the clutch and brake are housed in a single unit. The flywheel is stored directly on the bearing block and is controlled via a press safety valve. This immediately provides several advantages.

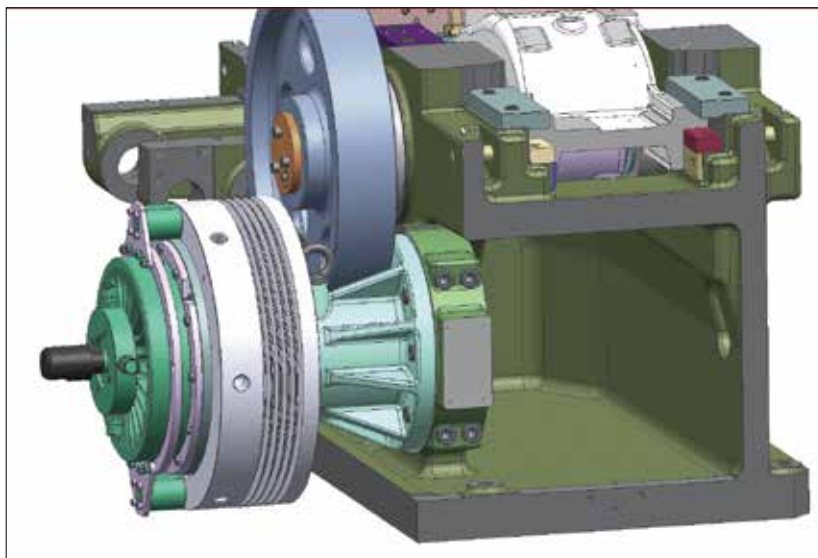


New design of the flywheel shaft compound 


The advantages

- State-of-the-art modern clutch/brake combination.
- The flywheel turns on the bearing housing, rather than on the pinion shaft, which is unburdened as a result.
- Significantly lower maintenance costs as only the friction pads are used as wearing tools.
- The friction pads are quick and easy to replace.
- By removing the brake, there is improved access at the rear of and under the pressram.
- The lead times are comparatively very short.
- The reliability of supply is ensured.

AMP 20 S with clutch/brake combination



All AMP 20 model customers will benefit from this modification. Depending on the load and switching rate, the investment will pay for itself in only three years. The AMP 30 is already being checked so that this model can also have the many advantages in the near future, if applicable.

AMP 20 model with  clutch/brake combination

Trade fairs and events

27–31 May 2019

Metalloobrabotka 2019 in Moscow, Russia

Location: **Moscow, Russia**
Company: **Hatebur Umformmaschinen AG**
Trade fair highlight: **CM 725/AMP 20 N**

From 27–31 May 2019, the “Metalloobrabotka” trade fair was held for the 20th time. Together with its Russian representative, OOO Equipment Solutions Vostok, Hatebur again participated at the event with their own booth in the Swiss Pavilion. The two companies greeted many customers and interested parties at their booth and were able to pass on in-depth information about the machines and services in one-on-one conversations.

28 May 2019

Forming Technology Symposium of Russia (JFSR)



Location: **Moscow, Russia**
Company: **Hatebur Umformmaschinen AG**

Together with its Russian representative and various sponsors, Hatebur organized a forming

symposium for the fifth time. This event took place during “Metalloobrabotka” and, once again, more than 50 specialists were in attendance. The symposium offers Swiss and German companies the opportunity to introduce themselves to Russian companies with an expert presentation, and to make contacts. This was also met with enthusiasm at this year’s edition.

17–20 July 2019

MetalForm China



Location: **Shanghai, China**
Company: **Hatebur Metalforming Technology (Shanghai) Co. Ltd.**
Trade fair highlight: **CM 725/AMP 50-9**

MetalForm China, which included the ChinaForge Fair, was held in Shanghai on 17–20 July 2019. Hatebur Metalforming Technology, the Hatebur subsidiary, participated at the event with its own booth.

The trade fair was well-attended, with Hatebur employees providing more details about the AMP 50-9 hot forming machine and the CM 725 cold forming machine to customers and interested parties.

Following the rather poor attendance of last year’s trade fair in Guangzhou/Dongguan, the 2019 trade fair saw a pleasing influx of visitors again. Hatebur employees were also pleased about the higher number of visitors and used the opportunity to have extensive discussions with partners and visitors.

7 November 2019

2nd Euro-Mexican Forging Conference



Location: **Querétaro, Mexico**
Company: **Hatebur Umformmaschinen AG**
Trade fair highlight: **CM 725/AMP 50-9**

For what was already its second edition, Hatebur held a European-Mexican forging congress together with its Mexican representative, Asesores en Procesos Industriales, and various sponsors. Over the course of the day, different presentations provided a more detailed look at a range of topics, which were then discussed in-depth in one-on-one conversations between the speakers and the many guests.

20–23 November 2019

Thai Metalex



Location: **Bangkok, Thailand**
Company: **Hatebur and Carlo Salvi**
Trade fair highlight: **CS 668/AMP 20 N**

As has been the case in recent years, the representatives of Hatebur and Carlo Salvi greeted customers, interested parties and guests at the booth of their representative, Munger Machine Tool. They provided visitors with information about new developments and gave them the opportunity to have various questions answered directly by specialists and to receive background information. The four-day trade fair in Bangkok took place for the 33rd time.

31 July–03 August 2019

MF-Tokyo

Location: Tokyo, Japan

Company: Hatebur and Carlo Salvi

Trade fair highlight: CM 725/CS 663

Hatebur and Carlo Salvi participated together at the MF-Tokyo trade fair again this year. They greeted customers, interested parties and guests at their large booth and gave them information about the developments at both companies.

The sixth edition of the “Metal Forming Fair Tokyo” had the slogan “Connecting Technologies, Expanding the Future”.

The focus at Hatebur and Carlo Salvi’s booth was given to the CS 663 machine showcased by Carlo Salvi. Over the course of the trade fair, the team produced hollow components using the six-station progressive press. The CS 663

is able to produce up to 400 parts a minute, using wires with a diameter starting from 5 mm. The Hatebur and Carlo Salvi range was shown in a round display case with a wide range of sample parts. Hatebur’s main areas of focus, the AMP 20 N *HOTmatic* machine and the CM 725 and CM 625 *COLDmatic* machines, were also highlighted.

In a first, visitors to the booth were greeted by Pepper the robot. He provided guests with initial information in Japanese and English about both of the exhibiting companies and their current machines, therefore giving those visiting Hatebur and Carlo Salvi an unusual and friendly source of information.



See us live!



23–28 January 2020

IMTEX FORMING 2020

Location: **Bangalore, India**
Booth, hall: **4, booth B123A**

30 March–3 April 2020

WIRE 2020

Location: **Düsseldorf, Germany**
Hall, booth: **16, 16C58**

20–21 May 2020

Fastener Fair USA 2020

Location: **Charlotte, USA**
Booth: **301**

22–24 June 2020

IFS China 2020

Location: **Shanghai, China**
Booth: **H1-1217**

**We look forward to seeing
you there!**

For the latest information about our participation at trade fairs, please visit www.hatebur.com and www.carlosalvi.com.

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