

COMPLETE

Nr. 02/19

The complete machining magazine

PEOPLE | The art of communication | Who is Franz Schön?

MACHINES | M175 MILLTURN | Dynamic and force combined

AUTOMATION & DIGITALISATION | WFL solutions for the future

All eyes on: The MILLTURN trend

Explore tomorrow's world of WFL complete machining and experience the transition from solution provider to system provider.



WFL 
MILLTURN TECHNOLOGIES

Salzburg. The stage of the world.

Salzburg. Baroque city and cultural city, traditional and modern. Residents and tourists lose themselves in the narrow streets and wide squares of the old town. The unique interplay of landscape, history and modernity creates a magical synthesis of the arts. With its 154,211 inhabitants, the „Festival City“ is a particularly enchanted place, which rightly finds its place on the UNESCO World Heritage List.

„Success is a matter of adjusting one's efforts to obstacles and one's abilities to a service needed by others.“

Henry Ford

Dear customers and readers,

„WFL customers enjoy tailor-made solutions – our aim is to evolve from a solution provider into a system provider.“

Not much time has passed since the last edition of our COMPLETE customer magazine. Back in March, we brought you the second edition. And this third edition is now being published to coincide with the world's most important metalworking trade fair – the EMO in Hanover.

At the EMO we will be demonstrating our innovative spirit live in action – from an array of machine highlights and new software products to smart technology, join us and take a glimpse into the future of complete machining.

Complete machining is subject to different demands today, or more accurately put, greater demands. Which is why we are always on the ball, striving to integrate a wide range of technologies, measuring tasks, finish machining operations, gear teeth and much more into our MILLTURN complete machining

centres, all to suit our customer's needs. Right from the very start, our motto has been “clamp once – machine complete”. That is and remains our goal.

Machining operations are increasing in complexity, so we are acting accordingly and ramping up our technological processes. However, we focus on more than just the machining operation itself; we cover the entire process. And by this we mean defining the machining process, workpiece programming, simulation, production and finally, support throughout the entire service life of a machine. We want to play our part in maximizing productivity.

We are delighted to present you with the third edition of “COMPLETE – The magazine for complete machining” packed with news relating to the company, our products and technology.

The WFL Management Team



Kenneth Sundberg
Managing Director After Market Sales

Norbert Jungreithmayr
CEO

Günther Mayr
Managing Director Sales and Technologies



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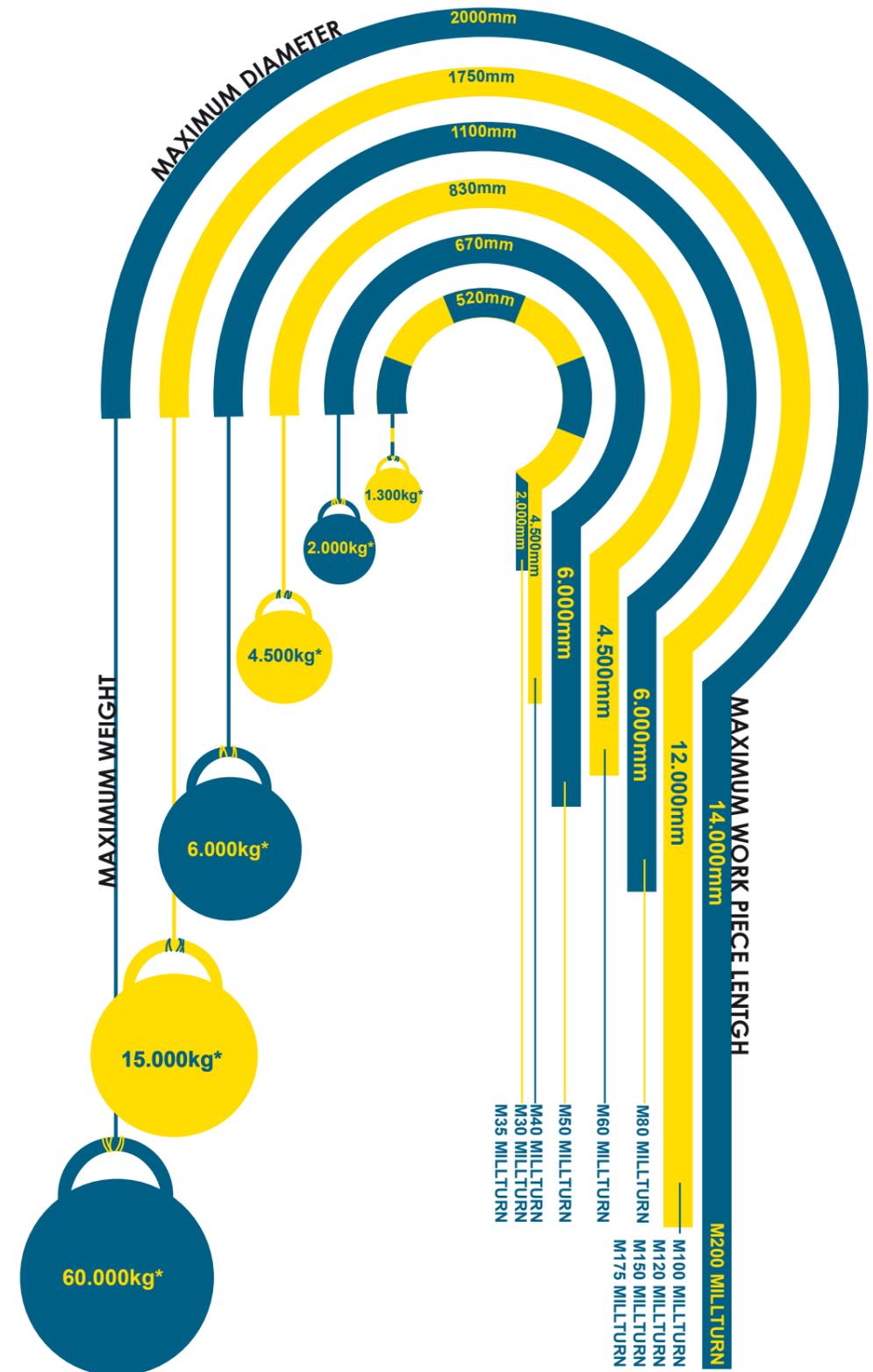
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*depending on machine configurations



EVERYTHING UNDER CONTROL

The department of Franz Schön works hand in hand and under the most precise planning. The individual processes are precisely coordinated and clocked perfectly in order to ensure that everything runs smoothly – from planning to final completion.

The art of communication

“Great things in business are never done by one person. They’re done by a team of people.”

Steve Jobs

The interface, the link, or to put it succinctly, „the key to success“ lies in making communication with our customers easy. Order management ensures organised order handling within the company. As well as making sure that internal processes are followed, the aim of order management is to satisfy the customer by delivering the products they have ordered on time, in compliance with the contract and without any errors. Franz Schön manages this essential and highly efficient department – which takes care of everything from planning through to processing individual customer orders. WFL order management aims to process orders more quickly, more efficiently and ultimately to deliver greater customer satisfaction. We paid a visit to the heart of the action and managed to catch up with head of department and order processing expert Franz Schön for a fascinating interview.

Mr Schön, please tell us a bit about yourself and your educational and professional milestones to date.

My schooling followed the conventional route: primary school, secondary school and then a polytechnic course. After this I

did an apprenticeship as a machine fitter, which I successfully completed in 1983. My career then began in the same year in machine tool construction at VOEST Alpine, where I was able to gain some initial experience with the assembly of machine tools and associated field service. As part of my professional activities, I graduated from the vocational school for foremen in machine building and technical school for industrial engineering/machine building as a second educational path. During this part-time education, I became one of the office staff and worked in purchase planning. Once I had gained several years of experience in purchasing, I was given the opportunity to switch to order management. Here, alongside project management, I was able to gain knowledge about company processes and organisational matters, and implement appropriate solutions.

In January 1994, I was appointed head of order management at WFL. Due to the size of the company at that time, I was heavily involved in interdepartmental tasks, which gave me a greater real-life understanding of commercial matters, for example. In recent years, I completed a range of advanced training courses, such as training as a safety specialist, contract law

and training as an export manager in regard to export control, to name just a few. In 2014, I took on additional responsibilities as I was appointed an authorised officer, or „Prokurist“ as we say in German. I believe that all this experience and training are key elements in efficiently and successfully handling projects at WFL.

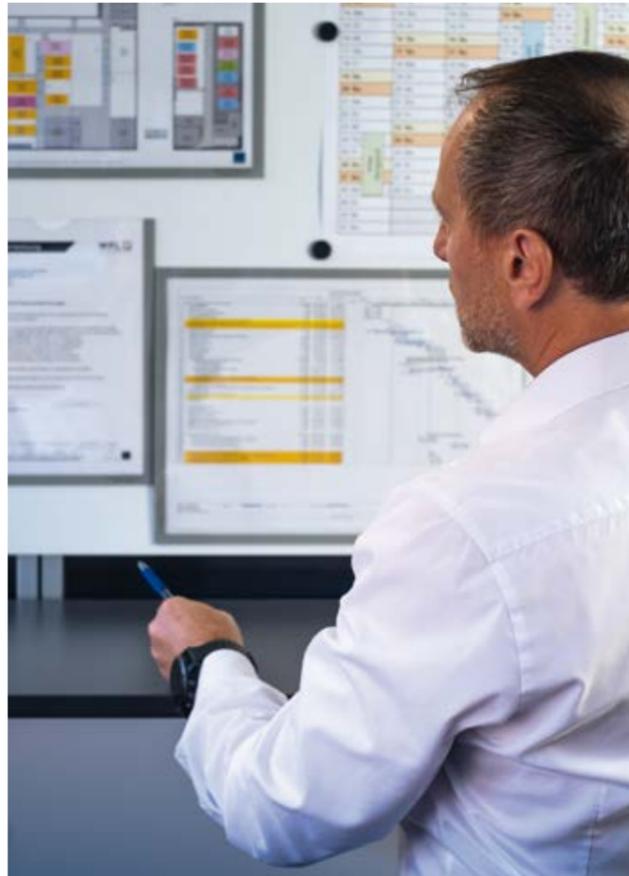
Could you describe a typical working day at WFL in and around your department?

I like to start my working day early in the morning. This gives me a chance to focus on scheduled tasks with as few interruptions as possible.

As soon as our customers and colleagues in other departments arrive at work, it is important that those tasks are prioritised and processed based on their urgency. To do this, you need a certain level of flexibility, which must not, or ought not, descend into chaos. Tasks such as checking contracts, drawing up schedules and order confirmations or creating progress reports and so on often have to be temporarily put on the back burner and re-scheduled based on their level of urgency. This means it can sometimes be stressful during the day, especially if there are customer acceptances on the agenda and not everything is going



IN THE MIDST OF EVENTS
Regular meetings and agreements are the nuts and bolts.



according to plan yet here. Tasks that can't be scheduled often make things a little hectic. In order management we also want to give 'spontaneous matters' our full attention and assist in delivering constructive solutions (both in-house at WFL and also for our customers). There's usually a lot of meetings scheduled throughout the working day as well to ensure that ongoing projects and processes are handled optimally. One of our department's main tasks is to act as a communication interface between internal departments and our customers and thus ensure interaction with one another runs smoothly, both internally and externally.

What strengths does your team or your department possess and what does your department stand for?

Without a doubt, our strengths are flex-

ibility, commitment, team spirit and our solution-driven approach. To ensure orders are processed and the associated challenges are tackled in the best possible way, each and every person and department must be motivated and this must be evident to our customers. As well as motivation, ensuring that everything runs smoothly is another of our many strengths. Successfully completed orders and satisfied customers – that's our goal and the mission for our department.

If you could choose any career, what would you want to be?

This question doesn't apply to me. I chose this career and try to give it my all every day. I enjoy my work, as I have enthusiastically learned all about my role and have already gained a lot of experience. So I will continue to use my expertise here at WFL and play my part in achieving

the goals that we have set for ourselves as WFL, to the best of my knowledge and belief.

If you imagine your job satisfaction as a curve, how would this curve change over time?

Like any stage in life, it has its ups and downs. However, the main thing is that you are enthusiastic about your work and dedicated to it. In one sense, I have grown up with WFL and have already learnt a great deal. For me, the 'downs' are the problems, but I see these as challenges. Overall, it is like a sine curve that's moving upwards, where you grow and develop with each challenge.

Which animal do you think best represents WFL?

I'm not really a creative type. But if I think carefully about how I view WFL as a com-



PRECISION
WFL stands for highest precision – not only in production, but in the entire order processing.

“Successfully completed orders and satisfied customers – this is what we aim for.”

pany and what has made it a company that our customers value – namely our flexibility, our rapid, and above all solution-based approach to problems, the unbureaucratic way in which we offer and implement technical solutions quickly, the internal cohesion and so on – then I would compare it to an ant colony, that is to say, strong, great team players, highly flexible and focused on a common goal.

What – besides family, friends and career – could you not imagine your life without?

On top of those essential things, or the core components of my life, sport is important to me. My job is often very stressful, so I feel it's important to offset that in this way. When I'm cycling, I can really switch off and relax. Whenever possible, I get out on the bike once or twice during the week, but at the least at the weekend.

Some people don't like to do sport. But this always comes down to the kind of work you do. If you have a job that is mentally demanding all day long, then it is pretty much essential to balance this with some physical activity. If you carry out physically demanding work, on the other hand, it can be really relaxing to read a book and unwind, rather than taxing your body further. All in all, when I do sport, I like to do something active that I enjoy.

What are some of the key moments in your life?

The birth of my children, definitely. To date, that has been by far the most important and defining experience in my life.

What was your dream job as a child?

When I was young, it was all about sport: skiing, football, cycling and so on. I think every young sports fan dreams of turning

their hobby into a career. But your parents give you a push in the right direction so you can find a suitable job. Now I am very pleased that I have taken this path and I enjoy my work.

What barriers or obstacles do you face in your current role?

Challenges arise here and there due to interdepartmental work and the positive fact that our company structure is growing and these challenges have to be tackled. If you compare this to how it was in the past, when there were fewer structured processes, then today's processes, which cover several departments, are much more difficult to coordinate. Time is also a decisive factor here. However, these extremely important systems and organisational adjustments must not affect our day-to-day business or the proper processing of orders. Therefore, my



PROFILE

Name: Franz Schön
Age: 55
Home town: Engerwitzdorf/OÖ
Education/Career:
1970 - 1978 Primary & Secondary school
1978 - 1979 Polytechnic course
1979 - 1983 Machine fitter apprenticeship
1983 - 1989 Machine fitter at Voest-Alpine-Steinel
1985 - 1986 Foreman course
1987 - 1990 Night school for mechanical engineering and industrial installation
1989 - 1990 Purchasing department at Voest-Alpine-Steinel
1990 - 1993 Order management at Voest-Alpine-Steinel
since 1993: Head of order management at WFL
1997: Apprenticeship as a security specialist
2015: Apprenticeship as exports specialist
since 2015: vice president

aim is to handle projects to the complete satisfaction of our customers.

If you could invite three historical figures to dinner, who would you choose?

I would choose three different people from different epochs. Albert Einstein – a genius through and through. How did he think? What was he like personally? And what input could he give me? The second person would be Mahatma Gandhi, as he had a special philosophy and displayed great wisdom. Finally, I am interested in politics and its contexts. So Barack Obama might make a perfect guest as someone who has achieved a lot. I think these men would have a lot to say. One is a genius, the other an idealist and the last brought new approaches to world politics. It would be a very interesting dinner with fascinating discussions and a lively get together.

Is there anything that you still definitely want to do in your life? What are the top three things on your personal bucket list?

Spending time with my family is very important to me. The children are growing up and holidays together with the family begin to dwindle. I want to make the most of this in the coming years.

For a while now, I've been wanting to do an extended cycling tour that lasts several days with my friends; one that's also a lot of fun, of course.

Professionally, my ambition is to preserve the value of our company here at WFL and build upon our excellent reputation.

What do you think lies ahead for WFL?

As I have mentioned, we have an excellent reputation and outstanding products, top technology and fantastic people. We need to maintain our team and expand it, as this is the only way to ensure that customers can rely on us and receive top quality and service.

What personality traits do you value in other people in particular?

Reliability, honesty and trustworthiness are very important to me. These traits are also essential when interacting with customers.

What's your recipe for success at WFL?

Employees are important. A good company is nothing without good employees who are motivated and enjoy their work. This is the only way to ensure that success lies ahead and to achieve WFL's goals.

All eyes on...

M175 MILLTURN

Dynamic and force combined

by WFL Millturn Technologies

With the models M100, M120, M150 and M175, WFL Millturn Technologies presents the premium class of multifunctional turning-boring-milling centres. Complete machining of complex workpieces up to 12m in length becomes a reality. In addition to superior performance and torque values of the spindle drives, tremendous feed forces on all axes ensure impressive dynamics and maximum productivity. Perfection down to the smallest detail and a modular machine concept offer the customer a complete package of the highest quality in a new dimension. This is your complete solution from WFL.



All eyes on

M175 MILLTURN

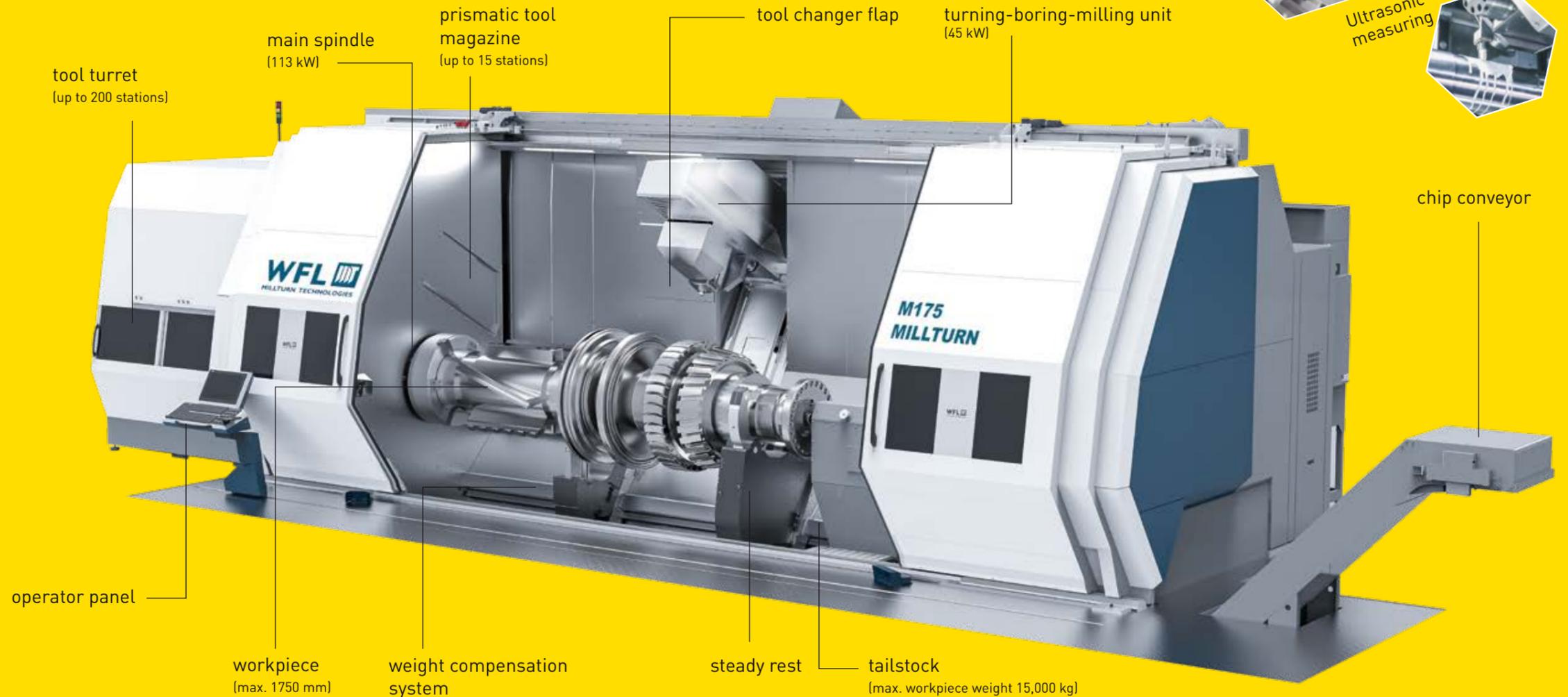
by WFL Millturn Technologies



Quality and size in a new dimension

Bigger, stronger, faster - with the latest M-series product - the M175 MILLTURN - WFL is launching a new giant of complete machining. This contains significant innovations, ensures the highest precision and an advantageous versatility for customer requirements. The new turning-boring-milling unit offers a max. swing diameter of 1750mm and can accommodate up to 15.000kg heavy workpieces very stable due to the new, large-sized bed guideway for steady rest and tailstock.

The turning-boring-milling unit has an X-stroke of 1620mm and a Y-stroke of 1100mm and can therefore be used uncompromisingly and universally, e.g. for deep radial machining. Due to the large volume box structure of the turning-boring-milling unit cross slide with a very wide bed guide base and multiple arrangement of ground gliding guideways in the X- and Z-axis, the tool carrier system has a particularly high stability. This massive and powerful construction is combined with proven main and milling spindle systems, whose 113kW and 58kW drives are extremely reliable in their performance.



Facts:

- Very stable construction
- Deep radial machining possible
- 58kW milling capacity
- 113kW main spindle power
- Max. workpiece weight 15.000kg
- Y-stroke 1100mm
- X-stroke 1620mm
- Max. turning diameter 1750mm
- Specially configured machine on customer request

Technical data		M175 MILLTURN
Nominal center distance	mm	2000 / 3000 / 5000 / 6500 / 8000 / 10000 / 12000
Swing - ø over Top slide	mm	1750
Swing - ø over bed	mm	1840 / 1810 / 1790 / 1750 / 1730 / 1700 / 1660
Max. power, Turning spindle 40% duty cycle	kW	103 // 113
Max. torque, Turning spindle 40% duty cycle	Nm	10160 // 14000
Max. torque, Turning spindle 100% duty cycle	Nm	7300 // 12400
Max. spindle speed, Turning spindle	min-1	800 // 800
Max. power, Milling spindle 100% duty cycle	kW	45 // 58
Max. torque, Milling spindle 100% duty cycle	Nm	500 / 310
Max. spindle speed, Milling spindle	min-1	5000 / 8000

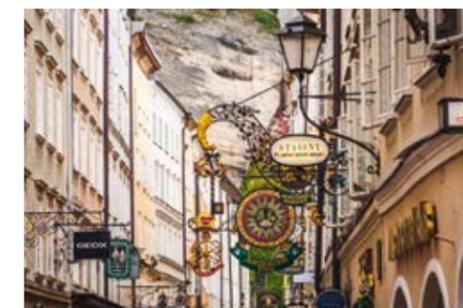
Technical data		M175 MILLTURN
Swiveling angle B-axis	degree	-110 / +110
Travel Y-axis, 45 kW	mm	1100 (-550...+550)
Travel X-axis, 45 kW	mm	1620 (-20...+1600)
Tailstock, quill - ø	mm	300
Tool magazine	number	36 / 72 / 108 / 200
Control SIEMENS	Type	SINUMERIK 840D sl



We love...

...Salzburg

Castles, parks, museums, churches and nature – the beauty of Salzburg lies in its diverse range of attractions. There are few Austrian cities that combine history and modernity in such a magical way. The birthplace of W. A. Mozart, the location for „The Sound of Music“, the unbelievable scenery of the city and the integration of modern art all make Salzburg a truly special destination.



ABOVE THE ROOFS
Salzburg is part of the UNESCO world cultural heritage since 1997 as a city of great value to human kind



COVETED SPOT

Tickets for the „Jedermann“ on the cathedral square are hard to get hold of. However, there is always a free place in one of the many beautiful cafés.



The first festival took place on August 22, 1920, with a production of „Everyman“ by Hofmannsthal in front of the cathedral.

The magic of time fills the air. Whether the meadows are glistening with spring dew or the autumn fog is spreading its wings across the city – nothing detracts from this journey into the past. In the early hours of the morning, when the streets are still illuminated by the old lamp posts, lingering traces of years gone by are still palpable. The aroma of fresh pastry hangs in the air as people begin to hurry along the cobbled paths. Before the first rays of sunlight touch the city, it's as if the centuries have stood still and there's no escaping this magical feeling. Meander through this wonderful place with curiosity and anticipation and discover and enjoy as many of its different facets as time allows.

The history of Salzburg

The history of Salzburg goes back to 400 B.C. with the first Celtic tribes. Even back then, they recognised the value of the

„white gold“ from the mountains – the name of the city and the river is no coincidence, „Salz“ being the German word for „salt“. The region is home to huge salt deposits, which brought vast wealth and attracted the very first settlers so long ago. After a long period, defined by unrest and migration, Bavarian Duke Theodo II assigned Frankish missionary Rupert with the task of building and leading the new diocese of Salzburg. Rupert is known as the founder of the city of Salzburg. In the years that followed, diligent church dignitaries proactively invested their large earnings to secure and protect their property and their city of residence. Thanks to their foresight, Salzburg was immune to the ravages of war for a long time. Lofty ambitions and diplomatic skill enabled the city to avoid conflicts and riots. Instead, universities, churches, wells and a magnificent inner city could be built.

It wasn't until 1809 that Salzburg was captured and came under French administration. The French Emperor Napoleon

Bonaparte surrendered Salzburg to his Bavarian allies shortly afterwards. However, after the fall of Napoleon, just a few years later, Salzburg once again became part of Austria. This period took its toll on the city's economy and it took another 80 years for Salzburg to recover.

This recovery was only possible thanks to industrialisation and the emergence of tourism. The creation of a cultural metropolis with an international reputation also helped to improve the economic situation. However, the final boom didn't come until after the Second World War. Today Salzburg has 150,000 inhabitants and enjoys global recognition. In 1997, the entire city centre of Salzburg and the Hohensalzburg Fortress was added to the list of UNESCO world heritage sites.

The famous son and his legacy

The culture and particularly the musical history of the city date back to just after Salzburg was established. Salzburg has

been able to hold onto and enhance its outstanding reputation as a city of music throughout the centuries. The royal court orchestras, in particular, strengthened this reputation. Many legendary composers and conductors, such as Georg Muffat, Johann Ernst Eberlin, Johann Michael Haydn and Leopold Mozart took on the management and guidance of these orchestras.

Leopold Mozart was well known as a court conductor, but he is best known today as the father of Salzburg's prodigy Wolfgang Amadeus Mozart (1756-1791). At just seven years old and already deemed a child genius, W.A. Mozart „climbed the charts“ of his day. He travelled from country to country and presented his compositions to nobility and their courts. The next big step in his career came when he was only thirteen years old and was appointed as unpaid court conductor. At 25, Mozart resigned from this position as he wanted to follow his desire as a free spirit. He continued his career in Vienna, where he lived, composed and finally died at the

age of 35. His level of fame as a composer and conductor during his lifetime was still fairly low, but this would change during the next century.

From
1920
onwards, Salzburg
finally became a
cultural metropolis

Heavily influenced by classical musical history and royal culture, the city returned to its full glory after turbulent economic times. From 1920 onwards, Salzburg finally became a cultural me-

ropolis, thanks to the introduction of the annual Salzburg Festival. This was founded by director Max Reinhardt, poet Hugo von Hofmannsthal and composer Richard Strauss. The first festival took place on August 22, 1920 with a production of „Jedermann“ (Everyman) by Hofmannsthal under the direction of Reinhardt in front of the cathedral. Since then, top international stars from the classical music and acting scene have drawn over 250,000 guests to more than 200 events ranging from operas and plays to concerts. In addition to the Salzburg Festival, there's also an Easter Festival and a Whitsun Festival – all of which embrace classical music. Salzburg is also a global city of music outside festival periods. This atmosphere can be felt during Mozart Week – at least in the concert halls. Around January 27, the birthplace of Mozart honours the composer's birthday with a prestigious series of concerts. Today Salzburg offers one of the most extensive ranges of classical and jazz concerts and festival days.



MIRABELL GARDENS

The beauty of this garden enchants all its visitors.



Modern tourism meets history

This background knowledge makes Salzburg all the more magical. Especially when you pause on a small bench in front of the Mirabell Palace and watch as people stroll by in wonder. The Dwarf Garden, which can be accessed via a small set of steps, and features 16 small dwarves made of marble, is a real eye-catching attraction. From the Mirabell Gardens, you can wander towards the Lederergasse, past the famous Mozart Residence where he lived for eight years before moving to Vienna. The direct route into Salzburg's old town is strewn with magical sights and historical details, romantic cafés and truly traditional companies. Here you have the opportunity to sample Salzburg's delicacies and purchase a few of the world-famous Mozart balls. After these refreshments, it's time to explore the Salzburg Grünmarkt. The market offers everything from fruit and vegetables to all kinds of fresh bedding plants. After passing the old marketplace head towards the Residenzplatz, where the famous Residenzbrunnen fountain is located – Europe's second-largest marble fountain. If you are visiting Salzburg at Christmas, the Residenzplatz is a must-see, as the annual Salzburg Christmas Market is held there. To round off your day, Salzburg has a very special attraction – the Hohensalzburg Fortress. From the fortress, visitors can enjoy a breathtaking view across the city and its amazing surroundings as well as the numerous impressive buildings that shape the city's skyline.

A day in Salzburg is one filled with numerous highlights – let yourself be carried away by the magic of the city as you take it all in. After all, Salzburg is regarded as „the stage of the world“.

More Informations about Salzburg:
www.salzburg.info
www.stadt-salzburg.at
www.salzburgerland.com



FACTS:
 Population: 154,211
 Size: 65.64 km²
 Capital City: Salzburg
 Districts: 14



EDITOR'S TIPS:

Hohensalzburg Fortress

The Hohensalzburg Fortress atop the Festungsberg towers over the roofs of the Baroque old town. As the largest fully preserved castle in central Europe, this landmark attracts millions of tourists to Salzburg every year.

Mozart's birthplace

W. A. Mozart was born in the „Hagenauer Haus“ at No. 9 Getreidegasse in Salzburg in 1756. Today, Mozart's birthplace is one of Austria's most-visited museums and is a real highlight for Mozart fans in particular.

Mirabell Palace & Gardens

Mirabell Palace was built in 1606 by Prince-Archbishop Wolf Dietrich for his mistress Salome Alt. Today it serves as the setting for the most romantic of weddings.

Getreidegasse

The Getreidegasse is the heart of the old town and draws many visitors with its unmistakable charm and Mozart's birthplace. As well as international fashion chains, the Getreidegasse captivates visitors with its historic inns and unique, traditional businesses.

Hellbrunn - Palace and Trick Fountains

The Hellbrunn Palace has been captivating and amazing its visitors with its trick fountains for over 400 years. A unique experience with many a surprise!

Haus der Natur

This museum combines enormous dinosaurs from prehistoric times, milestones in space travel, diverse underwater worlds and reptiles from all around the world. The journey into the human body is sure to impress, as will the interactive experiments in the Science Centre.

Museum der Moderne Salzburg Mönchsberg

The Museum der Moderne Salzburg lies high above the roofs of Salzburg's old town on the Mönchsberg. International art treasures from the 20th and 21st centuries are presented in a stylish setting, over four levels.

Augustiner Bräu Kloster Mülln

The Augustiner is one of Austria's largest beer inns and dates back to 1621. The beer is mainly brewed by hand and produced according to an old recipe. It traditionally comes out of wooden barrels and is served in stone mugs.

All eyes on...

WFL iControl

by WFL Millturn Technologies

WFL iControl protects your MILLTURN, even during autonomous production throughout the night. Depending on the machine's equipment, up to 16 freely configurable process signals are continuously monitored. The new design contains more complex and more intelligent monitoring options, offering comprehensive safety during production. Multi-stage monitoring logics are used, which respond if the collision limit or adaptive process limit is exceeded, or if there are significant, rapid changes in force.



WFL iCONTROL

by WFL Millturn Technologies

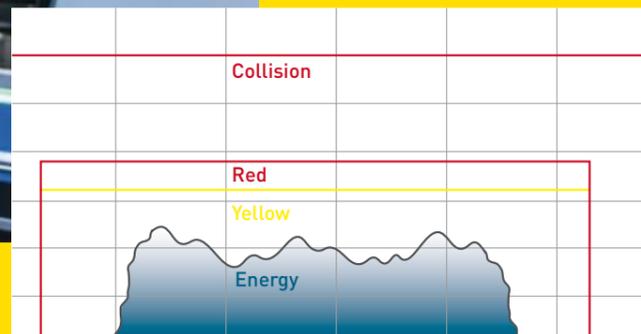
The torques of all axes and spindles involved in a machining operation are recorded via separate monitoring channels. A special, adaptive algorithm eliminates static weight and friction forces as well as dynamic acceleration forces, so that the process signal only represents the external forces resulting from the machining process. This principle allows comprehensive monitoring of the load conditions within the machine. During drilling or milling, a worn tool can generate enormous reaction forces on individual axes. Tool breakages or breakages of cutting inserts during turning affect the X, Y or Z-axis force in a specific way.

WFL iControl is fully integrated in the control interface. All relevant signals are shown on the display. Collision monitoring

is active right after the machine is switched on. It responds to overloads on individual or several machine axes within just a few milliseconds. This essential monitoring is always active and protecting the machine, without the need for any special programming or operation, including when new NC programs are being run-in.

Signal sources

WFL iControl responds to the drive torques of the NC axes and spindles and also to signals from external sensors which are responsible for vibration, pressure, flow and temperature.



Signal evaluation

The process signals are evaluated according to a range of criteria. The settings can be customised, which means the available monitoring modes for the process signals can be freely combined during the individual machining operations. Collision monitoring, process monitoring and tool wear monitoring are used for evaluation.

- Collision limit
- Red limit
- Adaptive limits
- Dynamic limit
- Continuous limit
- Yellow limit
- Energy limits

Data recording

New functions also provide data recording by means of a black-box and process recording function.

If the collision limit is exceeded, a blackbox log file is generated. The target position, the actual speed, the current drive torque and the process signal in the interpolation cycle are logged in this file for all NC axes and spindles approximately 1 second before and after the collision alarm. A long-time data recording function can also be activated in the NC program at any time, so that the average, minimum and maximum values are recorded in a process log file at regular time intervals for each process signal.

WFL iControl allows users to develop a feel for the technological potential of the machine and tool. As a result, maximum safety and protection are guaranteed for the machine, tool and workpiece. In aviation in particular, this data is needed when special machining operations are performed. In these cases, the data has to be recorded. The logs provide subsequent verification that no notable incidents occurred in relation to process forces or coolant supply.

ADVANTAGES:

- Greater process reliability thanks to continuous monitoring of machining operations
- Protects the machine against damage
- Increased productivity and workpiece quality
- Tool cost savings and better utilisation of the tool life due to wear monitoring
- Better utilisation of the machine as process signals are shown on the display
- Integration of sensed tools
- Maximum sensitivity thanks to teach-in technology
- Option to perform monitoring without teach-in cut
- Optimum monitoring of machining processes with different cutting depths thanks to adaptive limits
- Option for early detection of machine wear



NEW DIMENSIONS

The manufacturer of aerospace components always strives for surpassing its limits. This ambition combined with the country's spirited mentality leads to new innovations in the aerospace industry.

Ready for take off

Brazil – the land of *joie de vivre* and breathtaking nature. It's samba, caipirinha, endless beaches as well as the rain forest of the Amazon Basin which shape our perception. Rio de Janeiro is the symbol of absolute beauty and spectacular sights, of which the country has innumerable. Furthermore, Brazil is also land of high technology and sophisticated machining of high tech components.

São José dos Campos, a city with 700,000 inhabitants, which is located in the tropical highland of the state São Paulo, is one of the most important technology centres of Brazil and therefore does not fit our imagination. The city is home to subsidiaries of several international groups as well as numerous training and research centres, especially the ones focusing on aeronautics. Embraer, the leading manufacturer of commercial jets up to 150 seats is also the main exporter of high value-added goods in Brazil. Nowadays, the company is going through a strategical partnership process of creating two joint ventures with the aerospace giant Boeing. The company specialises in regional airliners and exactly fulfils the needs of many airlines with its intelligent developments. Therefore, Embraer's regional jets ride the wave of success worldwide. The company's portfolio furthermore comprises executive aviation and military transport aircrafts. The technology of WFL plays a major role in each and every of the thousands of daily take-offs and landings. This is because the landing gears of Embraer's smart jets are manufactured by

ELEB Equipamentos Ltda, in short ELEB, who turned to five MILLTURNS from WFL for the production of its complex landing gear components for aircrafts. It specialises in the manufacture and development of landing gears on production space totalling 24,000 m². Hydraulic actuators, electrical and mechanical valves, actuators and so-called pylons are also produced by the firm. Employing more than 600 workers, the company has developed into one of the key suppliers in the aerospace industry and its all-embracing range of services – from customised developments of landing gears through to reliable service – has garnered the company a strong reputation in the sector. ELEB Equipamentos Ltda. is best compared to a small country, with its well-planned structures and precise working methods, along with sophisticated improvement processes and visible strategies. It is this innovative mindset that enables the company to launch an average of two pivotal innovations onto the market every ten years or so. "We focused on innovation, quality and service right from the start and we have embodied these



THE TEAM

(left to right: Reinaldo Ponte Júnior (ELEB), Chris Jagersberger (WFL), Ivan Prando (WFL), Luís Marinho (ELEB), Paulo da Silva (ELEB), Gustavo Nogueira Emmã (ELEB), Josef Fellner (WFL), Gustavo Tureta (ELEB) around Luís Marinho, Managing Director of ELEB are guiding the company into an innovative, digital future.



THE FIRST MILLTURN

is in continuous operation at the company's production plant. It is mainly used to manufacture cylinders, parts for the main housing and sliding housing.

values ever since," explains Luís Marinho, Managing Director of ELEB.

The master of complexity and structural challenges

The ELEB team has taken on a wide range of challenges over the past 35 years. In the 1990s, the subsidiary of Empresa Brasileira de Aeronáutica S.A., produced landing gear and hydraulic assemblies for the EMB-314 series and the ERJ-145 and won its first tender for the S-92 Sikorsky. "The next steps just fell into place. Starting with the production of landing gear plus assemblies for the E-Jet series and the development and production of a complete shipset for the Entry & Light Executive series in the 2000s," reports Reinaldo Ponte Júnior, Senior Manager in Production Technology. The company has been carrying out ongoing work on new series since 2010. This led to the development and production of parts for the KC-390 series and for the Embraer E2. The market in which ELEB operates not only requires highest quality and reliability, but also a high degree of flexibility. Pro-

duction of very small batch sizes is a matter of course here as, once production is complete, the products undergo numerous tests. This means that very short set-up times are essential when manufacturing landing gears to ensure that valuable time is not wasted. So when ELEB started to look for its first complete machining centre in 2005, set-up times, machining quality and progressive technology were the deal breakers. Since then, these requirements have grown year-on-year and only a few providers were in a position to fully fulfil them. Different materials, such as easy cuttable aluminium, but also high-strength or hardened steel as well as stainless materials, like titanium, have to be machined efficiently. Deep hole drilling as well as deep internal machining with long, dampened boring bars is carried out. The manufacturing of typical components requires a very high cutting volume and highest precision. This, in turn, calls for contradictory requirements for the machine concept such as extreme stability, high dynamics and short auxiliary process times. Today's main focus is on daily monitoring

of the Overall Equipment Effectiveness (OEE). This indicator is a general measure of a machine's added value for a company. The OEE is defined by three factors: the availability, the performance and the quality. Checking the OEE on a daily basis gives a clear, transparent indication of the amount of added value that WFL machines provide. The average value for WFL machines at ELEB is far over the global benchmark. "This index was one of the most important factors in favour of making an investment in five complete machining centres from WFL," reveals Paulo da Silva, Process Analyst at ELEB.

Maximising new technical potential

Before the company purchased a MILLTURN, the machining steps were very complex. In the past, parts were moved with great frequency, meaning that the risk of damage was very high compared with the situation today. The different clamping methods were a risk in terms of quality and set-up times were extremely long. After the first M120 MILLTURN was introduced in 2005, it soon

became clear that these factors had all been significantly reduced or even eliminated. Henceforth, finishing after hardening could be carried out inhouse. This enabled ELEB to broaden their horizons and develop ever bigger landing gears. The company invested in two M65 MILLTURNS in the two following years, to be able to apply the successful technology to a broader spectrum of parts. Parts for smaller aircrafts are still produced on the two M65 MILLTURNS, while the M120 MILLTURN is used to manufacture cylinders, parts for the main housing and sliding housing, for example. Based on the increased capacity utilization and ongoing innovative spirit, the company invested in another M120 MILLTURN in 2007. "The huge advantage when machining on the MILLTURNS is that you don't need to use different angular heads. The various options for mechanical processing and unrestricted access to the work piece mean it is possible to use the best tools and perfect their machining," explains Reinaldo Ponte Júnior in regard to the technical capabilities of the complete machining centre.

With the E2 series, aircraft manufacturer Embraer entered into a new top-class segment and ELEB into a new cutting-edge phase of landing gear production. "Since they were introduced into the company, these machines have delivered maximum performance and enable us to lower set-up times while increasing the quality of the parts through exact precision," reports Luís Marinho. In 2017, ELEB decided to invest in another WFL machine. The M150Y MILLTURN has a turning diameter from 1750mm and is equipped with a slide for heaviest internal machining. This opens up almost unlimited possibilities when it comes to the manufacture of landing gears. To create sufficient space for the new machine, a new production facility was established in Taubaté. This is set to be the birthplace of future innovations.

Service quality is the perfect companion

According to ELEB, the implementation and commissioning of each and every MILLTURN was flawless. The technical availability of the MILLTURNS has been close to 100 per cent since 2014. At that time, WFL decided to open a branch office in Brazil with local service engineers and

a spare part warehouse. "There were very few difficulties, just a few minor teething problems. And usually these could be resolved very quickly by WFL Teleservice. If we need spare parts, the service team is available at all times. We have seen an enormous improvement here since 2014 – back then we were also the first service customer in Brazil" reports Paulo da Silva. The flexibility of the machines especially justifies the investment. When working with new parts or carrying out trials on the complete machining centre, it impresses with very quick, precise and universal machining.

Entering the future with eyes wide open

The main reason for the company's success, is the ongoing development in all business sectors. Its innovative acting is encouraged by internal conferences on the topic of Industry 4.0. Every two years, ELEB and Embraer promote the program INNOVA. The program encourages the company culture and supports spontaneous and stimulated innovation processes. The goal is to invest time and money in resourceful proposals related to new products, businesses and technologies. After gathering ideas for im-

provements and new potential, these are compared, evaluated and adapted to suit the company by an internal circle of experts. Once the new measures have been carefully introduced, numerous improvements can be measured using the Kaizen model. The term Kaizen comes from Japanese. The first part Kai = change, while Zen = for the better. It concerns the ongoing improvement of activities, processes, methods or products by all employees in a company. In 2018, 2371 ideas were brought to the table and, following evaluation using Kaizen, 1500 of these led to improvements.

Even the degree of innovation of the machines in production was measured. All by collecting and evaluating data. These are used to improve internal processes in conjunction with WFL engineers. "It is essential that we always have an eye on the latest technologies available on the market," explains Luís Marinho of the company's plans for imminent digitalisation. "Topics such as artificial intelligence, the Internet of Things and data-based analysis are not alien concepts but familiar words to us. We have a team which exclusively deals with tying up the loose ends. So, it is important for us to work with machines that will support us as we enter the digital future.



FOCAL POINT: AEROSPACE
Demo version of landing gear manufactured on the M120 MILLTURN



All eyes on

WFL PRISMATIC TOOLING SOLUTIONS

The decisive advantage



Increase in performance for the turning-boring-milling processes thanks to WFL prismatic tools

WFL develops special tools which are perfectly tailored to the MILLTURN and are used to machine complex workpieces. Hard to access machining area often require long special tools. WFL prismatic tool holders can be used for precisely this kind of challenging machining operation and are secured to the turning-boring-milling unit in addition to the HSK or Capto tool system with a prismatic tool accommodation. These tool solutions enable users to maximise the machine's full potential.

Sensors in tools

Integration of ultra-modern sensors enables detailed tool information and machining states to be called up on the controller or tablet. Signals are transmitted via Bluetooth. The machine can respond interactively to a defined trigger event. Suitably equipped tools provide information on utilisation, temperature, deflection, and the surface quality achieved and actively intervene in the machining process in the event of an overload.



WFL prismatic tools for internal turning operations

WFL system boring bar

- Optimum stability conditions during tricky internal machining
- Fully automatic tool change on a stable and optionally vibration damped basic boring bar
- The same HSK or Capto tool system as in the turning-boring-milling unit
- Cost-effective variant for use of different cutting heads or use of sister tools during extensive internal machining

Vibration damped, carbide-reinforced boring bars

- Perfect clamping results for optimum machining with maximum boring bar overhang
- Boring bar overhang up to 18xD already achieved



WFL prismatic tools for deep hole drilling

- Deep hole drilling: gun drilling, ejector drilling, HTS drilling, etc.
- Perfect drill clamping stability
- Supply option for the right coolant pressure and volume:
 - High coolant pressure for small hole diameter
 - High coolant flow rate for large hole diameter
- Automatic, quick tool change, either from the tool magazine, pick-up magazine or prismatic tool changer
- Coolant supply via external docking point – either automatic or manual

CNC special contour boring bars

- Production of cavities in deep holes (centric and eccentric): chamber boring, seat pocket, etc.
- Appropriate drive heads for coupling with the optional U-axis
- Use of CNC facing heads



WFL prismatic tools for milling operations

- Fully automatic tool change, even for large and heavy tools
- Attachments are mainly made of steel, which means outstanding stability and ability to accommodate high cutting forces
- Individual version for maximum stability and time savings
- Numerous tried-and-tested, industry-specific solutions are available
- WFL standard modular range for optimum flexibility
- The maximum permissible torque can be limited via the WFL controller to protect the attachments



BORING BAR

High length/diameter ratio, vibration dampened

The past meets the future

Interview with Norbert Jungreithmayr, Kenneth Sundberg & Günther Mayr

In the second part of our „History of WFL“ series, we take a look at how the MILLTURN was developed and what lies ahead for the complete machining concept. Together with senior WFL managers, we examine which technical developments have really paid off, how to interpret future trends in the machine tool market and what latent potential lies dormant in the MILLTURN.

Are there any events from the early days of WFL and the development of the MILLTURN that have stuck in your mind?

N. Jungreithmayr: We started in 1993 in a difficult economic environment – the machine tool industry was in crisis. But luckily, we found an owner – the Rothenberger family – who believed in us and gave us immense support as we developed. The things that stand out most in my mind are the team spirit and the dedicated team that set out on this road to success and is still exceptionally committed to this day. Everyone just got stuck in wherever necessary. This commitment and this morale were what got us off the ground. It goes without saying that we had this great

product, the MILLTURN, and a new idea: that of complete machining. This new idea and the superb product came from it, coupled with dedicated employees and our owner, allowed us to get off to a great start.

G. Mayr: I am still amazed by the vision that our colleagues from Linz had, having the foresight to develop such a product and get it ready for series production. The fact that the Rothenberger family and our predecessors had the entrepreneurial courage to found WFL during the crisis of a century in the machine tool market in 1992/93. A time when many renowned machine tool manufacturers either closed down or, at the very least, suffered long-

term damage, and then build it into the strong company that it is today, makes it all the more remarkable.

Mr Sundberg, what do you know about WFL's beginnings?

K. Sundberg: I now know a great deal, but even before I joined WFL, almost two years ago, I was aware that WFL Millturn Technologies was the leading machine manufacturer in complete machining. Today, I am more convinced than ever that WFL is truly leading the way.

Do you remember any particular technical developments which were innovative at the time?



TOGETHER AND STRONG FOR AN INNOVATIVE FUTURE

The three heads of WFL are always focusing on various options and chances in the machine tool market.



COMMUNICATION

The management team is maintaining a steady dialogue with customers and employees.

“For WFL, I see opportunities rather than risks in structural change.”

Günther Mayr

N. Jungreithmayr: The turning-boring-milling unit forms the heart of our machine and is where breakthroughs can be most readily seen. Software also plays a key role and thanks to impressive innovations, we have also been able to successfully conquer this market. Even back then, our approach was to offer customers a production solution. Not just a machine, but machining processes, tools, programs and methods. This idea has been with us right from the start and provided the ideal basis for creating a successful company.

What short and long-term trends do you see for the machine tool market in the future?

N. Jungreithmayr: As a manufacturer of complete machining centres, we are following the trend of producing smaller batch sizes. Automation is on the rise and will continue to increase, including with respect to the shortage of skilled workers. The drive behind this pattern is less about autonomous factories and more

about being able to produce small batch sizes in the second and third shift. This is a decisive development. It's also worth mentioning digitalisation, data management and information gathering. Improving machine utilisation even further is crucial. Cutting times have been highly optimised, optimum machines and tools are being deployed. There is still potential with regard to idle times, set-up times and downtimes.

From my perspective, however, it is more important to anticipate trends in advance, identify them ahead of time so that we have the right product or the right development ready to hand. We develop our machines based on our customers' requirements. As a supplier of complete solutions, we stay in close contact with our customers throughout the entire order process and this helps us to identify trends early on.

K. Sundberg: What is currently happening in the automotive industry will definitely be a huge challenge for the industry over the short and medium-term. This

situation will have a significant impact on the entire machine building industry, either directly or indirectly.

Another aspect is the networking of machines, tools, robots, etc. in an entire system with complete transparency. There is strong growth in this area, which will continue to increase over the coming years. This is no longer simply a vision; it's happening every day and with great success. Demand for efficiency and expertise in production is also a hot topic. This is an area where WFL, as a production expert, can really support industry with products and services that help customers get the most out of their investment. The training that WFL offers also comes into play here. Our motto in After Market Sales is „Release Your Manufacturing Potential“ and we endeavour to achieve this by working closely with our customers. Retrofitting, modernisation and all kinds of production support are very important in ensuring the customer that we are extremely competitive.

G. Mayr: The world of machine tool man-

ufacturing is in a period of rapid change, I completely agree. In certain areas of machine tool manufacturing, order volumes have fallen by 30 to 50%. It is mainly companies that are overly dependent on the developments in the automotive industry and its current strong trend toward electromobility. But we need to bear in mind that crisis is not actually the right word for this. We call it a structural change in drive technology. But change always brings opportunities for innovative companies. I regard this change as more of an opportunity than a risk for WFL. For example, many of our customers no longer buy special gear hobbing machines, but they value our expertise and knowledge in this area as a reason for buying a MILLTURN.

What do you think the machine concept of the future will look like?

K. Sundberg: It's difficult to predict the future, but aside from aspects such as digitalisation and automation, it will also be just as important to continue to work closely with customers in order to understand their challenges and develop and implement solutions. Complexity is increasing and so I consider efficient collaboration with customers and other partners as the key to success. I believe that WFL's specialisation and focus on the field of complete machining and on being a system partner with top-tier manufacturing expertise will remain an attractive factor – regardless of what the market requires.

N. Jungreithmayr: From our perspective, the machine concept of the future is complete machining – with ongoing optimisation, additional processes, greater information processing and integration in higher-level systems.

G. Mayr: I believe that WFL's future lies in the concept of complete machining. There is a rapidly growing market for complete machining. Our customers come to us for solutions that don't exist yet. Some of the requirements include automation of a MILLTURN with heavy workpieces and production of a wide range of gear teeth. WFL is always able to find a solution for these requirements.

What does WFL's strategic approach look like?

N. Jungreithmayr: We have a clear aim – we want to grow faster than the mar-

ket. How do we intend to do this? With outstanding products from machines to software and from production solutions to customer services, we want to have a stronger presence in the markets, establish additional branches and look after national regions. We need highly motivated, committed and well trained employees to achieve our goals. We want to use the latest technology, not just in our machines but also in our processes and service support.

G. Mayr: The After Market Sales department and the expansion of our sales and service network (with 24/7) in the markets is a key strategic goal. Our customers also want automation right through to smaller turnkey projects, mainly those overseas. Of course, we need to build up our technology with the corresponding professional infrastructure for demon-

strating our machines, technology and test machining of customer's sample workpieces, which is essential for the company to evolve.

K. Sundberg: Our main goal is to strengthen our position as the number 1 in complete machining. New technology, products and machines are being developed and adapted to meet the needs of the future. WFL will increasingly evolve into a system partner. Good examples of this include the acquisition of automation experts FRAI Robotic Solutions in 2018 and the introduction of our own system tools for the most challenging production tasks. The new organisation that we are currently developing enables us to give our customers more comprehensive and sustainable support, throughout the entire life cycle of a MILLTURN.

“As complexity is increasing, I consider efficient collaboration with customers as well as other partners as the key to success.”

Kenneth Sundberg



UNITED STRENGTHS

Everyone contributes their knowledge and skills from different departments.



All eyes on

WFL Retro-Fit Solutions

Retro becomes Fit

In the era of fast-paced development and progress, quality and innovative solutions stand the test of time. WFL's second-hand machines are proof of this – even after several years of use, they demonstrate a very high level of competitiveness. Like with the new machines, WFL offers unique options with regard to quality and customer care.

A MILLTURN of WFL is always a product with highest quality standards. Concerning the second-hand machines, WFL ensures that the machines are in top condition before delivery to the customer. As with the new machines, WFL offers an overall concept with advice, technology support, commissioning, training, etc. as required. A premium PRE-OWNED WFL MILLTURN therefore represents an interesting alternative, if additional capacity is needed at short notice or the budget for a new MILLTURN is not enough.

Decades of dedicated use lead to machine and equipment wear and therefore to loss of relative performance. To limit this loss, WFL offers regular upgrades and services. Thanks to regular servicing of the MILLTURN, customers benefit from a significant increase in performance and service life.

The cost of a refurbished MILLTURN, compared to a new machine, is also something to take into account. With the full WFL package, our highly skilled technicians will ensure that you always get the most out of your MILLTURN. Once the second-hand machines arrive at WFL, they are subjected to a general overhaul. First, the machine is cleaned and thoroughly tested in terms of accuracy and functionality. If all checks are passed, the machine receives a „CERTIFIED“ certificate.

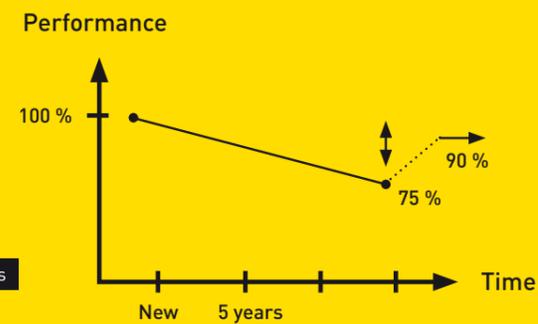
The MILLTURNs are only offered for sale once they have been approved by the WFL technicians. What is more, WFL also offers customised second-hand machines. From over-hauls and conversions to additional technological features, everything is possible.

The increased focus on WFL's second-hand machines over the last two years clearly shows that there is a lot of interest in the market. The customer satisfaction with the delivered machines and comprehensive project support has resulted in very good feedback and a high customer satisfaction. WFL always stocks a number of high quality second-hand machines. For further information about the machines, refer to:

www.wfl.at/extended-solutions/retro-fit-solutions

WFL – your partner for every eventuality

A used MILLTURN complete machining centre makes an interesting alternative to a new machine...



LONG LIFESPAN
Regular servicing helps increase the MILLTURN's performance and service life.

LIFELONG LEARNING EVEN APPLIES FOR MACHINES
Support throughout the machine's entire life cycle



Automation and digitalisation

Solutions for the future are already available at WFL

Without any doubt, the pace in optimizing manufacturing through digital support and automation has significantly increased and developments towards that will accelerate in the future. Within manufacturing there are several key targets to meet in order to stay competitive and generate profitable business results in a challenging environment.



1. Reducing lead-time and avoiding errors in the production planning process
2. Virtual simulation of processes and validation before starting the metal cutting process
3. Monitoring the process during machining to collect clear and visualized data in order to identify errors and opportunities for further improvement
4. Making use of intelligent tooling that is able to communicate with the machine control and thereby optimize the process, based on know-how captured in algorithms rather than on individual experience and practical knowledge
5. Validating the manufacturing results in the machine to make sure that the machined part is correct before it is taken out of the machine
6. Monitoring the state of the equipment continuously with the purpose to proactively service the machine before failure
7. Using automation to get as many productive hours out of the machine investment as possible and to run with less per-

sonnel. This is both based on the fact that there is a big lack of skilled workforce in most parts of the world. In a more and more complex environment, it is important to reduce the risk of errors caused by manual intervention.

For many companies the development trends are very challenging or sometimes even threatening. So how to deal with all the changes and continue to operate business at the same time?

At WFL we have the ambition to take away as much complexity as possible and to guide our customers in a step-by-step approach. In our daily business we get to solve some of the most challenging manufacturing tasks and the projects very often involve a number of digital solutions as well as automation. WFL's offer is highly flexible and based on very comprehensive internal solutions. However, solutions from our partners can be provided too in order to meet our customer's requirements and preferences.

The WFL digital offer



The WFL digital offer – Additionally, WFL is providing solutions together with Siemens, Sandvik Coromant and other partners.

United Technologies von WFL und FRAI



Advantage through Automation

The acquisition of FRAI Robotic Solutions in 2018 has opened up new opportunities in providing leading automation solutions, which are tailored to the specific needs of our customers. The interest in the combination of automation and WFL Millturn machines has increased tremendously since FRAI has joined the group. For further information take a look at this website: www.frai.at.

Smart novelties in 2019

Full control over your MILLTURN

We are proud to announce that we dispose of a completely new process monitoring system with intelligent adaptive control functions. With WFL iControl you can further enhance the efficiency of your MILLTURN. WFL iControl protects your machine even during unmanned production, as it is working with a multilevel monitoring logic and reacts when:

- Exceeding a collision limit
- Exceeding a process near limit, which is subsequently being learned
- Significant fast force changes occur (dynamic breaking control)



One application – all data

In 2018, the process monitoring solution WFL DATA ANALYZER was presented at AMB in Stuttgart for the first time. Many customers have decided to install this product and we are proud to announce that two additional functions are ready now:

- Tool Monitoring for monitoring of individual tools with information on wear, period of application and longevity.
- Service Monitoring for a perfect preparation of possible service intervals for all machines and therefore prevents standstills.



Intelligent tools – the future of manufacturing

With a world record of internal machining with 18xD, long, damped boring bars have already been offered for the most challenging internal machining operations for several years.

Recent developments of Sandvik Coromant include digital supported boring bars with embedded sensors and smart software that has been integrated in the control of the machine tool. This solution not only allows for even higher productivity and quality, but also leads to an increase in process safety. WFL and Sandvik Coromant worked closely together to provide a continuous power supply for digital tooling, which until now has been solved with a battery. The new power solution enables a trouble-free manufacturing process.



Closer than you think

WFL is located all over the world



Events

16.-21.09.2019	EMO Hannover	05.-10.11.2019	CIIE Shanghai
07.-11.10.2019	MSV Brünn	21.-24.01.2020	NORTEC Hamburg
08.-10.10.2019	SEPEM Industries Angers	10.-13.03.2020	METAV Düsseldorf
15.-17.10.2019	Motion + Power Technology Detroit	15.-20.05.2020	ELMIA Jönköping
16.10.2019	WFL Oktoberfest Wixom, MI	25.-29.05.2020	Metallobrabotka Moskau



Focal Point: Sinsheim, Germany



WFL BRANCH SINSHEIM, GERMANY

Our customers are located all over the world. However, the next WFL Millturn Technologies branch or agency is closer than you think and a reliable partnership is therefore guaranteed. So search for your agent and get in touch with us!

With its 50 distributors from several countries and 7 branches world-wide, WFL is a global company with extensive resources. In each edition of our COMPLETE magazine we present one of our branches, because we want you to get know WFL better. For this reason, we talk to our respective branch managers about relevant topics.

The German branch of WFL Millturn Technologies is located in Sinsheim, Baden-Württemberg. Baden-Württemberg has a very strong economy and is not only considered to be one of the most competitive, but also one of the most innovative regions within the European Union, especially with regard to industrial high technology, research and development. Plenty of WFL machines are already being used for this purposes. No matter if mechanical engineering, aeronautics, plastics or manufacture of metal products – MILLTURN machines cover various industries on the German market. Customers mainly opt for a MILLTURN because of the machine's high performance in turn allowing for high productivity. Furthermore, German manufacturers not only appreciate the integrated measurement technology, which offers various possibilities inside the machine, but also WFL's precision and good service.

Apart from highly rated machines and related processes, WFL offers a proficient team. Due to their excellent market knowledge, four sales employees can provide highly satisfactory customer care and react to requests immediately. Further competences regarding the German market include an efficient co-

operation with our sales partners as well as the various references in the regions. As Sinsheim is relatively close to WFL's headquarter in Linz, Austria, quick service and supply of spare parts can be ensured. Moreover, the proximity allows for short-term discussions on projects, machine demonstrations as well as inspection of brand new products and technologies – for example at the biennial technology meeting.

WFL Millturn Technologies is represented on numerous large-scale and regional exhibitions in Germany, such as EMO in Hannover and AMB in Stuttgart as well as Intec in Leipzig, METAV in Düsseldorf or NORTEC in Hamburg.



»» QUESTIONS | COMMENTS | IDEAS?

You have questions regarding our products, technologies or chipping? We are looking forward to your mail at office@wfl.at

»» FACTS COMPLETE

Our customer magazin „COMPLETE“ is available in German and English. Additionally a download link can be found on our homepage.



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