



CHIRON **Group**

2017

chiron

STAMA

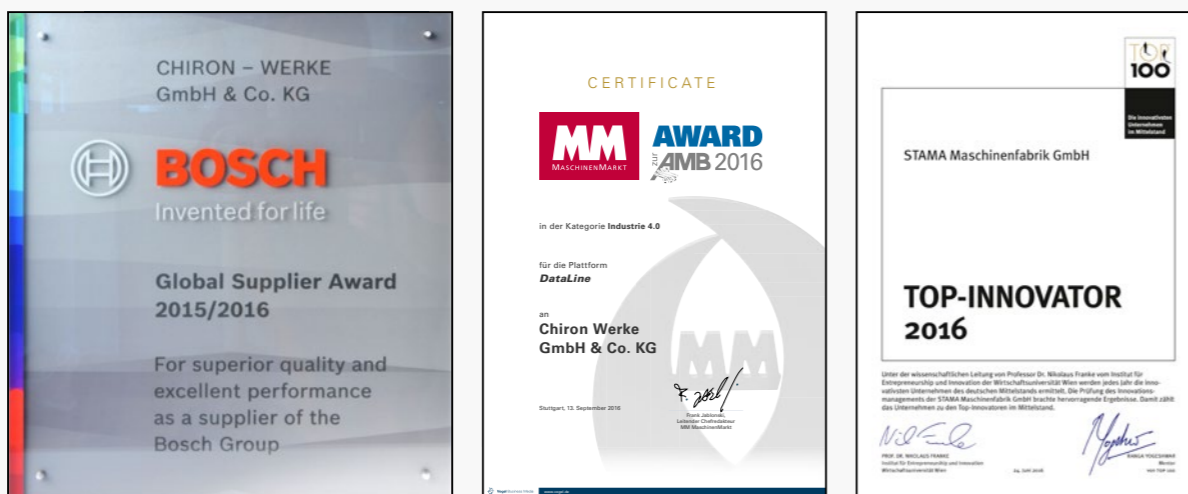
SCHERER
FEINBAU

CMS

CHIRON Group Overview

Single and multi-spindle, vertical machining centers			Retrofitting
Milling / Mill-turning	Shaft turning / Turning		
Turnkey (turnkey integral solutions) / Automation			
Automotive/Mechanical Engineering/Medical & Precision Technology/Aerospace			
Tuttlingen/ Neuhausen o.E.	Schlierbach	Alzenau/ Moembris	Neuhausen o.E.
9 international companies in France, Italy, Poland, Turkey, Mexico, USA, China (2) and India			

Important Awards 2016/2017



The CHIRON Group is one of the world's leading providers of machining centers and processing solutions.

Ladies and Gentlemen:

This first sentence is part of our Mission Statement which we defined in 2017 and which constitutes the core message of the CHIRON Group. The CHIRON Group – these are our machining centers of the brands CHIRON, STAMA and SCHERER, our retrofit subsidiary CMS, our international sales, service and production organizations, and above all our competent and dedicated employees. Our brand names stand for high-precision and productive milling and turning machining centers. They offer individual machining solutions and well-known customers worldwide rely on their turnkey and automation competencies.

We as a group of companies continue to expand these capabilities by pooling our competences, processes and innovative skills. We will satisfy our customers' needs now and in the future by expanding our international presence, by developing new product platforms, and by offering digital systems and services.

That is also in line with our parent company. Already 60 years ago, Hoberg & Driesch recognized the potential of the CHIRON Werke and acquired all of its shares. Since then, our shareholders support our future growth strategy to become one CHIRON Group which in the long term remains to be entrepreneurially successful with its sustainable strategy.

We are publishing this Corporate Report CHIRON Group 2017 for the first time. Its structure is based on our mission statement and therefore demonstrates how the combined strengths of our brand names, organizations, and in particular our employees contribute to the realization of our mission statement.

Sincerely,
Your
CHIRON Group SE

Dr. Markus Flik
CEO

Dr. Achim Degner
CFO

Wolfgang Ehrk
COO

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Note: For better readability, we dispensed with the use of the feminine and masculine form. Any reference to persons applies to both sexes.

01.
STRATEGY



Growth

Digitization,
automation
and services
are important
growth drivers

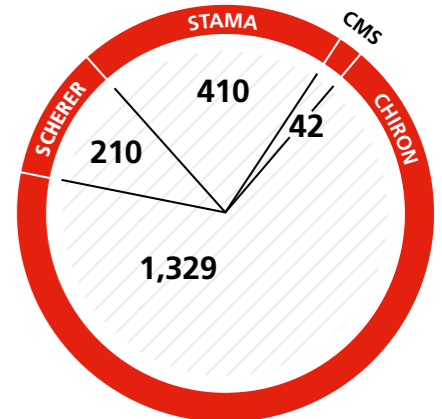
They see the Group well positioned to meet future challenges (left to right): the Managing Directors of the CHIRON Group Wolfgang Ehrk, Dr. Markus Flik and Dr. Achim Degner.

Growth with turnkey projects and the national and international sale of new machines characterizes the development of the CHIRON Group over the past few years. In the future, the business will be supplemented by digitization and related services as well as a continuously growing degree of automation.

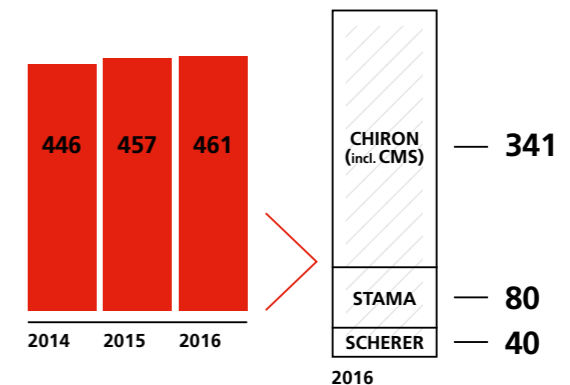
NUMBER OF EMPLOYEES
CHIRON Group
IN GERMANY AND ABROAD 2016



NUMBER OF EMPLOYEES
BY COMPANY
2016



SALES DEVELOPMENT
CHIRON Group
IN EUR MIO



The CHIRON Group takes over the complete process responsibility in turnkey projects – from planning to project management to the commissioning on site. In doing so, it provides optimum production solutions for the customer, technically and economically. Since the customers are focusing more and more on completely automated cells, the CHIRON Group is already equipping around 50 percent of new machines with an automation solution. With the integrated milling and turning operation, the group of companies offers a broad range of applications with the machine

brands CHIRON, STAMA and SCHERER. With approx. EUR 341 million in sales and a share of 74 percent, CHIRON is the largest individual company in the Group. In 2016, STAMA contributed over EUR 80 million (17 percent), and SCHERER generated a share of 9 percent in the Group's turnover with just under EUR 40 million.

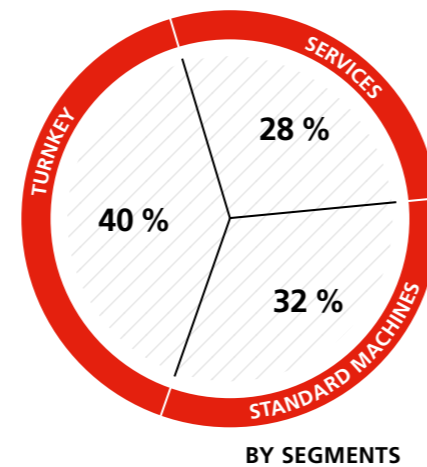
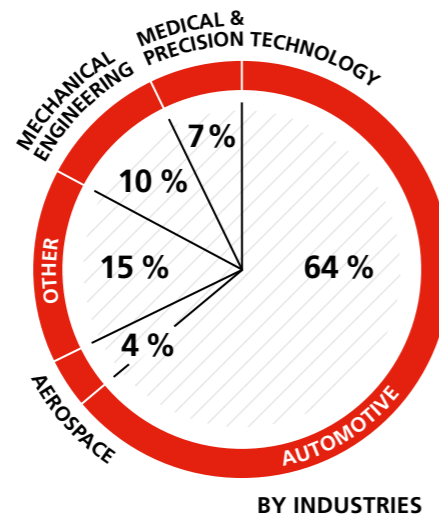
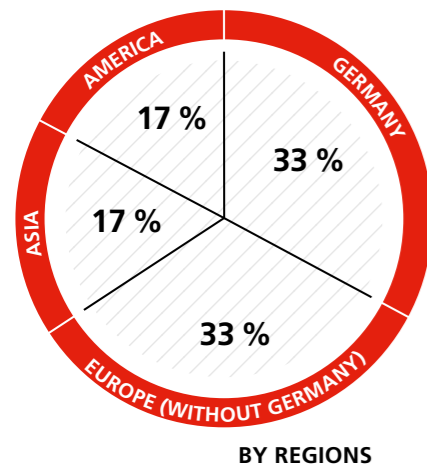
ON TRACK WITH DIGITIZATION

The CHIRON Group has already laid the foundations for digital technologies before terms, such as "Industry 4.0" or "Digital Manufacturing" were coined. With SmartLine, the Group is taking

»The CHIRON Group has defined an ambitious growth strategy. We drive this among others through upgrading our product program, extending our regional presence and offering comprehensive qualification. Together with our team we are on the move!«

Dr. Markus Flik
CEO

**DISTRIBUTION OF SALES
CHIRON Group 2016**



an individual modular approach when it comes to digitization, that is geared closely towards the requirements of our customers. The SmartLine products such as DataLine, ProcessLine and RemoteLine offer decentralized machine and process data analyses, simulate and optimize complex machining processes and, among other things, enable an even higher productivity, quality and availability by providing remote diagnosis. In addition, it is getting more and more important for our customers to be able to trace workpieces data. For this

»With our robust processes, we are a reliable partner for our customers and provide for maximum productivity in production. Quality, delivery times and delivery reliability are our elementary control parameters. Digitization initiatives are becoming more and more important in our processes.«

Wolfgang Ehrk
COO

»Based on our longterm orientation, we enjoy the confidence of our business partners. We pursue a clear implementation of our growth strategy and offer corporate stability and security – since an important principle of the CHIRON Group is: sustainability.«

Dr. Achim Degner
CFO

reason, the CHIRON Group is working on systems that collect and consolidate data on the production process, and provide these to the customer system.

GROWTH IN NEW MARKETS

In concrete numbers, the development is as follows: In 2016, the CHIRON Group increased its sales to around EUR 461 million. This slightly exceeded its own target which was based on the sales figures from the previous year. In 2016, the Group sold approx. 700 machines worldwide.

The revenue share of the European markets decreased from 70 to 66 percent, while Asia increased its share by 2 percent to a total of 17 percent. The share of the markets on the American continent also increased by 2 percent to a total of 17 percent. This is proof that the decision to setup a new location in the North American Detroit and in the Mexican Querétaro was the correct one.

The largest share of the Group turnover was generated with turnkey orders (40 percent), followed by the sale of standard machines (32 percent) and with service (28 percent). Sector-wise, the automotive and supplier industry dominates with 64 percent, followed by mechanical engineering (10 percent), medical and precision technology (7 percent), and aerospace (4 percent).

WHAT GUIDES US Trusting customer relationships and our loyal shareholders make it possible for us to achieve sustainable profitable growth.



Dr. Claus Eppler and Dr. Guido Spachtholz point out the group-wide management system of innovations.

Innovation

Focusing on customer benefits

Innovations are the driving forces for successful companies. But how can nowadays innovations in mechanical engineering still be developed and managed to the level of market readiness? An interview with Dr. Claus Eppler, Head of Research and Development of CHIRON Werke, and Dr. Guido Spachtholz, Managing Director of STAMA.

Faster, more accurate, more robust: The demands placed on machine tools are continually increasing. How does the CHIRON Group meet this challenge?

Dr. Eppler: The demands not only grow continually, they are also becoming more and more diversified. A few years ago, a tool machine manufacturer still had to build good, fast and robust machines,

his technology had to be up-to-date and his machines had to be developed in line with the market. Meanwhile, innovations are required within different areas from different perspectives – also in cooperation with our customers and suppliers. As a result, we no longer consider innovations only for new machines, but also for services and processes. We feel challenged by that. Within the CHIRON

Group we created structures, filled functions and installed processes which we use to pick up and evaluate trends and innovation topics from all of the relevant areas and push for further developments.

Dr. Spachtholz: The challenges are completely different today. The possible variants of the basic machine concepts are well known. Today, further developments are taking place in the component details, in the kinematics and in the control intelligence. But new ideas are also needed when integrating the tool machine into the production process in order to meet the customer demands in terms of reducing cycle times, run times, cost per piece or operating concepts. Our customers demand maximum productivity.

Where do the ideas for further developments come from?

Dr. Spachtholz: One should not always compare innovation with a technological quantum leap. At our house, innovation is frequently the continuous development, in other words a clear process. The ideas are coming from different sources: internally from e.g. our service, engineering or sales. Externally from customers, partner organizations, suppliers or research institutes. For example, we are closely networked with the Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University. They do basic research which we as medium-sized machine manufacturer could not afford.

DR. SPACHTHOLZ

Guido Spachtholz was born in Juelich in 1973. After his high school graduation in 1973, he trained as a technical draftsman. Afterwards, he studied mechanical engineering with focus on design and automation technology at the RWTH Aachen University. He worked as a student assistant at the WZL and received his Dr. on the "Extended Power Range of Spindle Bearings" in 2008. He received a special award for his dissertation. Later, Dr. Spachtholz was entrusted with the design and development of multi-spindle automatic lathes by a company in Cologne. In April 2013, he took over the position as Technical Director at STAMA in Schlierbach, and is one of its two Managing Directors since 2016.



As Managing Director at STAMA, Dr. Spachtholz supports the technical innovations from the idea all the way to the realization.

Data, in other words, what you can read from the data and for what they are used. We do not follow cloud solution concepts. All of the data analyses are designed in such a way that they work directly at the machine or in secure cloud solutions going forward. We start with the individual machine, compress the accumulated data with mechanical competence, analyze them, develop parameters, generate and evaluate statements. We can then provide this information in the local customer network to the master foreman, the process planner, the controller or to the management. This way, we create added value for our customers throughout the life cycle of the machine and with the vertical networking.

Dr. Spachtholz: Our great advantage in comparison with IT-companies is that we have comprehensive domain knowledge.

»It is absolutely crucial for the development that all technical advances on and in our machines are strictly aligned to the customer's benefit.«

Dr. Eppler
Head of Research and Development at CHIRON Werke



Head of Research and Development at CHIRON Werke, Dr. Eppler is centrally involved in the continuing innovation cycles.

»Our great advantage in comparison to IT-companies is that we have comprehensive technical expertise in domains. That saves us big-data round-ups.«

Dr. Spachtholz
Managing Director of STAMA

Dr. Eppler: This close network with our business partners is extremely important to us since we are not able to cover all areas of expertise. However, we must be able to identify, understand, evaluate and integrate current trends and requirements into our solutions. Because, at the end of the day, the CHIRON Group is selling complete solutions, with complex machines that stand for themselves. It is absolutely crucial for the development that all technical advances on and in our machines are strictly aligned to the customers' benefit.

»We must identify and integrate trends.«

Digitization, Big Data, Industry 4.0: Where and how does the CHIRON Group position itself as a medium-sized machining center manufacturer on these topics compared to specialized IT-companies?

Dr. Eppler: We position ourselves exactly where we belong: at the machine. Instead of Big Data we aim at Relevant

DR. EPPLER

Claus Eppler was born in Albstadt-Ebingen in 1971. He studied mechanical engineering with major in "Engineering Mechanics" and "Production Management". After graduating in 1996, he held various management positions at the Institute for Control Engineering in Stuttgart. In 2003, he received his Dr. on the "Compensation of Externally Excited Vibrations in Drive Systems with Planetary Gears" and subsequently changed to the Mauer-Werke as Manager of Electrical Design and Development. Since 2007, Dr. Eppler has been Head of Electrical Engineering and since 2010 he is Head of Research and Development at CHIRON Werke.

The IT-companies that wish to capture this market do not have that. This technical expertise in mechanical engineering often saves the big-data round-ups. The pure search for patterns and data correlations in large quantities of data is a feasible approach when interactions are unclear. However, we are very familiar with these causalities with our machining centers and we are able to gain insights much more streamlined, faster and more effectively. That is pure customer benefit.

»The large IT-companies do not have our technical expertise in mechanical engineering.«

Dr. Eppler: With SmartLine we offer software and hardware solutions that control and optimize production processes, safeguard the availability of equipment, enable predictive maintenance, and offer an abundance of analysis possibilities. Our current focus is on machine simulation and production optimization, and all that goes with it. But we are also thinking about maintenance and service concepts where, for example, the machine itself is ordering its spare parts.

From idea to innovation: How do you manage this process within the CHIRON Group?

Dr. Spachtholz: As already mentioned, strategic and technological impulses are coming from different sources. The task

of the Development System at the CHIRON Group is to structure and channel them. As a result, we steer a lean and group-wide management system for the entire life cycle of innovations – in other words, from advanced development and product planning to product development all the way to product maintenance. In principle, this system applies to all products and solutions, regardless whether it concerns machine or software development. Both depend on each other and therefore should not be considered in isolation in the innovation process.

Dr. Eppler: Within the CHIRON Group there is the principle of organized creativity. In doing so, we are questioning together with employees from the relevant technical departments whether the machine concepts are still correct and what we can improve. This also creates new concepts for our production and services. Creativity and flexibility are important, however, at a certain point in time they must be rolled into a formalized structure. The process of the structured innovation basically applies to any form of expression, regardless whether it is from the market or from the company, radical or step by step.

WHAT GUIDES US Based on our technological expertise, we develop innovative solutions for machine tool design, for production processes and also for our digital services.

Many ideas are therefore coming directly from the company. How is it possible for the CHIRON Group to maintain its staff's qualifications at such a high level?

»The CHIRON Group follows the principle of organized creativity.«

Dr. Eppler: Our aim is to always be up-to-date with the state of the art of technology. That is the heart of a mechanical engineering firm. And we have also created the structures for that within the CHIRON Group. For that reason, the technical advances on and in our machines are ongoing. Our employees in the application department, for example, are always working on the newest machines with the most recent control. That is qualification, day after day, always at the upper limit. In addition, we also offer technical and methodical qualification for our staff in-house.

Dr. Spachtholz: Of course, we also have qualification plans in order to keep up with technological leaps. Two years ago, for example, we sought external input from specialists to include robot cells in our portfolio. This elevates our employees to a very high level so that the one testing the customer's work pieces today can later also work in sales as project developer or turnkey-specialist. The expression of a learning organization becomes really tangible.

Internationality

Strengthen worldwide presence

Customer proximity plays an important role for the machine tool manufacturer: for service, for project support, for customer satisfaction. For this reason, the CHIRON Group has a second location in the USA since 2016, and since 2017, it is represented in Mexico with its own sales and service organization.

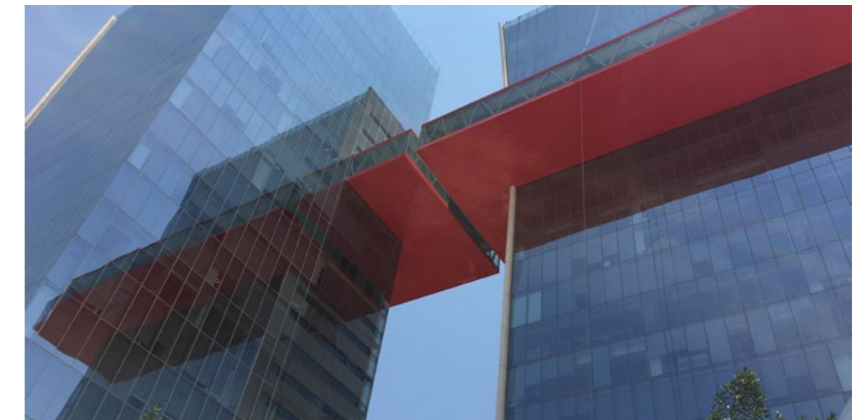
Mexico is an important sales market for machines of the CHIRON Group. The international automotive industry utilizes the country as a strategic production site, just like the aerospace and medical technology industry. These are all sectors in which the CHIRON Group is strong.

To further enhance access to the market and service for the existing customers in Mexico, CHIRON Tecnologías de Producción, S.A. de C.V. was established in Querétaro in 2017. Because of its proximity to Mexico City and to other federal states such as Guanajuato, San Luis Potosí and Aguascalientes, the new subsidiary is situated in the middle of Mexico's industrial growth region.

PLENTY OF POTENTIAL

The new subsidiary offers its customers sales as well as service for all brands of the CHIRON Group. In doing so, CHIRON in Mexico is clearly aiming for growth sectors: two-thirds of the business is to be transacted with the automotive industry, followed by aerospace and medical technology. The local aerospace industry in particular is growing dynamically: more than 15 percent annually between 2004 and 2014.

There is also great potential in medical technology for the CHIRON Group: Mexico is among the 10 worldwide leaders in exporting medical technology, the largest in Latin America, the leading supplier to the USA.



CHIRON AMERICA EXPANDED FURTHER

The new subsidiary in Mexico will work closely with CHIRON America. The CHIRON Group opened a new sales and service organization in the heart of the automotive metropolitan area of the USA. Sales experts and product specialists of CHIRON, STAMA and SCHERER are ready to provide advice to customers, application of machine tools and to expand the sales and service activities at the new location in Plymouth near Detroit, Michigan. Application competence is in demand in the USA which is why CHIRON America is expecting 80 percent of turnkey business.

WHAT GUIDES US With our presence in all relevant markets, we offer reliable support concerning sales, projects and customer service.

The new subsidiary CHIRON Tecnologías de Producción, S.A. de C.V. has its office on the 15th floor.

02.

PRODUCT



Productivity & Quality

Three in one

Turnkey-projects with a high degree of automation are complex matters. Often, new innovative solutions are created with these new projects. Therefore, many companies rely on the turnkey-competence of the CHIRON Group.

Nine months from the award of contracts to the start of production: some turnkey projects can be a challenge and a mechanical construction test for the entire team at CHIRON. The customer requirements are often complex: For example, the turnkey solution for unmanned machining from the bar, highly automated, with integrated order management, low space requirement, many component variations with small batch sizes; furthermore, an ultrasonic cleaning device and blow-off station integrated into the cell. The customer is one of the leading manufactur-

ers of surgical components. The requirements are correspondingly high, not only on productivity, but also on the quality of the produced parts – in particular the homogeneous surface structure. “In some industries optics are very important. That cannot be simply programmed. You need many years of experience with the material, the tool, the workpiece. And: the smaller the burr or the better the achieved surface, the shorter the downstream process. That is very important for many customers”, says Roger Schoepf, Head of Applications at CHIRON Werke, who also coordinates the application divi-

Roger Schoepf is Head of Application at CHIRON Werke and coordinates the application division Group wide. With his team of around 120 employees he implements approx. 180 turnkey projects per year.

sion for the entire CHIRON Group. In this function, he promotes the cooperation of the application departments within the Group in order to offer the customer state-of-the-art solutions with this combined know-how.

CONCENTRATED COMPETENCE

In 2012, CHIRON centralized its application activities in a new production hall. Meanwhile, Schoepf’s team comprises around 120 employees who implement approx. 180 turnkey projects per year. Among the specialists are application engineers, fixture designers, automation specialists, mechanics, measurement experts, project managers and tooling specialists. “In the application department of CHIRON Werke we have all of the necessary specialists with more than 1,000 years of combined experience under one roof. And that is our unique selling proposition. Therefore, a turnkey solution of the CHIRON Group is the best solution for customers with complex production and automation requirements”, says Schoepf.

With a turnkey project, the customer shifts a lot of trust and responsibility to the machine manufacturer. He secures longterm expertise and experience with process and machining solutions, tool life or technical feasibilities that have accumulated over years. One example: CHIRON developed a solution for the

»Optics are very important. That cannot simply be programmed. You will need many years of experience with the material, the tool, the workpiece.«

customer which can be applied to mill three workpieces from bar material, each at an angle of 120 degrees. Previously, only one piece per section was possible. The new, more efficient process now distributes non-productive times over three components instead of one.

The coordination with the customer for a turnkey project is always very close. One milestone is the startup meeting. It takes place two to four weeks after the order placement and after extensive review of the technical details. Then the customers and the specialists of CHIRON sit at one table to discuss applied technologies to be used, software and functions, tools, specific workpiece features, processes, cycle times, and much more. “CHIRON is the process developer during a turnkey project. The minutes of the startup meeting are our guideline for the entire turnkey process. And for the customer it is an exact definition of the production cell,” explains Schoepf.

HIGH WORKPIECE VARIANCE

The automation solution Variocell SYSTEM of the CHIRON Group will be individually configured and can therefore be flexibly adjusted to the automation requirements of the customer. The entire system has a footprint of 7.5 x 4.5 meters and consists of a bar feeder, a machining center and an automation cell. The high-performance machining center FZ08 MT PRECISION+ with counter-spindle for 5 axis simultaneous milling provides multi-functional processing (milling, turning, drilling, threading) of – in this case – the surgical components. It is equipped with up to 96 tools in the chain magazine to machine all component variations.

An industrial robot, a gripper storage, a clamping device storage, an ultrasonic cleaning device and blow-off station as well as a pallet storage for finished parts are built-in on a very tight space (2.2 x 2.5 meters) in the automation cell. Since the customer would like to

WHAT GUIDES US Due to their high availability, our machines and processing solutions provide our customers with the greatest possible productivity and value over the entire life cycle.

produce approx. 50 component variations, 15 clamping devices are needed for the FZ08 MT PRECISION+. These are equipped with an RFID-Chip for the order management. Depending on the order, the robot places the correct device into the machining center, i.e. the machine sets itself and is fully automated. The gripper station consists of two exchangeable grippers: one for the clamping devices and one for the workpiece. Once the first part is produced, the gripper takes it out of the machining center and places it into a sieve bowl. The robot brings this bowl to an ultrasonic bath where it is cleaned, rinsed and then blown-off. Finally, the robot places the cleaned and dried workpiece into a blister – secures and isolated individually. Finished parts can now be easily removed from the pallet storage. The complete

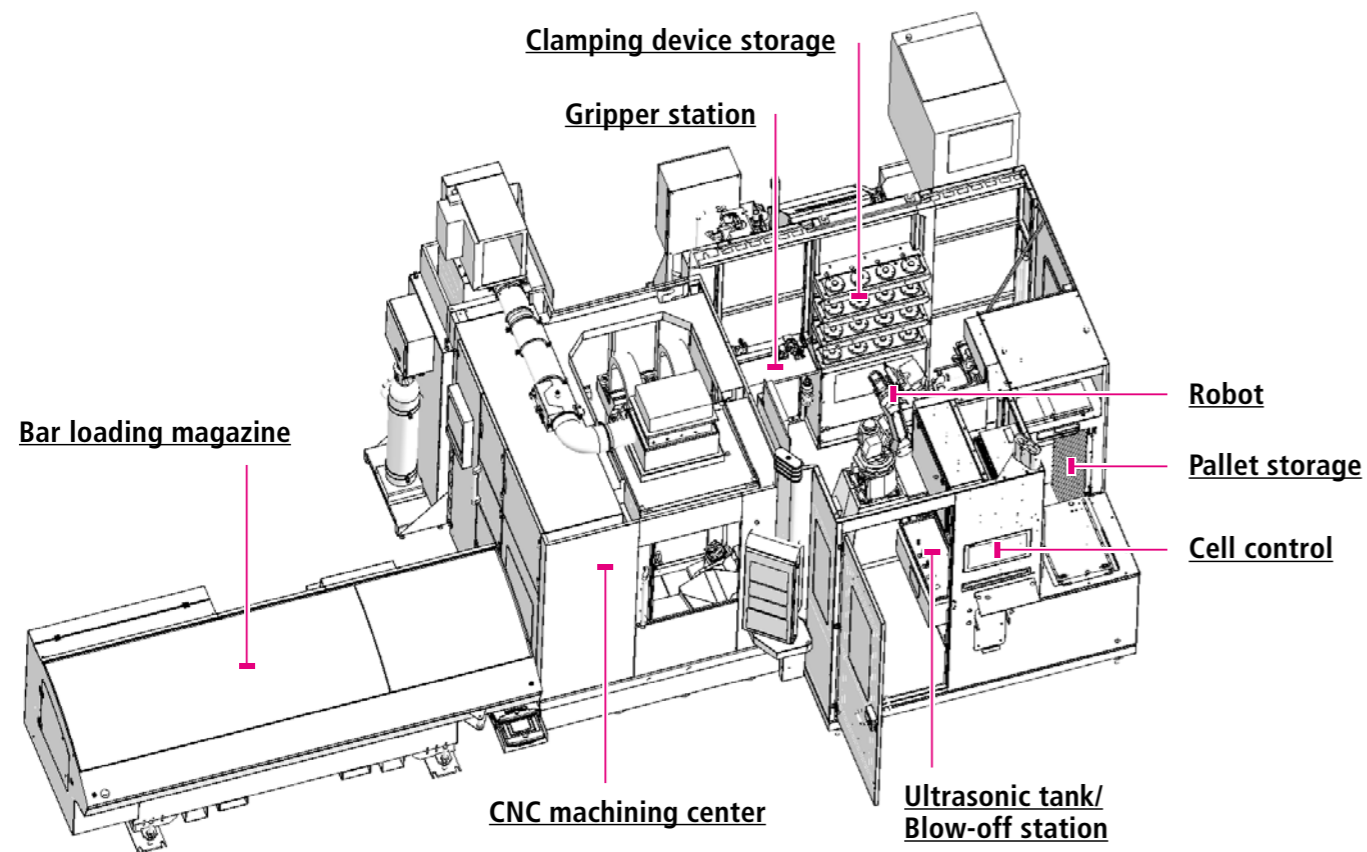
production documentation is an important process step for exact traceability for the medical industry.

ORDER-RELATED MANUFACTURING WITH FLEXIBLE AUTOMATION

The application department is also fully responsible for the cell control. The CHIRON Group places a very high demand on the modular integration of complete process elements, including standardized human machine interface (HMI) in the cell control. With this modularity, a flexible and efficient service for increased productivity is possible for the customer.

By now, the automation department comprises around 30 employees. The department is well positioned with specialists from mechanical and electrical

engineering, PLC and robot programming up to virtual simulation and an installation team. For this project, the operator creates one or more orders with the barcode scanner and manually enters the number of the desired pieces. The automation unit now knows which workpiece is to be produced. It brings the appropriate clamping device from the device storage to the machine and starts with the manufacturing. "In order for us, and for the customer to have full control over the production process, and also high process safety, there is an unwritten rule within the CHIRON Group: "We simulate every time before we produce a chip. All of the processes are subject to a virtual collision analysis before we have the machine in front of us with all of the relevant components finished," explains Schoepf.



Many workpieces made of high-strength alloys place high demands on mechanical engineering and production technologies. In order to efficiently machine these tough pieces, the machine must be dynamic, precise and robust. The STAMA machines of the 38-series are perfect for these particular requirements. All of the available processing technologies can be integrated and combined customer-specific onto the modular component of the 38-series (MC 338, MC 538, MT 838): 1 or 2 spindles, milling or milling-turning, interpolation turning, use of U-axes, 5-axis simultaneous machining, flexible automation solutions and much more. The 38-series mills with a capacity of 65 kilowatts, a torque of 400 Newton-meters and up to 10,000 rotations – and all of that with

two spindles. The low overall height of the body, broad guiding distances, fewer moving masses and high thermal and mechanical stability are the features that give the 38-series machines its efficiency and precision. All machine components are calculated according to the Finite-Element-Method to give it particular stiffness and robustness. The compactness and small footprint are unique at this high cutting capacity with HSK-A100. The active tool magazine with 40 or 64 positions is firmly incorporated into the base frame, a tool can weigh up to 18 kilograms and the chip-to-chip time is constantly 3.3 seconds short. Layout flexibility of each individual machining operation ensures the beneficial freedom which can only be

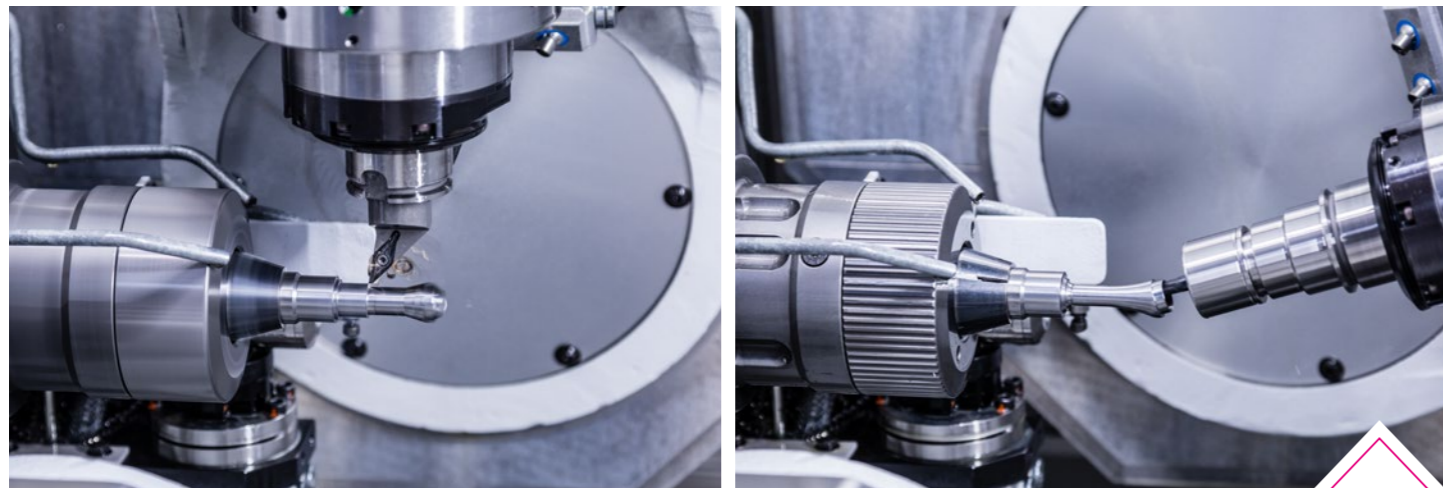
achieved by implementing a truly optimized solution. The most recent highlight was STAMA's achievement to reduce the processing time by two-thirds with the milling-turning center MT 838 TWIN and the use of two U-axes in the turbo-charger housing processing of V-belt and trumpet, thus making the entire process faster by 25 percent. All of the STAMA series have this high-productive DNA. But design and machine dynamics of the 38 model series make this kind of production boost possible, even in the machining of really tough pieces.

WHAT GUIDES US We offer our customers the unique combination of highest efficiency and absolute precision.

Efficiency & Precision

Unlimited possibilities

Finished parts, produced faster with increased precision – and of course, with unrivaled surface quality. This is no contradiction; as demonstrated by the complete 6-sided processing achieved with the FZ08 MT PRECISION+ from CHIRON. We present the step-by-step production of a three-part dental handpiece made from bar material.



1 **Sturdier alignment:** the turning tool is fixed to the main spindle with an additional bolt. This improves accuracy which results in increased feed-rates during turning.

2 **Better positioning:** the tool is tilting in the turning center of the swivel head. This way, none or only a few compensating movements are necessary in the X and Z axis.



3 **Higher speeds:** the wear-free linear drives in all three axes provide for highest dynamics. The hydraulic weight compensation enables this drive technology even on the Z-axis.



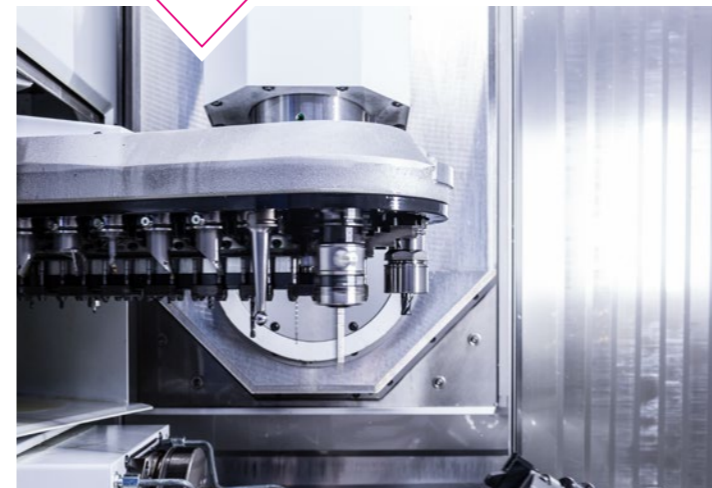
4 **Individually identifiable:** the unloading device is integrated into a very small space in the cell. This allows the parts to be separated in the fully-automated production. The unloading process is carried out parallel to the machining without loss of time.



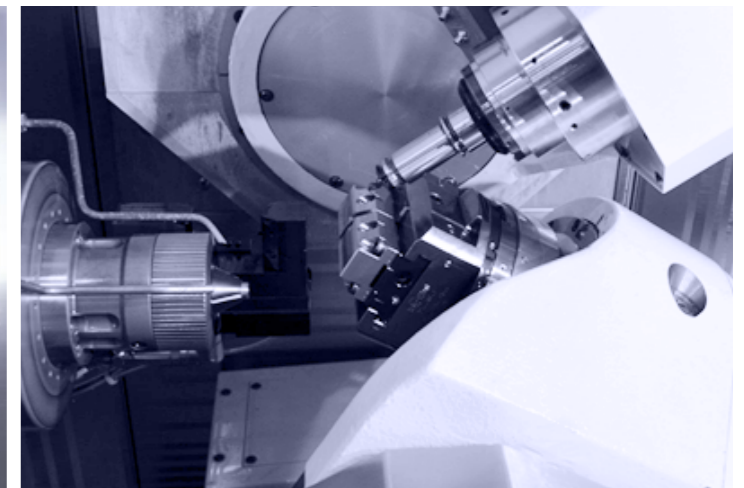
6 **Active on all sides:** there are no limits to the versatility of the machine, from the simultaneous 5-axis milling to the turning in the counter spindle; and all of that on 3.1 m².



5 **Always ready:** all of the axes and bearing points are cooled. The warm-up cycle of the machine is extremely minimal with deviations in the µm-range. As a result: "first part is a good part" can be achieved – completely in line with lot size one.



7 **Comprehensively equipped:** the machine manages up to 96 tools. The tools are accessed via a separate door. This makes it possible to intervene parallel to the machine operation.



8 **Fully moveable:** with eight NC-axes there are no limits to the machining operation. The counter-spindle not only provides for a vertical or horizontal pick-up position, but also at all angles in between.

03. RESPONSIBILITY



EMPLOYEES

Full commitment from the first second

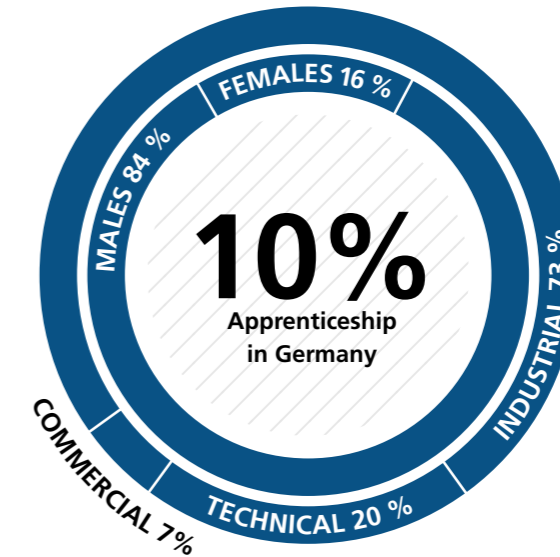
Employees are the most valuable asset in machining center production. They are the ones who make CHIRON, STAMA, SCHERER and CMS so successful world-wide. For this reason, the CHIRON Group is investing a great deal into its apprentices, the future innovation drivers.

Eva-Maria Wahl, the young metal cutting mechanic took first prize in the WorldSkills Germany vocational competition 2016 in CNC-milling.

The CHIRON Group is dependent on experts. Because the Group's long-standing turnkey competence – perhaps the most distinctive common brand feature at CHIRON, STAMA and SCHERER – cannot be programmed, produced or saved. On the contrary. Only with competent staff, it is possible for the Group to meet individual customer requirements and to offer the best solutions. For this reason, the CHIRON Group does not leave anything to chance in the vocational training and sets standards. From the very first day, the young employees are preparing to become the specialists of tomorrow. Most recently, Eva-Maria Wahl, Steffen Sigrist, and Marius Ruedinger demonstrated that. In 2016, they won all three top positions at the WorldSkills Germany vocational competition in CNC-milling. With that, they qualified CHIRON for the WorldSkills Abu Dhabi 2017 – the 44th WorldSkills competition with more than 1,200 specialists in 51 different professions from 77 countries and regions. The successful formula behind this strong performance? More training, more perspectives and more opportunities.

MORE TRAINING

Those who want to join the apprenticeship program at the CHIRON Group do not only learn machining by the book. The young men and women rather benefit from a considerably higher training quality than usual in the industry. Because the curricula were upgraded with individual challenges from the basic instruction courses to the last advanced training course. For example, future industrial mechanics train the production and assembly of a miniature CNC-machining center, including spindle system, tool changer and direct drive. "That motivates and imparts valuable know-how," confirms Herbert Mattes, Head of Vocational Training at CHIRON Werke, the well-conceived concept. "Regardless, whether the focus is on industrial,



technical or commercial vocations: the apprenticeship packages of the CHIRON Group focuses on teaching competences explicitly."

MORE PERSPECTIVES

The supreme maxim for machining center competence is looking at the whole. That is the reason why all apprentices are working in different departments for at least two months each as of the second year of training. In doing so, they experience the machine production from different perspectives and thus gain a better understanding of the necessary coherences in production. In addition, to actively strengthen the collaboration within the CHIRON Group, some apprentices even move temporarily to another company within the Group. For example, since 2017 STAMA and CHIRON exchange apprentices with each other for four weeks. In doing so, the young colleagues are learning new projects, technologies and solution strategies. For the same reason, a 6-weeks stay at CHIRON America is in the program for all students of CHIRON Werke. Some of the apprentices even have visited a completely unknown company – during a 4-week Go.for.Europe internship, for example, in England, Spain or Italy.

APPRENTICESHIP PROGRAMS OF THE CHIRON Group

CHIRON, STAMA and SCHERER are currently training around 160 apprentices in 15 different professions. These include industrial training programs in industrial mechanics, electronics, mechatronics and metal cutting mechanics. Furthermore, access to technical studies in mechanical engineering, mechatronics and electrical engineering and to technical product design are also possible. Finally, young employees who decide on a commercial vocational training can also start their career at the CHIRON Group.

MORE OPPORTUNITIES

Eva-Maria Wahl started her career in September 2012 in the apprenticeship workshop at CHIRON Werke in Tuttlingen. Today, after 3 ½ years of training, the young metal cutting mechanic programs, produces and measures large sized high-precision workpieces, such as machine bases, headstocks and weighing plates, core parts of CHIRON machining centers. With that, she decided to accept the guaranteed offer to stay with CHIRON, just like almost all of her colleagues: "At CHIRON, I continuously work with the latest technologies", confirmed the 21 year old. "Whether it is digitization, automation or robotics – we actively shape the current industrial revolution and have the best opportunity to become the sought-after experts of tomorrow."

WHAT GUIDES We set ourselves ambitious goals and develop ourselves continuously. We rely on our committed and competent employees. Our open and dynamic corporate culture makes us an attractive employer.



Sustainability

A second machine life

Visible transformation: the employees of CMS update between 60 and 100 machines per year to the latest technological standards.

Sustainability not only means the economical use of raw materials and greater energy efficiency, but also the preservation of values; machine tools are a value. And that is exactly what CMS-GmbH is doing: they overhaul and modernize machines, and make these available again on the market as good as new. In other words, preserve.

Machine tools cost a lot of money because they are made up to 95 percent of metal: iron, aluminum, precious and heavy metals. But a lot of expertise in mechanical engineering and passion have been invested in them as well. A machine tool is much more than the sum of its parts. And for everyone who is working on it in development, design and production, it is also a piece of personal identification.

INCREASE PRODUCTIVITY

CMS-GmbH in Neuhausen ob Eck near Tuttlingen is the retrofit specialist within the CHIRON Group. Since 2000, the company has been buying up used ma-

WHAT GUIDES US Our machines and we ourselves protect resources and avoid waste.

OLD

10 YEARS AT FULL-LOAD OPERATION

Depending on use and maintenance, even the best machine tool sooner or later reaches the end of its lifecycle.

chining centers made by CHIRON, STAMA or SCHERER from the entire world market – with lasting effects. Today, the CMS-employees update between 60 and 100 machines per year to the latest technological standards. And there is still plenty of work left to be done, since around 21,000 CHIRON, 8,000 STAMA and 1,350 SCHERER machines are available on the market.

At CMS, retrofit is sustainability in practice. In case of a complete overhaul, where the machine is completely disassembled and rebuilt from scratch, around 75 percent of the material mass is preserved. That saves raw materials. All dismantled machine elements, as well as oil, grease and coolants are taken to a controlled and certified disposal facility. This step protects the environment. In addition, all essential components are replaced, such as drives, main spindles, ball screws, guides and even the control, if required. As a consequence, they are



NEW

BROUGHT UP-TO-DATE

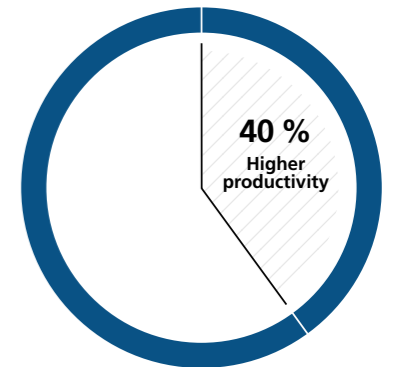
Mechanical engineering at the highest level: equipped and geared up to face a new machine life. When retrofitting, the machine is upgraded with new components.

30 to 40 percent faster than before. That increases productivity.

SAVE ENERGY

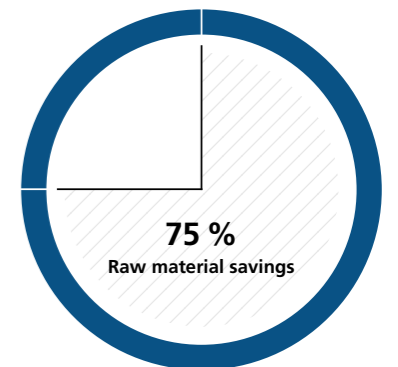
And that is not all: The employees of CMS retrofit the machines with energy-optimized components and integrate energy-efficient solutions. On the one hand, it can be used to discharge the thermal energy from the various cooling circuits of the machine tools (such as the control cabinet cooling system or coolant unit) into the central water circuit of the customer. On the other hand, special drive motors feed the generated but not needed energy back into the grid. Furthermore, there is also the Power-Safe-Function which put machine tools automatically into stand-by mode during unproductive times. All of these measures have one thing in common: they greatly reduce the energy consumption in manufacturing and with it the costs per piece at companies that use machine tools of the CHIRON Group.

SAVING RESOURCES WITH COMPLETE OVERHAULS



PURE PRODUCTIVITY

After the retrofit, the machines are up to 40 percent more productive.



HIGH SAVINGS IN RESOURCES

75 percent of the material mass is preserved during the complete overhaul.

Product-Highlights 2017



STAMA MT 724 2C

The milling-turning machining center with two independent columns is suitable for 6-sides complete machining from the bar or chuck. One milling and one turning spindle each are used per working area and allows precise and powerful 5-axis machining. In doing so, the workpieces can be completely milled and turned simultaneously. A workpiece handling device is also integrated into the machine.

CHIRON FZ08 FX PRECISION+

The machining center is designed for production at lowest cost per piece. It operates with maximum precision, offers excellent surface accuracy and maximum dynamics with linear drives in all axes. The advantage: compact, high-precision, efficient, flexible and up to 50 percent more productive than before.



STAMA MT 838 TWIN

Double-spindle machining center with HSK-A100-interface for 5-axis complete machining of large workpieces, saw cuts, blanks and semi-finished products. The production processes with milling and turning are highly productive, the swivel axes of the bridge are pivoted on both sides. The torque technology developed in-house provides high accuracy during positioning. As 2-place-center it can be loaded, unloaded and equipped during the machining operation.



CHIRON FZ12 FX VARIOCELL UNO

Machining center and robot cell as unit. Flexible and economical solution as a compact unit consisting of machining center, handling robot and workpiece storage unit for low-manpower operation and higher process reliability.



CHIRON DZ18 W

Productive double-spindle machining center with automatic tool change with the pick-up method and workpiece changing device for the loading and unloading operation for the simultaneous machining of large workpieces.



SCHERER WDZ 350

The vertical shaft turning machine WDZ 350 with one steady rest and the WDZ 350 Duo with two steady rests are manufactured for high productivity. A workpiece gripper in the tool turret ensures fast loading unloading.



CELL SCHERER VDZ 100 DS CHIRON DZ12 W

The highly productive machining cell is suitable for automatic turning and milling from one source. Work operations are optimally coordinated with one another and quantities are optimized – for maximum output. Savings in resources, such as energy, personnel or space result from the common use of aggregates.

IMPRINT

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