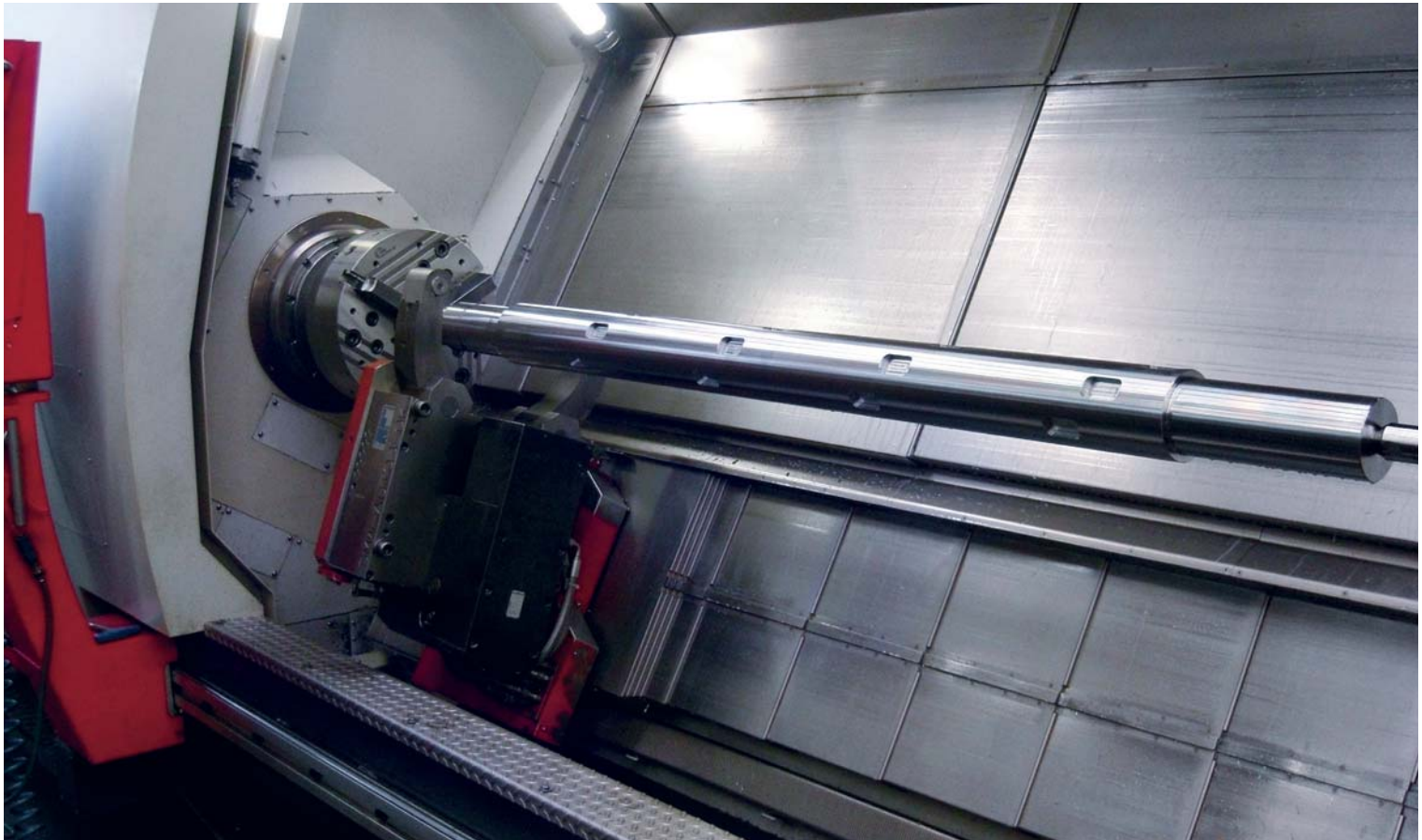


One-Off, Series or Sample Production of Shafts in Lengths of up to 3500 mm



Turned parts – if required also with milling operations of up to 2500 and/or 3500 mm – are processed by Suchanke using Maxxturn 110 x 2500 MY and/or 110 x 3500 MY machines.

Suchanke GmbH

The company founded in 1981 represents several generations of experience and expertise in the area of turning technology. Suchanke has been manufacturing at the Rheinfelden headquarters since 1989, fulfilling special requirements of primarily regional corporate customers from the printing, plastics, consumer goods and automotive industry. The focus is on the production of technical rollers, embossing rollers and cylinders as well as embossing sleeves made of aluminium or steel. The turned parts – to some extent with milled parts and complex shapes – are produced as needed on a one-off basis or in small batches, whilst differentiated work steps are performed. Suchanke's CNC Processing Technology has successfully and continuously maintained its market position for a long time. The team of experienced processing experts including the two managing directors Gerd and Ingo Suchanke currently consists of eleven members.



Suchanke GmbH

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Requirement Profile

- Production of precise turned parts in medium dimensions in small to mini batch sizes
- Special productions with a maximum batch size of 70 pieces – turned parts for cylindrical rollers
- High surface qualities, small reproducible work piece tolerances as well as long tool lifespan
- Quality prevails



Embossing roller with a length of more than 2000 mm and a diameter of 300 mm processed with Maxxturn 110 x 3500 MY.

"In Good Hands, Well Looked After."

Tradition-Conscious Family Business Uses CNC Technology for Machining

Ingo Suchanke runs the eponymous family company that was founded in Rheinfelden (Baden) 35 years ago. The company successfully stands its ground with customised, high-quality products for manufacturers from the processing and printing industry but also for those from the area of vehicle construction and general engineering. Ingo Suchanke considers the direct, cooperative and trust-based communication with customers and employees as well as the priority of quality work crucial factors for long-lasting, successful business activities. One key step was the investment in modern CNC processing technology. The commissioning of the Emco Maxxturn 110 x 2500 MY turning machine in 2011 and its versatile fields of application convinced the machining experts in Rheinfelden. Two years later, the managing director ordered two additional Maxxturn turning and milling machines. In the following, he indicates the reasons for his decision, presents facts and talks about his experiences. Apart from the quality of results, the flexible application potentials and the good price-performance ratio offered by the Maxxturn machines, it is also the service provided by his CNC turning machine partner that satisfies him.

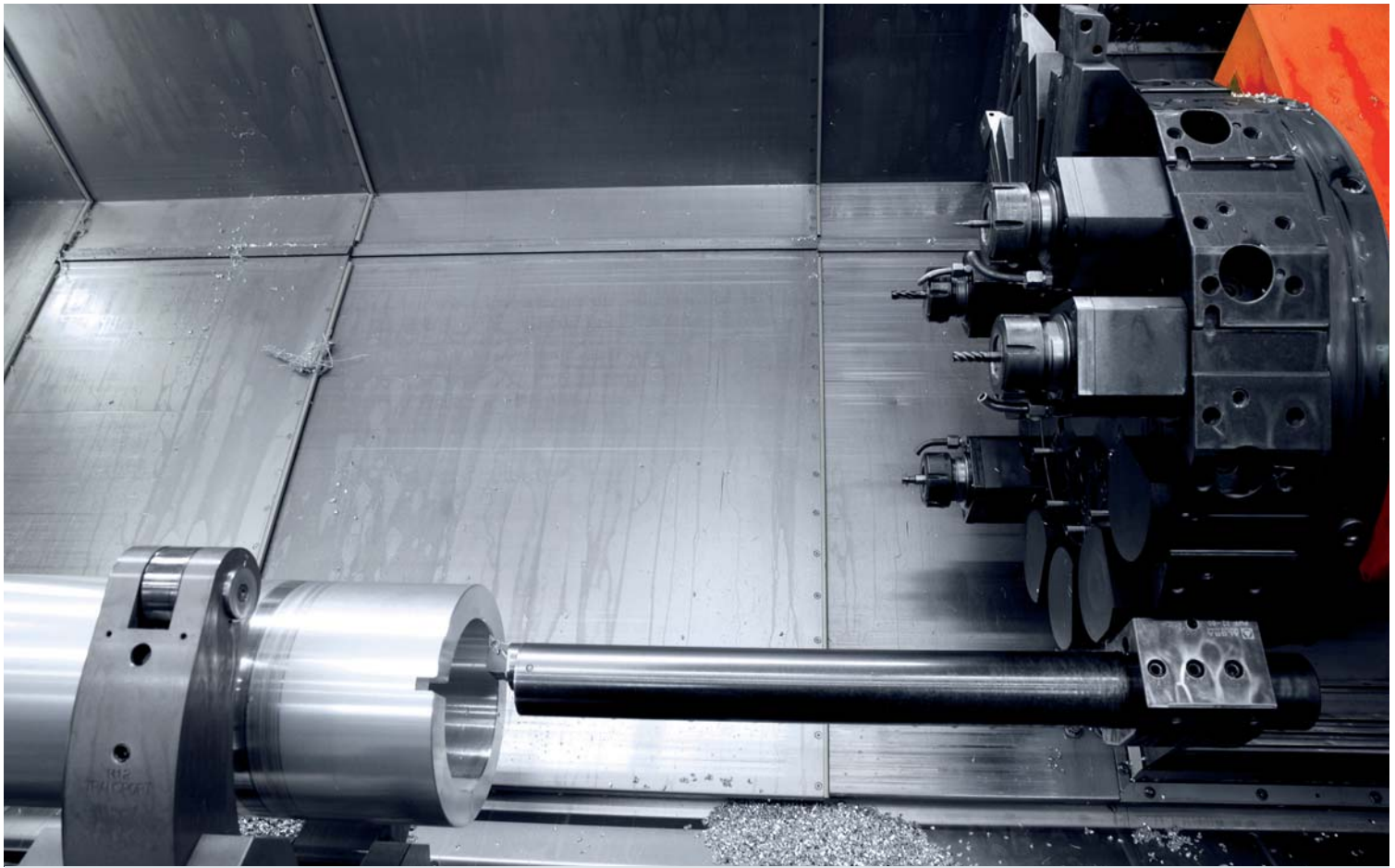
Innovative Thinking and Cooperative Acting When It Comes to Turning Technology

Since 1997, Ingo Suchanke has been assisting his father Gerd as a managing director. During this period, when national and global economic turbulences have, as is well known, affected the mechanical engineering industry, he and his team consisting of eleven members have mastered all challenges. Being asked about his strategy, the junior manager first describes the initial situation and further development: "In 1981, my father started with the orders of one single customer who has been commissioning us with

the manufacturing of printing and embossing rollers. The company has been convinced by our quality work for decades now so that it is still one of our high-revenue business partners. By now we have expanded our range of technologies and hence also the solutions for our customers. The same applies to our clientele, our production area, our



These drive shafts made of high-grade alloy steel with a diameter of 250 mm and a length of 2500 mm are completely processed using the Maxxturn 110.



The boring bar with vibration absorption (diameter of 60 x 700 mm) is mounted at the circumference of the turret disc (12 x block tool mounting possible)

team of employees and, last but not least, our equipment with modern machines. We have become more independent and more future-proof." Discussing the still most important product, he continues: "Rollers for the production of embossed wallpapers, vehicle interior, wooden structures and other materials with profiled surfaces are our core competence. However, the pattern on the turned metal part falls within the responsibility of the designers and engravers. To ensure that these turned parts run with as little vibrations as possible and hence flawlessly, precision is always one of the main requirements. Until now we have always done well by exceeding these requirements instead of just executing the order specifications. Our rollers produced with high precision can also be re-engineered and re-used with a new engraving." Ingo Suchanke emphasises the quality and cooperation aspect: "The cylindrical roller has to match the material to be embossed, the mechanical forces acting on it as well as influences such as temperature, lifespan specifications or rotational speed. That is why most of these orders are custom products; series of no more than 70 pieces are the exception. The customer provides us with the design drawing and material data. We are in contact with them before and during the production. And our reliability, along with our expert experience, has paid off over the decades. In a similar way, this applies to the relationship with our employees: As a family business, we attach great importance to solidarity and fairness. Very soon, many of our colleagues are going to celebrate their 20th work anniversary." The primarily stainless and high-strength materials are very expensive. Typical materials include St52, C45, 42CrMo4 as well as Hastelloy no. 4893 and 4856. Suchanke's employees mostly know the tools and cutting data to be used for the respective material or find these in the EDP documentation. "By now we have a lot of experience with the typical jobs of our regular customers, the respective materials and cutting data specifications. And if a client completed the data sheet with a material appearing extraordinary to us, we ask again. The same applies if parameters like the circumference of a roller, for instance, are

stated with values according to which we have not yet produced. Thus, we work together to ensure that errors and the resulting costs are avoided. And if repairs are necessary, we take care of them," explains Ingo Suchanke.

New Development Stage with CNC Technology

In 1989, the company moved into the newly-built production hall in Rheinfelden. According to the junior manager, it was a key moment in the history of the family company that had seen growth in his first 9 years. And after another eight years, in 1997, modern process technology was introduced by a new CNC processing machine, followed by an Emco Maxxturn 110 MY in 2011. "These were highlights in our history," reports Ingo Suchanke who, concurrent with the start of the CNC era, had started his leadership responsibility as junior manager. "Everyday practice has shown us the many possibilities of the machine and taught us how to use them. We realised that we can do far more with this machine than with the traditional turning machines – and also far more than expected. We were able to offer an expanded, more differentiated service profile, received enquiries that were more demanding from both a technical and an economic point of view and have won new customers – from the furniture and automotive industry, for instance," reports Ingo Suchanke. The news about the new CNC turning machine with milling options quickly spread among Suchanke's interconnected customers, and the next capacity expansion was to be implemented in Rheinfelden as early as in 2013 with the acquisition of another Maxxturn 110 x 2500 MY as well as a Maxxturn 110 x 3500 MY. Of course, the managing directors had thoughtfully considered their decision for Emco. "I checked the offers of several providers and looked around on trade fairs," reports Ingo Suchanke. "But Emco's division manager was very committed in demonstrating the live operation of the respective machine, which means he wanted to show us how it runs at the premises of a user in everyday practice. This user, a Swiss company, was very satisfied with the machine tool.



Together with their Emco partners, Gerd Seleger and managing director Ingo Suchanke discuss the potentials of the new processing machines: Gianni Palazzetti, product manager and Thomas Moosbrucker, responsible sales representative (from left to right).

And the service and price-performance ratio add up as well.” By now, Ingo Suchanke confirms from his own experience: “On-schedule delivery and commissioning went well. But even after that, Emco still wants to ensure that we realise our user benefit. An important criterion,” says Suchanke and continues: “Our Emco partners ask us, for instance, whether our machining processes are performed well by the machine delivered. As a logical consequence, we opted for the second and third Maxxturn machines. Another advantage is that the employee who is already familiar with the programming and complex Siemens system control may help his colleagues. With joint efforts, this hurdle was also cleared by our older employees who are experienced in the use of traditional turning technology. Emco supported us with follow-up training. And afterwards, if there is any need for problem solutions, we may always fall back on our competent Emco contact, Ulrich Tögel.”

Large, Heavy Work Pieces and Complex Boundary Conditions

Using the two Maxxturn 110 x 2500 MY and/or the Maxxturn 110 x 3500 MY machines, Suchanke is able to machine work pieces with a length of up to 2500 and/or 3500 mm and a diameter of up to 620 mm. The managing director explains: “Most of the ‘long’ turned parts to be machined by us have diameters between 50 and 450 millimetres, whilst chuck parts may have a diameter of up to 670 millimetres. The diameter of longer turned parts depends on the design of the part. With the self-centering steady rests, we support work pieces with a diameter of up to 350 millimetres.” The work piece weights dealt with at the Rheinfelden manufacturing company usually amount to 1500 kg, but work pieces featuring a weight of up to 2500 kg are also possible. Whilst the mechanical forces are paramount when it comes to high-tensile steel, the thermal loads are critical for lightweight materials such as aluminium. As Suchanke provides his customers with top quality and precision, e.g. drilling holes

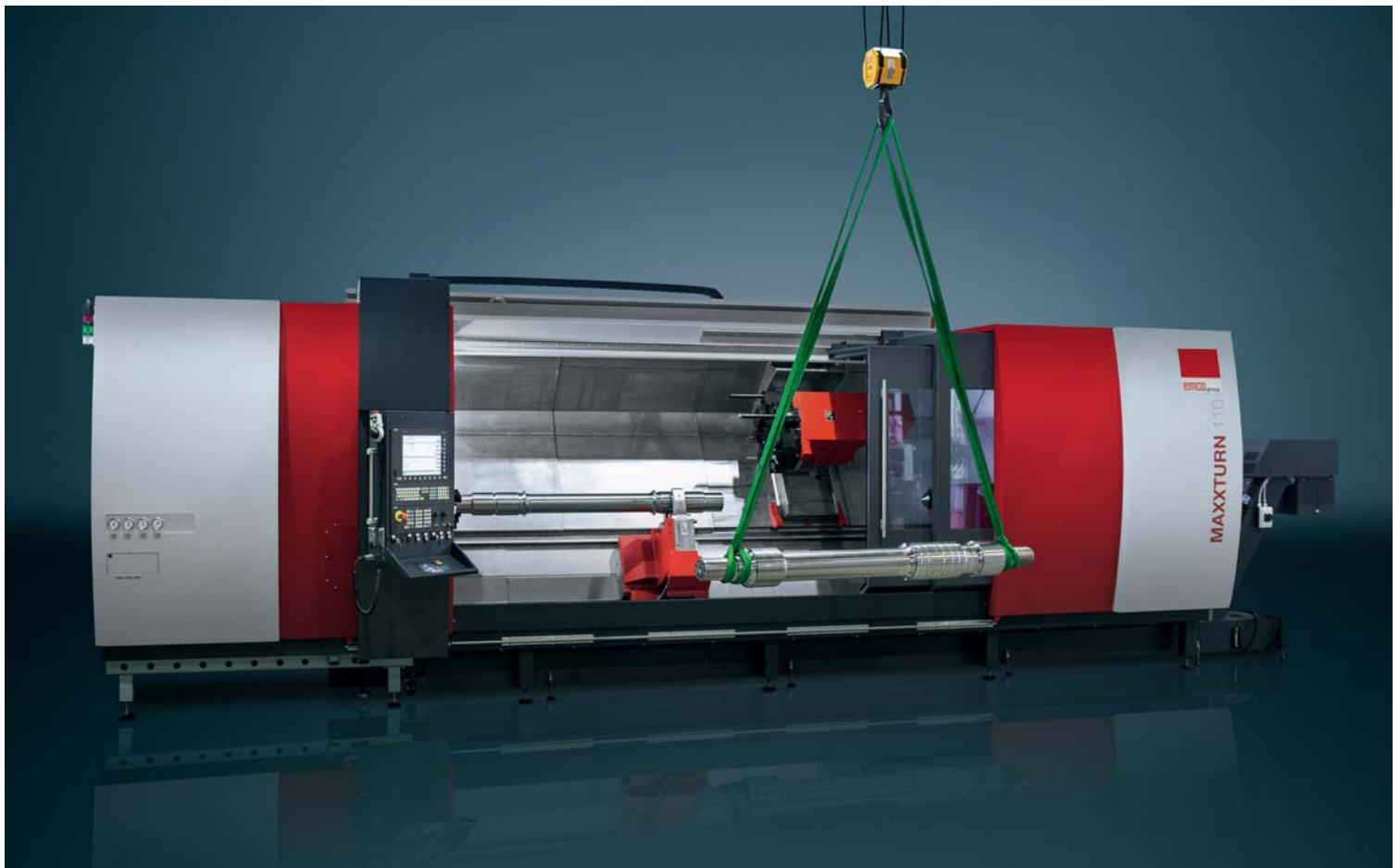
with a length of 850 mm subject to a tolerance of only 20 μm in thermally sensitive aluminium, the machine tools must be designed accordingly. Featuring optimum damping behaviour, the torsion-resistant machine beds in mono-block design fulfil such criteria. They form the basis for the modular attachments of the headstock, tailstock and machine slide. All linear movements are performed by pre-tensioned roller guide systems. The user knows these features by the processing results: High surface qualities, small reproducible work piece tolerances and high tool lifespans, which again result in low maintenance and repair costs and high availabilities.

Flexibility is Key

“One of our requirements is characterised by the production of small series to a batch size of one. Complete processing in one set-up offers advantages for our customers and us, from both a technical and an economical point of view. But our business practice is also characterised by heavily interrupted machining processes with intermediary stress relief heat treatment or hardening,” explains Ingo Suchanke, “but no matter how the processes look like, a high level of quality is always essential. A large progress with regard to complete processing is possible through the Y-axis combined with the driven tools. The integration of the Y-axis into the slide construction results in a short flow of forces and hence in high rigidity. Apart from precise keyways and drillings, it is also possible to perform complex milling operations.”

In-House Processing and Outsourcing

After the new Maxxturn 110 MY has been put into operation for the usual products, the users from Rheinfelden considered their important requirement for a high degree of accuracy fulfilled. The additional Y-axis creates additional processing possibilities. The increased efficiency is remarkable. Ingo Suchanke takes the processing of identical aluminium



New machine design for all MT 110 models.

sleeves as an example. Compared to the conventional turning machine that was used before, the Maxxturn 110 MY performs four times more efficiently. He mentions a problematic situation caused by a personnel shortage due to illness. "Thanks to the new CNC machine, one particularly time-critical delivery was nevertheless received by the customer on schedule." Another typical turned part, the embossing roller, is produced in several operations. "The material is sawn from semi-finished material and then turned on the CNC machine. Our conventional turning machine is still used for that as well. The cones are made with one of the machines. After that, the tubes and cones are joined, retracted and welded. In one of the following manufacturing steps, the thermally joined part is processed using one of our Maxxturn machines. The process is completed by grinding the part to the final dimension," as the creation of the precision part is described by Ingo Suchanke. "The stress relief heat treatment of some parts is outsourced. Further processing is again performed in-house, whilst the hardening process is carried out by specialised companies. However, we take care of the finishing treatment and assume the overall responsibility for the quality assurance."

Experiences, Conclusion and Perspectives

The junior manager comes to a positive conclusion: "Our Emco machine tool partners always comply with their commitments. The processing quality, efficiency and availability have satisfied us to such an extent that we would opt for Emco again, anytime. There is only one thing we would do differently today: We would order the machines with glass scale. Our equipment provides us with a sound foundation and ensures that we are well prepared for the future."

Maxxturn 110 product manager Gianni Palazzetti adds in this regard: "The Maxxturn machines offer the possibility of virtual, offline processing operation simulations and tooth system creations. As soon as our users from Rheinfelden express a need or interest, we will of course support them."

If Suchanke plans to incorporate larger, longer and heavier parts into their product range, Emco could offer the new Hyperturn 200 Powermill machine: Turned parts in lengths of up to 6 metres, featuring a weight of 6 tons and a turning diameter of up to 1 metre can be processed with this machine. For this purpose, the Hyperturn 200 Powermill users are provided with a main spindle drive power of 84 kilowatts and steady rests featuring diameters of up to 510 millimetres."

MAXXTURN 110 Highlights

- Main spindle with bed lengths of up to 2500 or 3500 mm
- Tool turret
- Driven tools for milling and drilling operations
- Y-axis directly integrated into the machine construction
- Steady rest for shaft processing
- Siemens control

[Technical Data]

EMCOgroup

Designed for your profit

EMCO MAXXTURN 110

Work area	
Swing over bed	820 mm (32.2")
Swing over cross slide	560 mm (22")
Distance between centers	1700 / 2700 / 3700 mm (67 / 106.2 / 145.6")
Maximum turning diameter	680 mm (26.7")
Maximum part length	1500 / 2500 / 3500 mm (59 / 98.4 / 137.8")
Travel	
STravel in X	420 mm (16.5")
Travel in Z	1560 / 2560 / 3560 mm (61.4 / 100.8 / 104.1")
Travel in Y	-80 / +100 (-3.15 / +3.9")
Main spindle A2-8" (integrated spindle motor ISM)	
Speed range	0 – 3500 rpm
Integrated spindle motor, power (100/40% DC)	33 kW
Torque (100/40% DC)	800 Nm
Spindle nose according to DIN 55026	A2-8"
Spindle bore	106 mm (4.2")
Spindle bearing (inside diameter front)	160 mm (6.3")
Max. chuck size	315 (400) mm (12.4(15.7"))
C-Axis on spindle A2-8"	
Resolution	0.001°
Motor, Main spindle A2-11" (ZF-gear box)	
Speed range (two step gear box)	0 – 2500 U/min
Power	52 kW (69.7 hp)
Torque	2480 Nm (1829.1 ft/lbs)
Spindle nose according to DIN 55026	A2-11°
Spindle bore	125 mm (5")
Spindle bearing (inside diameter front)	190 mm (7.5")
Max. chuck size	400 (630) mm (15.7 (24.8"))
Motor, Main spindle A2-15" (ZF-gear box)	
Speed range (two step gear box)	0 – 2000 rpm
Power	52 kW (69.7 hp)
Torque	3410 Nm (2515.1 ft/lbs)
Spindle nose according to DIN 55026	A2-15°
Spindle bore	125 mm (5")
Spindle bearing (inside diameter front)	190 mm (7.5")
Max. chuck size	500 (800) mm (19.7 (31.5"))
C-Axis on spindle A2-11" - A12-15" (Automatic engaged, free from backlash)	
Max. Torque	2000 Nm (1475.1 ft/lbs)
Resolution	0.05°

Tool turret (Standard)	
Number of tools stations (all driven)	12
VDI shaft DIN 69880	50 mm (2.0")
Tool cross-section for square tools	32 x 32 mm (1.3 x 1.3")
Shank diameter for boring bars	50 mm (2.0")
Additional tools (block-tool)	12
Speed range	0-4000 rpm
Max. power	10 kW (13.4 hp)
Max. Torque	70 Nm (51.6 ft/lbs)
Tool Turret (Option)	
Number of tools positions (all driven)	12
Precision-interface	BMT-65P
Tool holder for shanks	25 x 25 (32 x 32) mm
Tool holder for boring bars	50 (60) mm (2 (2.3"))
Speed range	0 – 9600 rpm
Max. power	17.6 kW (10.2 hp)
Max. torque	56 Nm (41.3 ft/lbs)
Feed drive	
Rapid motion speed X / Z / Y	24 / 30 / 12 m/min (944.8 / 1181.1 / 472.4 ipm)
Feed force in the X axis	17000 N (3821.8 lbs)
Feed force in the Z axis	20000 N (4496.2 lbs)
Feed force in the Y axis	17000 N (3821.8 lbs)
Tailstock with quill	
Quill travel	150 mm (5.9")
Quill diameter	150 mm (5.9")
Max. application force	22500 N (5058.2 lbs)
Internal taper of quill	MT5
Coolant system (integrated in chip conveyor)	
Tank capacity (BL 1500 / 2500 / 3500)	450 / 520 / 650 liter (119 / 137.4 / 171.7 gal)
Pump power 7 bar (option 8 bar)	1.15 kW (2.2 hp)
Power consumption	
Connected load (spindle A2-8 / A2-11)	46 / 70 kVA
Dimensions	
Height of centers above floor	1265 mm (49.8")
Total height	2875 mm (113.2")
Dimensions W x D (without chip conveyor)	6775 / 7800 / 9200 x 2530 mm (266 / 7 / 307.1 / 362.2 x 99.6")
Total weight BL 1500/2500/3500	approx. 16 / 18 / 20 t (35274 / 39683.2 / 44092.5 lb)

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