

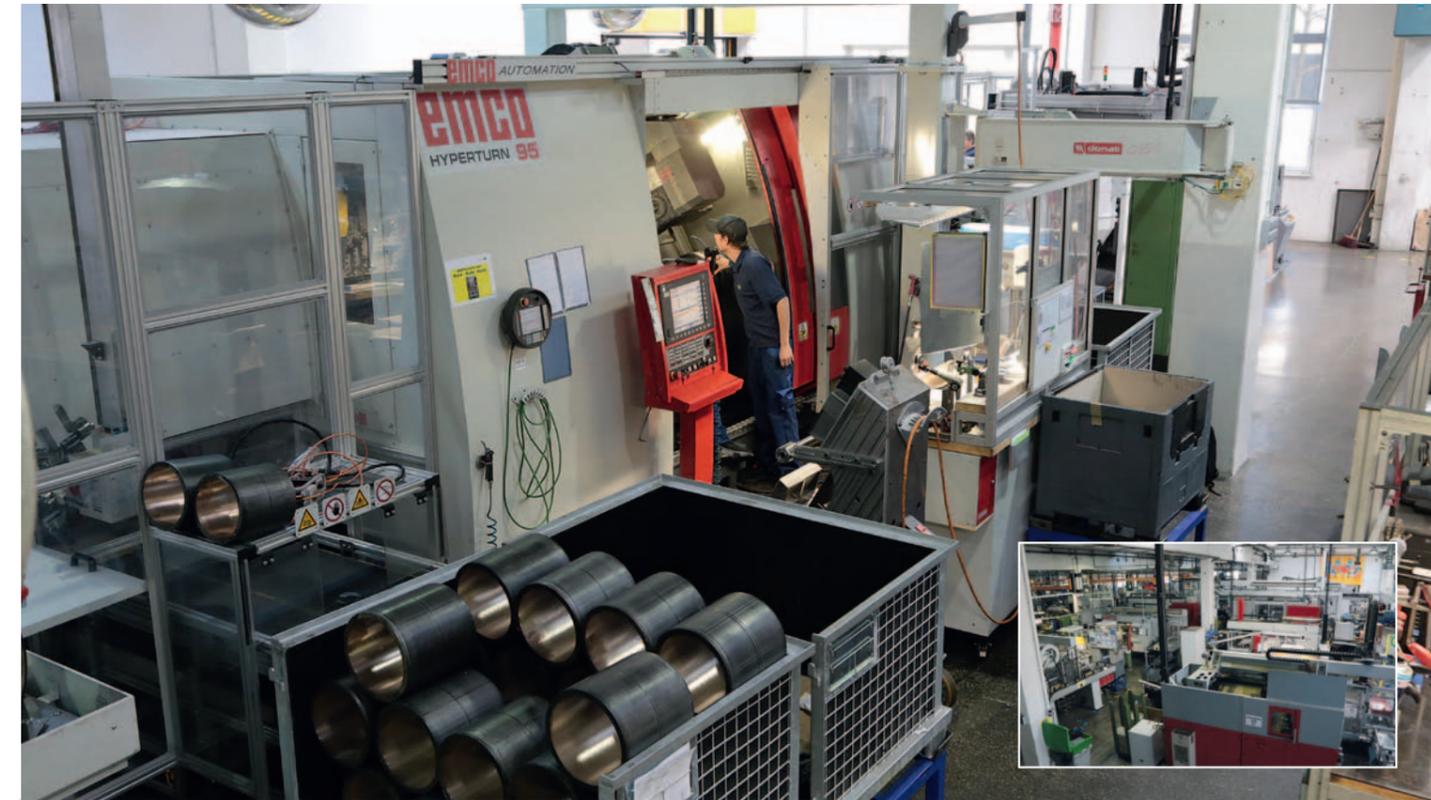
[Technical data]

HYPERTURN 95/110

Work area		Driven tools	
Swing over bed	720 mm (28.3")	Speed range	0 – 3000 rpm
Distance between spindle noses	1700 – 2300 mm (66.9 – 90.6")	Torque	40 Nm (29.5 ft/lbs)
Max. Bore in Draw Tube (A2-8)	95 mm (3.7")	Drive performance	10.5 kW (14 hp)
Travel		Driven tools	2 x 12
Travel in with milling spindle X1 / Z1	550 / 1300 – 1900 mm (21.7 / 51.2 – 74.8")	B-axis and PowerMill	
Travel in 2 / Z2	300 / 1340 – 1940 mm (11.8 / 52.8 – 76.4")	Travel range	210°
Y travel in	240 mm (+/- 120 mm) (9.4" (+/- 4.7"))	Tool magazine positions	40 (80 optional)
Main and counter spindle (A2-8)		Tool holder	HSK-T63 (PSC63)
Maximum speed	3500 rpm	Maximum torque	128 Nm (94.4 ft/lbs)
Maximum power	33 kW (44.3 hp)	Maximum power	21.5 (26) kW (28.8 (34.8) hp))
Maximum torque	800 Nm (590 ft/lbs)	Maximum speed	7000 (12000) rpm
Main and counter spindle (A2-11)		Tool change time (tool - tool)	2.2 sec
Maximum speed	2500 rpm	Feed drives	
Maximum power - main spindle	52 kW (69.7 hp)	Rapid motion speed X / Z counter spindle	30 m/min (1181 ipm)
Maximum torque - main spindle	2480 Nm (1828 ft/lbs)	Rapid traverse speed in Y	15 m/min (590 ipm)
Maximum power - counter spindle	42 kW (56.3 hp)	Coolant system	
Maximum torque - counter spindle	1040 Nm (767 ft/lbs)	Tank volume	690 / 740 liters (182.7 / 195.5 gal)
Tailstock		Pump capacity	14 bar / 17 l/min (203 PSI / 2.6 gal/min)
Taper mounting (integrated bearing)	MT 5	Dimensions	
Travel in	1100 / 1600 mm (43.3 / 74.8")	Height of center above floor	1364 mm (53.7")
Quill stroke	150 mm (5.9")	Overall height	2890 mm (113.8")
Quill diameter	150 mm (5.9")	Space required inclusive tool magazine	8500 / 9100 x 3150 mm (334.6 / 358.3 x 124")
Tool turret top and bottom		Total weight	18000 – 22000 kg (39683 – 48500 lb)
Number of tool positions	2 x 12	Safety devices	
Tool holding shaft in accordance with VDI (DIN 69880)	40 mm (1.8")		CE compliant



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Emco Hyperturn 95 for the processing of workpieces featuring diameters of up to 400 mm in Miba's slide bearings and thrust rings department

[Miba AG]

At the Laakirchen location Miba Gleitlager Austria GmbH manufactures with 600 employees. In three-shift operation small end bushes, camshaft bushings and thrust rings in batch sizes from 5 to 200 pieces featuring diameters of up to 400 mm are manufactured. Thanks to automation solutions, one employee can operate several machines.

Miba AG is one of the leading strategic partners of the international engine and automotive industries. The company's sintered components, slide bearings, friction pads, high-performance electronic components and coatings are to be found in vehicles, trains, ships, airplanes and power plants across the world. Founded in 1927, the traditional company today employs more than 5,500 workers at 22 locations in eleven countries.



[Requirements Profile]

- Production of bearing bushes featuring diameters from 125-400 mm
- Efficient interplay of programming, logistics and machining
- Simultaneous machining of two workpieces
- Offline programming
- Operating the gantry loader directly via the machine control



The generous workspace can be accessed easily. The distance of 1,700 mm between the spindles enables the simultaneous machining of two parts.



The gantry loader is equipped with a three-jaw gripper on either side for inside and outside hold. It can move workpieces weighing up to 40 kg at speeds of up to 120 m/min.

At its Laakirchen location, Miba Gleitlager Austria GmbH manufactures slide bearings, thrust rings and bushings for diesel and gas engines. These come into play in the bearing of connecting rods, crankshafts and camshafts. The company has specialised in large engines. The batch sizes of the manufactured parts range from individual pieces for special engines to medium batch sizes of approximately 500 pieces for the commercial vehicles sector. As a premium supplier in this segment, the Upper Austria bearing specialists place highest requirements on the quality of the manufactured products.

The bearing shells manufactured in Laakirchen usually consist of a steel carrier plated with aluminium or bronze alloys, whereas bearing bushes are mostly made of solid aluminium or bronze. Modern coating technologies additionally refine the bearing surfaces and make them more durable. Many of these bearing components must moreover be furnished with lubrication channels or complex external geometries. The bearing bushes are manufactured in a diameter range of 125 to 400 mm, whilst the core area is 240 mm.

Coordinated Processes

'When manufacturing the bearing bushes, we attach great importance to an efficient interplay of programming, logistics and machining', says Thomas Mösl, production manager for bushings and thrust rings at Miba Gleitlager Austria GmbH. 'We try to standardise our work processes as far as possible and to keep distances at our company as short as possible', he continues, thus referring to the factory hall's regular layout adjustment to the manufacturing processes. Accordingly, all turning centres of the bushings and thrust rings department were combined into one manufacturing cell in 2016.

Wherever possible, loading and unloading the machines is supported by automation. 'Another aspect we consider during production is the use of standardised tools, if possible, and quick change systems in gantry loaders to reduce the setup times at the machines', continues Mösl. 'Besides, we programme our machines offline so that we

lose as little time as possible. Our gantry systems, too, are controlled with fixed parameters and not, as is customary, by teach-in programming', explains Josef Kienesberger, who is the department's person responsible for programming. 'If the machine park were to be reorganised, for instance, this helps us resume our work immediately after a brief calibration and coordination process without having to re-programme all gantry systems from scratch', he details.

Hyperturn 95 Fits the Machine Concept

According to Mösl, the machine park was upgraded regularly so that the use of contemporary technology was ensured at all times. That is why, as early as in 2011, the company started planning the replacement of an existing turning centre that had ceased to meet Miba's high requirements. 'To us, it was important that the new machine allowed for good integration into the existing processes whilst at the same time expanding our range of application', recalls Mösl.

Eventually, it was Emco's Hyperturn 95 that stood out in the comparison of the machines. In connection with an Emco gantry loader, it was a perfect match for Miba's requirements profile. 'At the time of acquisition, the machine was actually too big, which, however, soon turned out to be a stroke of luck. Shortly after the machine had been commissioned in 2012, we had to machine parts we could not possibly have processed with the machine dimensions originally requested', knows Kienesberger, adding that apart from that, the Hyperturn 95 constituted a reasonable „stability reserve“ for other applications, which allowed the



'We produce 70 to 80 different parts in our turning operations area. Automated processes and sophisticated logistics help us use our machines ideally.'

Thomas Mösl, production manager for bushings and thrust rings at Miba Gleitlager Austria GmbH

company to achieve maximum precision, even with high cutting values.

Another essential criterion in the company's selection was the fact that, using the Siemens 840D sl control, the gantry loader, too, can be controlled directly with the machine control via the third control channel – an extra feature that has ever so often constituted a welcome plus with other Emco machines used by Miba.

Simultaneous Machining Made Possible

'It is not only the additional features that make controlling the Hyperturn 95 so interesting', knows Rupert Lehenauer, sales manager at Emco. 'The 95's performance range is quite impressive. Featuring a capacity of 33 kW and a torque of 800 Nm at the main and counter spindle, there is enough reserve capacity left for the processing of large parts and complex materials. What is more, the distance of 1,700 mm between the spindles leaves enough room at both of them so to that loading and unloading can easily be carried out using the gantry loader. This is what makes simultaneous machining with two spindles possible in the first place', he details.

A chain magazine with 40 tool pockets is included in the Hyperturn 95 standard equipment. The bottom turret can receive 2 x 12 tools, all of which can be used as driven tools. Featuring a capacity of 10.5 kW, the driven tools also allow for comprehensive milling and drilling operations. The machine is equally convincing on the B-axis, where the strong drive power of 21.5 kW applies a torque of 128 Nm to the tools inside the HSK-T63 holder of the milling spindle.

'The gantry loader, too, has been perfectly integrated into the solution. When it comes to these systems, we closely cooperate with Güdel Austria, the company that provided us with the whole system mechanics for this machine. These have in turn been completed by Emco's engines and control technology', explains Lehenauer. The gantry loader has been designed so as to include a loading station where 20 workpieces can be held available. Furthermore, it is equipped with a transport arm, the processor head of which has been furnished with two opposite three-jaw grippers,

thus being able to load either spindle of the machine. The robust design can move workpieces weighing up to 40 kg at speeds of up to 120 m/min – with an accuracy of +/- 0.05 mm.

Long-Standing Partnership

Miba has relied on Emco turning centres for many years already. Today, Thomas Mösl's department counts as many as 16 machines made by the Salzburg manufacturer. 'That was another reason why we opted for the Hyperturn 95. We simply know that we can rely on Emco. Although the close proximity surely plays a role, too, it is especially the straightforward and competent support in all areas that we do not want to miss', praises Mösl the good cooperation.



'With its two powerful spindles, the Hyperturn 95 enables the simultaneous machining of two workpieces. The gantry loader helps us reduce the setup times and get the most out of the machine.'

Rupert Lehenauer, sales manager at Emco GmbH



Bearing bushes made from multiple-component materials are Miba Gleitlager Austria GmbH's specialty