

EMCO



HYPERTURN 100 PM

Turning and milling center
for the complete machining
of complex workpieces



/MULTI- FUNCTIONAL TURNING AND MILLING CENTRE

The HYPERTURN 100 is a powerful multitasking machine for the machining of complex workpieces with a maximum turning diameter of 800 mm* and a maximum turning length of 3100 mm (between the tips). The 40 or 100 available tool stations allow high flexibility during processing.



* without lower turret, please pay attention to workpiece weight

1 MAIN AND COUNTER SPINDLE

- / Dual drive motor for a backlash free C-axis (A2-11")
- / Integrated spindle motor with C-axis (A2-8")
- / Impressive performance values (A2-8"/A2-11"):
33/53 kW - 800/4400 Nm - 3500/2500 rpm
- / Liquid cooling with automatic temperature regulation

2 MILLING SPINDLE

- / Moving column structure for high stiffness
- / Integrated B-axis
- / Excellent technical data: 165 Nm, 33.8 kW, 12000 rpm
- / Integrated torque motor
- / Large swivel range

3 TOOL MAGAZINE

- / Perfect accessibility for tool setup and inspection
- / Up to 100 tool stations
- / Three additional stations for boring bars and large dimensioned tools

4 Y-AXIS

- / Large working stroke +/- 210 mm
- / Compact construction
- / Preloaded roller guides
- / Large distance between the guides

5 CONTROL

- / Ergonomically arranged
- / Can be rotated by 90°
- / Height adjustment +/- 100 mm
- / Sinumerik
- / 22" multi-touch display including IPC and EMCONNECT process assistant



6 CHIP CONVEYOR

- / Slat band conveyor
- / Chip ejection height 1130 mm
- / Coolant volume 500/600/700 l
- / Milling spindle pump 14 bar
- / Turret pump 14 bar
- / Two washing pumps of 7 bar

7 MACHINE DESIGN

- / Optimum use of space
- / Innovative protection system against flying chips and coolant
- / Large workspace
- / Good ergonomics and accessibility
- / Standard workspace flushing

8 TOOL TURRET

- / 12 fixed or driven tool positions
- / External or internal coolant, up to 50 bar
- / Integrated servo drive
- / Taps without length compensation, polygonal turning, and many other technologies
- / Comprehensive support and reduction of production times

STRUCTURE

1 MACHINE BED

- / One-piece machine construction
- / Torsion-resistant welded steel construction
- / Machine bed filled with special concrete with DMP® system
- / 3 available bed lengths with space between the tips 1700 -2400-3300 mm

2 ROLLER GUIDES

- / In all linear axes
- / Large guide distances

3 TOOL TURRET

- / 12-Fold with BMT65P/VDI40 interface with Direct Drive Technology
- / Water-cooled direct drive 6000 rpm
- / Max. coolant pressure 50 (100) bar

4 MAIN AND COUNTER SPINDLE

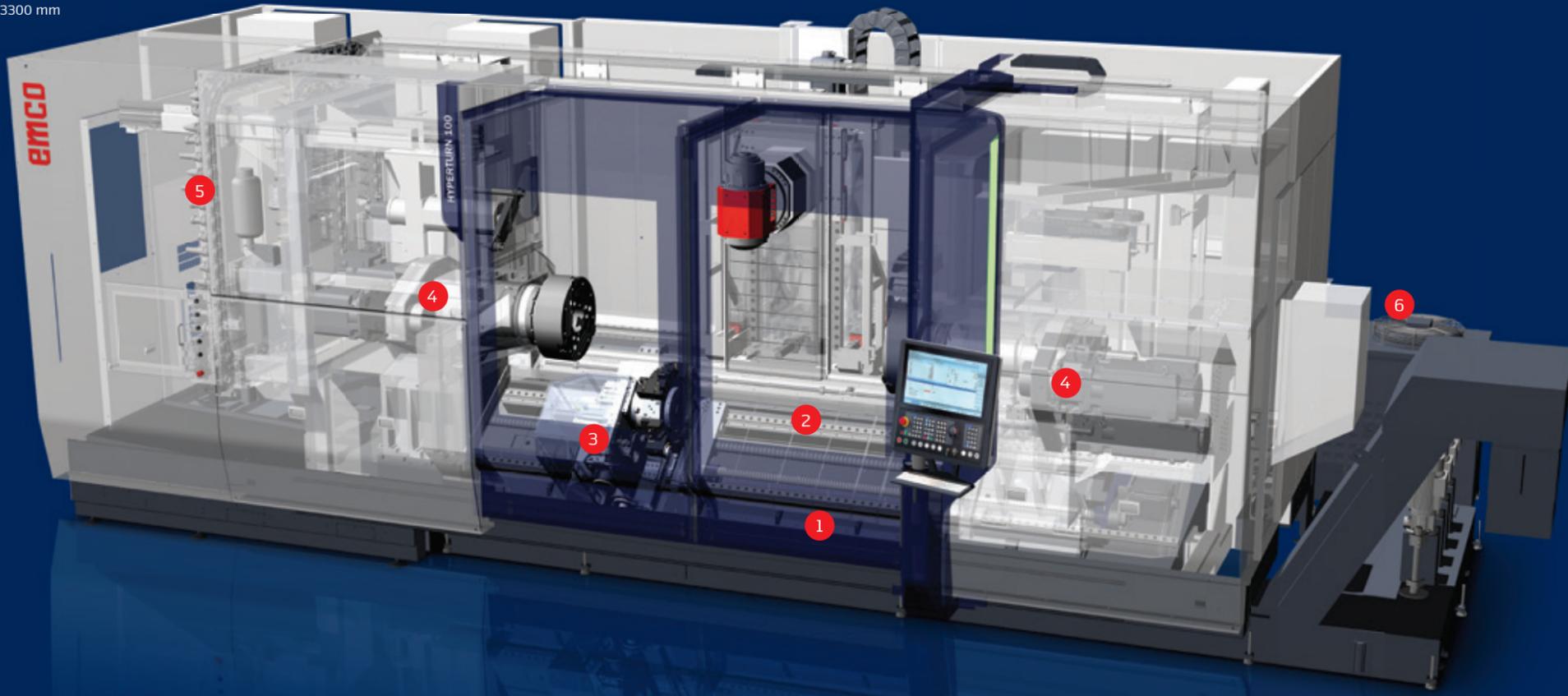
- / 11" tandem drive solution with wide speed range
- / C-axis for milling operations up to 2800 Nm (11")
- / 8" integrated spindle motor (ISM) with synchronous technology and water cooling
- / Additional holding brake and clamping pressure programmable in the standard version
- / Spindle connection DIN A2-8" or 11" (6" -15" optional)
- / Full clamping cylinder with clamping stroke monitoring

5 TOOL MAGAZINE

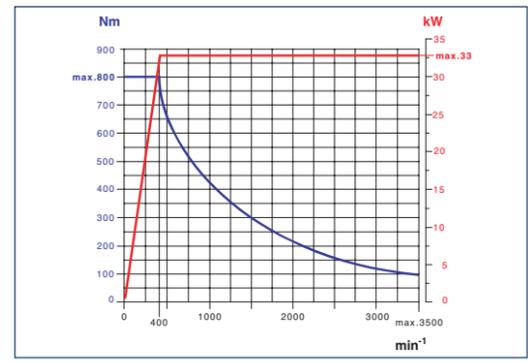
- / Chain magazine with 40/100/120 tool stations
- / Space-saving integrated in the basic machine
- / Servocontrolled swivel arm changer
- / Short changing times
- / Max. tool length 500 mm
- / Max. tool diameter 90 (150) mm
- / Max. tool weight 12 kg

6 COOLING DEVICE

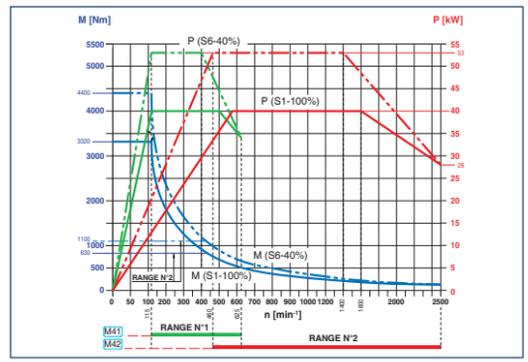
- / Standard version
- / Temperature process monitoring of milling spindle, main and counter spindle and direct drive from the tool turret
- / Temperature process monitoring of hydraulic oil (optional)



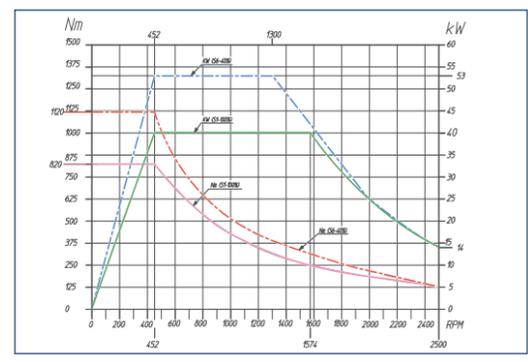
Power and Torque



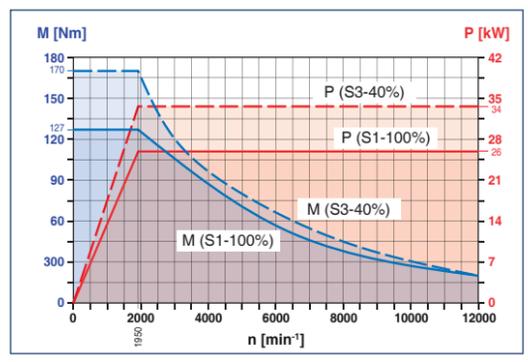
Main and counter spindle A2-8"



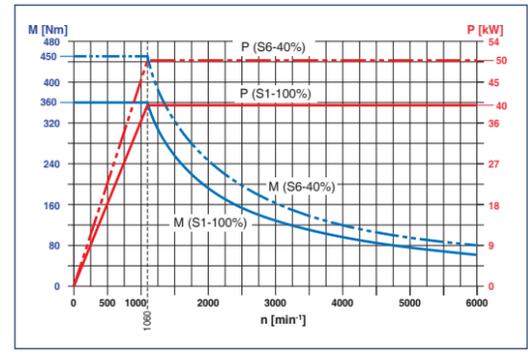
Main spindle A2-11" / Counter spindle A2-11" with additional option



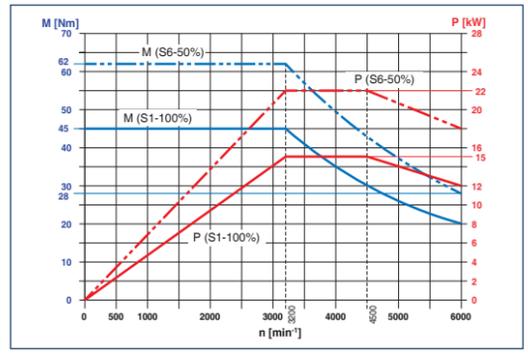
Counter spindle A2-11"



Milling spindle (standard version) HSK63/PSC63



Milling spindle HSK-T100 (optional)



Tool turret BMT65/VDI40

TECHNICAL HIGHLIGHTS



MAIN SPINDLE AND COUNTER SPINDLE (A2-11")

Featuring performance data that enable all types of machining without any compromises. The EMCO spindle concept comes with two servomotors that also act as a C-axis. The motors work synchronously, guarantee backlash compensation and enable the achievement of the outputs and torques shown in the diagram. The main spindle and the counter spindle are equipped with a special EMCO cooling system that optimises the temperature stability and guarantees maximum precision in all machining processes. A mechanical gear on the counter spindle is available as an option.



MILLING SPINDLE

The standard version comes with 12000 rpm and is suitable for all turning, drilling and milling operations and technologies. The water-cooled ISM (Integrated Spindle Motor) can be delivered with up to 33,8 kW and a maximum torque of 165 Nm as well as with HSK-T 63 or PSC63 (Capto C6). Internal and external coolant inside and outside (up to 80 bar) allows the efficient production of turned and milled parts.



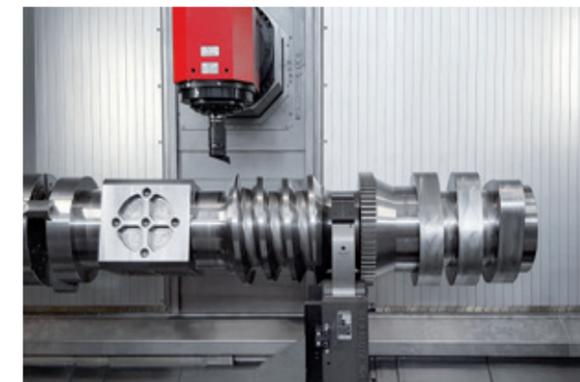
WORK AREA

The spacious work area has been designed for workpieces featuring a turning diameter up to 720 mm. The complete machining of complex workpieces in one setup is possible when using a CNC steady rest and a counter spindle.



MAIN SPINDLE AND TAILSTOCK

Alternatively there is the spindle variant A 2-8" with dynamic direct drive at max. 3500 rpm and 33 kW. The standard spindle brake ensures additional stability during high-performance milling. The movable NC tailstock with MK5 integrated quill bearing is used to support long workpieces, this makes a safer and optimal machining process possible.



HYPERFLEXIBILITY

The HYPERTURN 100 machine concept enables a wide range of machining operations in one setup, including off-centre turning and milling, bore levelling, gear milling, contour milling, 5-axis machining and much more.



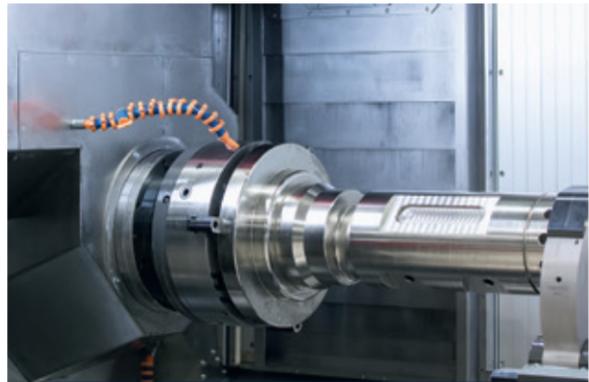
DEEP HOLE MACHINING

With 12.000 rpm and 80 bar, deep hole drilling machining is easily possible. Up to 500 mm the tools can be changed within the standard tool magazine, tools up to 1000 mm can be changed within the pick-up magazine.

HIGHLIGHTS

- / Automatic tool default settings and workpiece measuring probes
- / One or several CNC-steady rest
- / 40 / 100 tool magazine stations
- / Flexible milling spindle with 12000 rpm
- / Boring bar pick-up system
- / Simultaneous 5-axis machining
- / High pressure coolant: 80 bar
- / Virtual machine – collision monitoring
- / EMCO REMOTE SUPPORT
- / Tool breakage monitoring
- / Made in the Heart of Europe

TECHNICAL HIGHLIGHTS



MAIN SPINDLE

High-quality spindle heads according to DIN 55026 with 8" and 11" ensure high force and very good clamping accuracy.



MILLING SPINDLE

The B-axis of the HYPERTURN 100 Powermill is for state-of-the-art milling processes such as 5-axis machining, HSC or HPC machining supported by a 240° swivel range and a 100% monitored ISM motor solution. This means that complex turned or milled parts can be produced very efficiently. A high torque 450 Nm solution is available as an option, complemented by a HSK-T100 or PSC80 (C8) coupling.



COUNTER SPINDLE

The moving counter spindle offers identical performance data as the main spindle. The mechanical disc brake is also included in the standard equipment of the machine. Additionally, a stroke-monitored part ejector with internal liquid cleaning is integrated into the spindle. This ensures a reliable, unmanned machining process.



TOOL MAGAZINE

Depending on the version, the chain magazine can accommodate 40 or 100 tool holders with HSK-A63 / HSK-T63 / PSC63 (C6), or 75 tool holders HSK-A100/ HSK-T100/ PSC80 (C8) in the shaft. Easily accessible from the front, the magazine has been integrated in the machine housing without occupying too much space.

HIGHLIGHTS

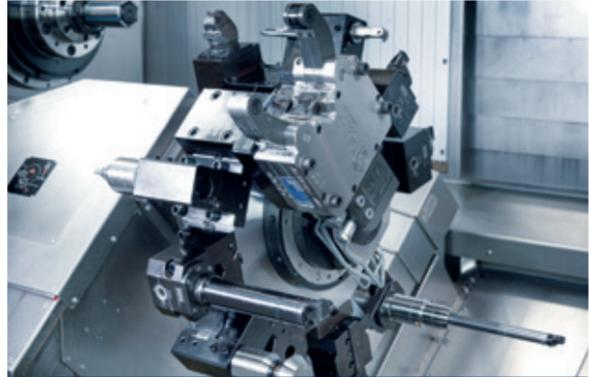
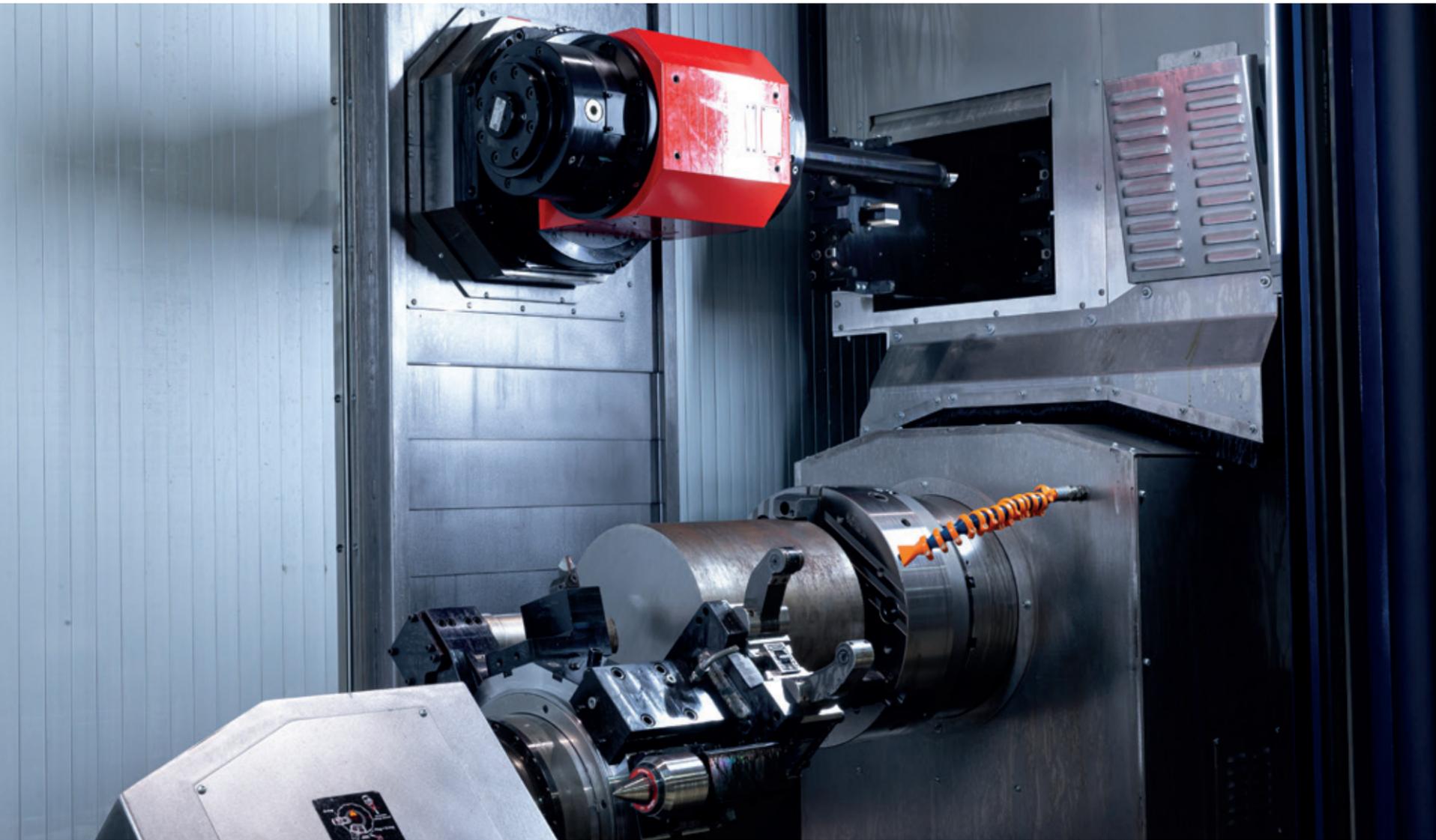
- / Very large work area for the complete machining of large workpieces featuring a turning diameter of up to 720 mm and a maximum length of 3100 mm
- / Powerful main spindle and counter spindle (A2-8", A2-11"), 33/53 kW and 800/4400 Nm
- / Dynamic and precise B-axis with direct drive as well as high torque and performance
- / Multitasking and multi-technology: Sinumerik 840D sl with EMCONNECT
- / Main spindle and counter spindle: high-performance machining with vibration-damped boring bar, including a special magazine (option) with the same drive concept and identical performance data



TOOL CHANGING

Tools can be loaded into the tool magazines from the front. This avoids the need for the user to go to the rear of the machine. Also tool wear or break inspections can be handled in a timesaving way.

TECHNICAL HIGHLIGHTS



TOOL TURRET

The compact direct drive high-performance motor is integrated in the tool disc. The drive of the tools takes place directly. Without gear train. Without gear train, gears and vibrations and almost noiseless. That means: more speed, more power, more productivity. Optionally, the tool can be equipped with a hydraulic steady rest.



WORKING AREA FLUSHING SYSTEM

Main and counter spindle, milling spindle or tool turret cover as well as additional flushing nozzles in the work area ensure optimal chip drainage.



WORKING AREA COVERS

Telescopic sheets as well as roll covers guarantee protected guide ways free of chips and jerk-free feed movements even at high travel speeds. On the one hand, this is reflected in perfect workpiece surfaces and on the other hand increases the life of the entire machine.



MAINTENANCE CENTRE

The maintenance centre is located on the rear left-hand side of the machine. This is where the pneumatic unit and the hydraulic indicators are to be found. It is now possible to programme and determine the clamping pressures in the parts programme. The container for the central lubrication system is located underneath the pneumatic unit.



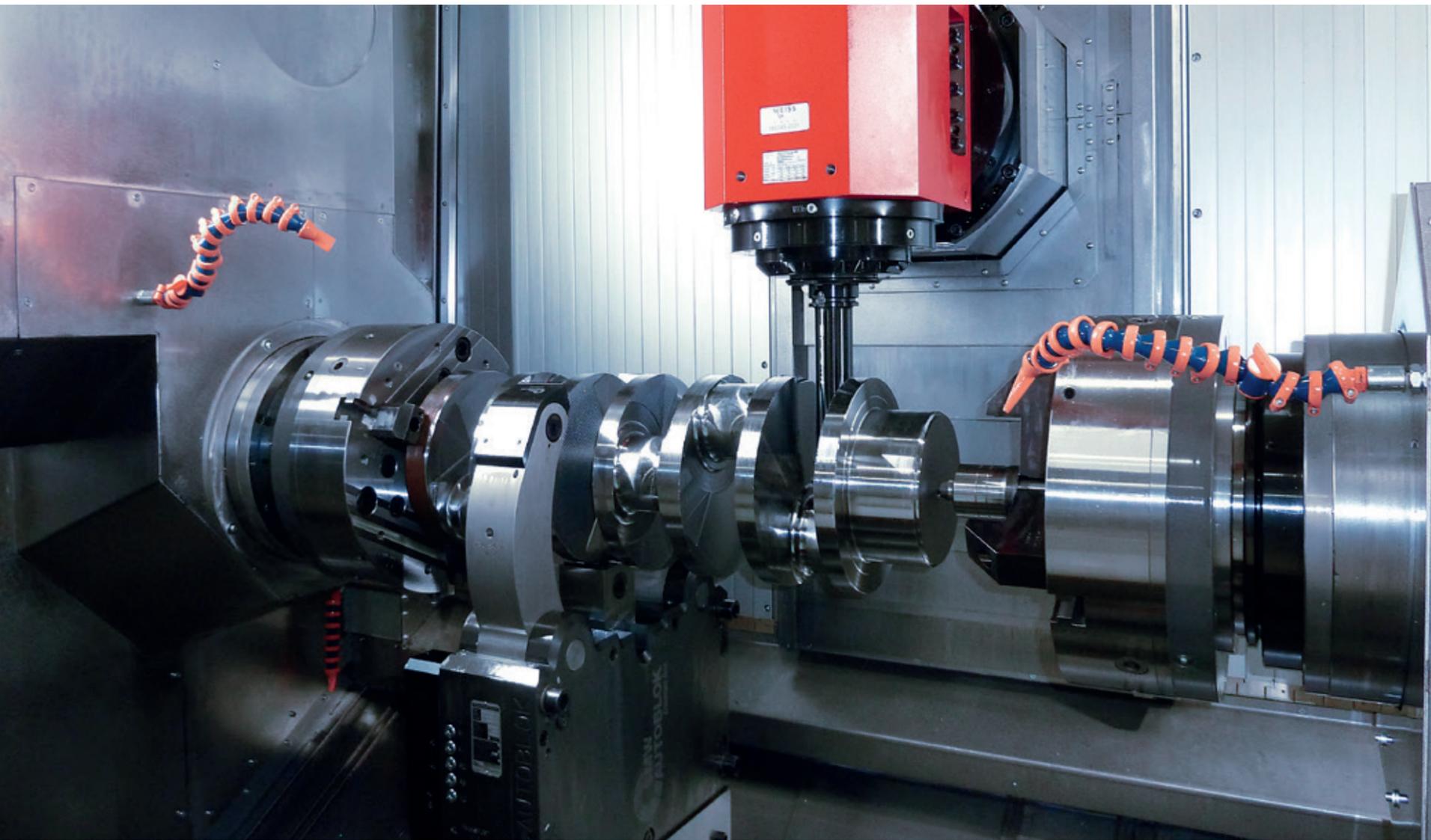
CONTROL UNIT

The Sinumerik control unit is located on the right side of the work area of the HYPERTURN 100 Powermill, arranged on a high adjustable, swivelling panel. This ensures maximum ergonomics for the set-up and running in of the machine.

HIGHLIGHTS

- / High dynamics due to state-of-the-art spindle motor technology
- / All spindles liquid-cooled for optimum thermal stability
- / High productivity due to short tool change times
- / Both tool systems can be used on both spindles
- / Bed design for maximum stability and oscillation damping
- / Excellent repeatability due to linear guides
- / Short set-up times due to ease of access to work area

OPTIONS



WORKPIECE MEASURING PROBE

Measuring probe for various tool holders allowing the automatic measuring of the workpiece in the work area with subsequent tool correction. With measurement set for check and correction of the kinematic accuracy of 5-axis machining.



CNC STEADY REST

Different hydraulics steady rests are available for shaft machining. Small shaft parts up to 180 mm can be supported by a turret steady rest. For large shaft parts a CNC steady rest with centering ranges up to 520 mm is available. All steady rests with programmable clamping pressure, coolant, spear air and central lubrication included.



TOOL MEASUREMENT

The tool probe in the work area makes quick and precise measurement of tools both in the milling spindle as well as on the turret possible. Various solutions such as laser pins for milling spindles or 2 pins for the milling spindle with unsteady turret are available.



BAND FILTER SYSTEM WITH HIGH-PRESSURE COOLANT PUMPS

If necessary a coolant pressure of 25/40/60/80 bar can be provided. This enables coolant-fed drilling and milling tools to be used to their best advantage.



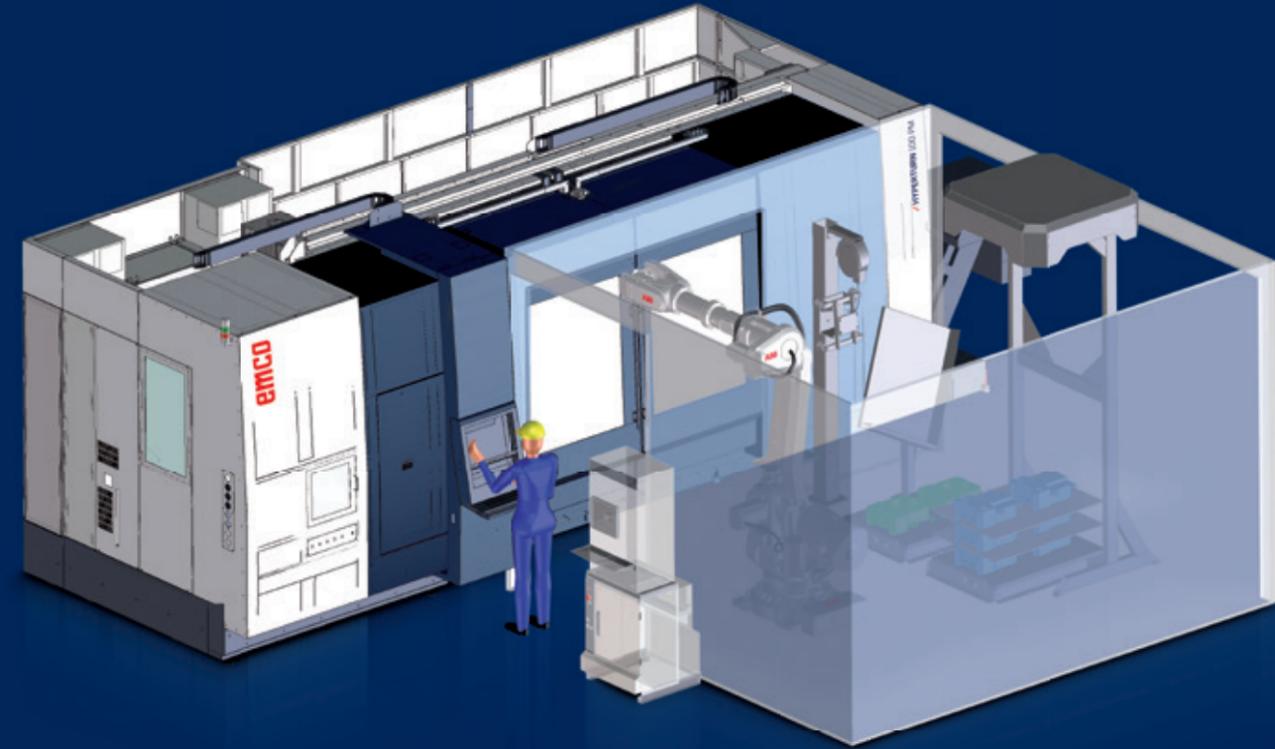
AUTOMATIC DOOR

Offering maximum comfort for manual workpiece loading, the fully automatic machine door is also the prerequisite for automatic, robot-assisted loading.

HIGHLIGHTS

- / Glass scales in the linear axes X, Y and Z
- / Highest positioning accuracy
- / Set-up parallel to main time
- / Thermal and mechanical stability
- / High machining performance
- / Various milling spindle variants with more power and speed
- / Comprehensive technology as well as digitization possibilities

EMCO AUTOMATION SOLUTIONS: OPTIMIZATION OF PRODUCTION PROCESSES WITH HIGH-LEVEL FLEXIBILITY



ADVANTAGES

- / Fully automatic loading and unloading of the workpieces
- / Multi-channel Sinumerik control incl. user cycles
- / Seamless interplay between the machine tool and the loading device
- / Varied possibilities of customer-specific adaptation
- / Possibility of integration of measuring station, signing station, cleaning station, etc.
- / Reduction of the set-up time due to a loading hatch
- / Worldwide service

NONSTOP RETURN ON INVESTMENT

EMCO solutions focus on customer-specific requirements.

The perfect implementation of customer-specific requirements shortens production times. The compact installation dimensions of 8900 x 7200 mm optimally match the conditions in production. The robot head change with different grippers, the flexible self-centering solution for different parts, the combination of parts by the tool turret and the B-axis expand the system and meet the demand for high productivity. Pallet scanner by blanks enable oriented loading of blanks into the machine and increase autonomy for unattended production.



In cooperation with ABB, the robot IRB6700 / 245 kg, the pallet system FLEXLOADER FP800 with 2D / 3D camera and with the completion of the line with jaw station including automatic changeover, we have a perfect result that meets the customers' requirements.



The very short set-up times, the optimal software solution and the user-friendliness with highest safety are the decisive factors for a profitable production.

NETWORKS ARE CREATED INDIVIDUALLY – OUR SOLUTIONS AS WELL

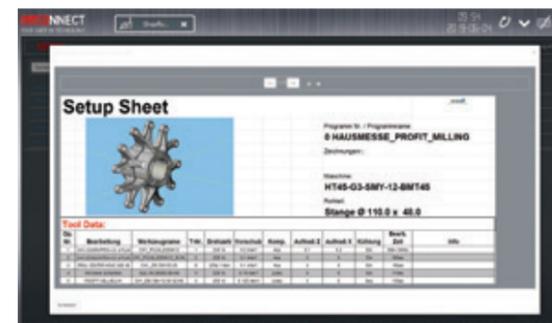
Staying in touch is important not only among human beings. Persons, machines and the whole production environment must also be connected perfectly and safely in order to ensure efficient procedures during the production process. With EMCONNECT, the machine is optimally equipped for this purpose. The optional EMCONNECT Digital Services offer innovative online services for optimized machine operation. The user has always the control of the machine status. The automatic notification in case of malfunctions or standstill of the machine as well as the extended capabilities for remote maintenance, minimise downtimes.

Integration into control

EMCONNECT offers several possibilities of operation according to different situations. For quick access, apps may be used simultaneously in the side panel of controlling. In this way, you can always look at your familiar numerical control, the well-known centrepiece of the machine.

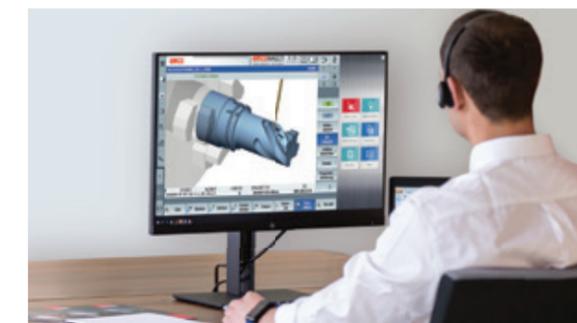
An innovative concept

These powerful apps may be used independently from the control, while in the background the machine is busy in the production process. With only one click, you can change at any moment between numerical control and EMCONNECT. This is possible with the help of an innovative and ergonomic control panel, equipped with a modern 22" multi-touch display, an industrial PC with associated keyboard and HMI hotkeys.



The control panel as central platform

With EMCONNECT, the control panel of the machine becomes the central platform for the access to all the operative functions. The user gets every type of support from the apps, which directly provide all the necessary applications, data and documents. In this way, EMCONNECT makes an important contribution to a highly efficient processing at the machine.



Comprehensive connectivity options

With the remote support, the web browser and the remote desktop, there are numerous connectivity options, even beyond the direct production environment. With the help of the integrated remote support, it is easily possible to carry out the remote diagnosis and remote maintenance. The optionally available OPC UA interface enables data exchange with the IT system environment and interaction with other machines for automation at shop floor level.

EMCONNECT HIGHLIGHTS AND FUNCTIONS

- / Fully connected**
Connection to all applications via remote control of the office computer and the web browser
- / Structured**
Clear monitoring of the machine state and the production data
- / Customized**
Open platform for modular integration of customer-specific applications
- / Compatible**
Interface for seamless integration into the operating environment
- / User-friendly**
Intuitive and production-optimized touch operation data
- / Future-proof**
Continuous extensions as well as easy updates and upgrades

Standard Apps

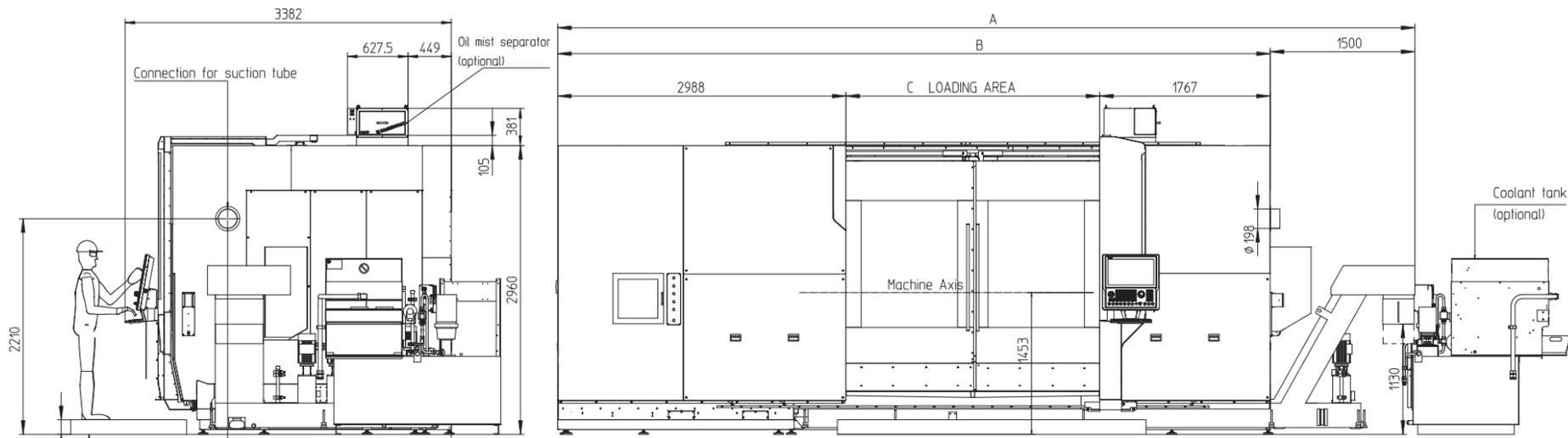
Control	Dashboard
Machine Data	System
Remote Desktop	Web Browser
Remote Support	Settings
Cutting Calculator	Calculator
Notes	Service
Documents	EMCO TechSheet
GD&T	File Import
Shopfloor Data	Thread Reference
	Tricalc

Optional



INSTALLATION PLAN

Installation plan HT 100 PM with cooling unit and band filter system

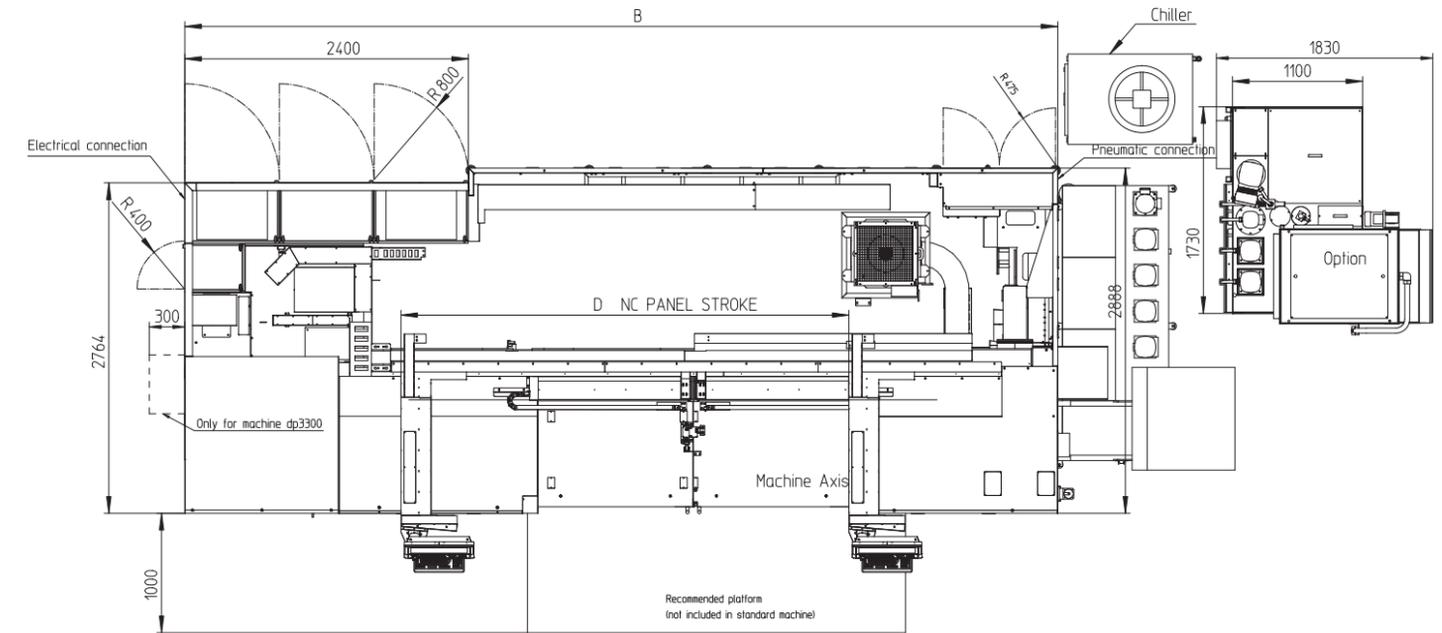


Machine version	A	B	C	D
1700	8185	6685	1585	3090
2400	8885	7385	2360	3790
3300	9785	8285	3150	4690

Indications in millimetres

INSTALLATION PLAN

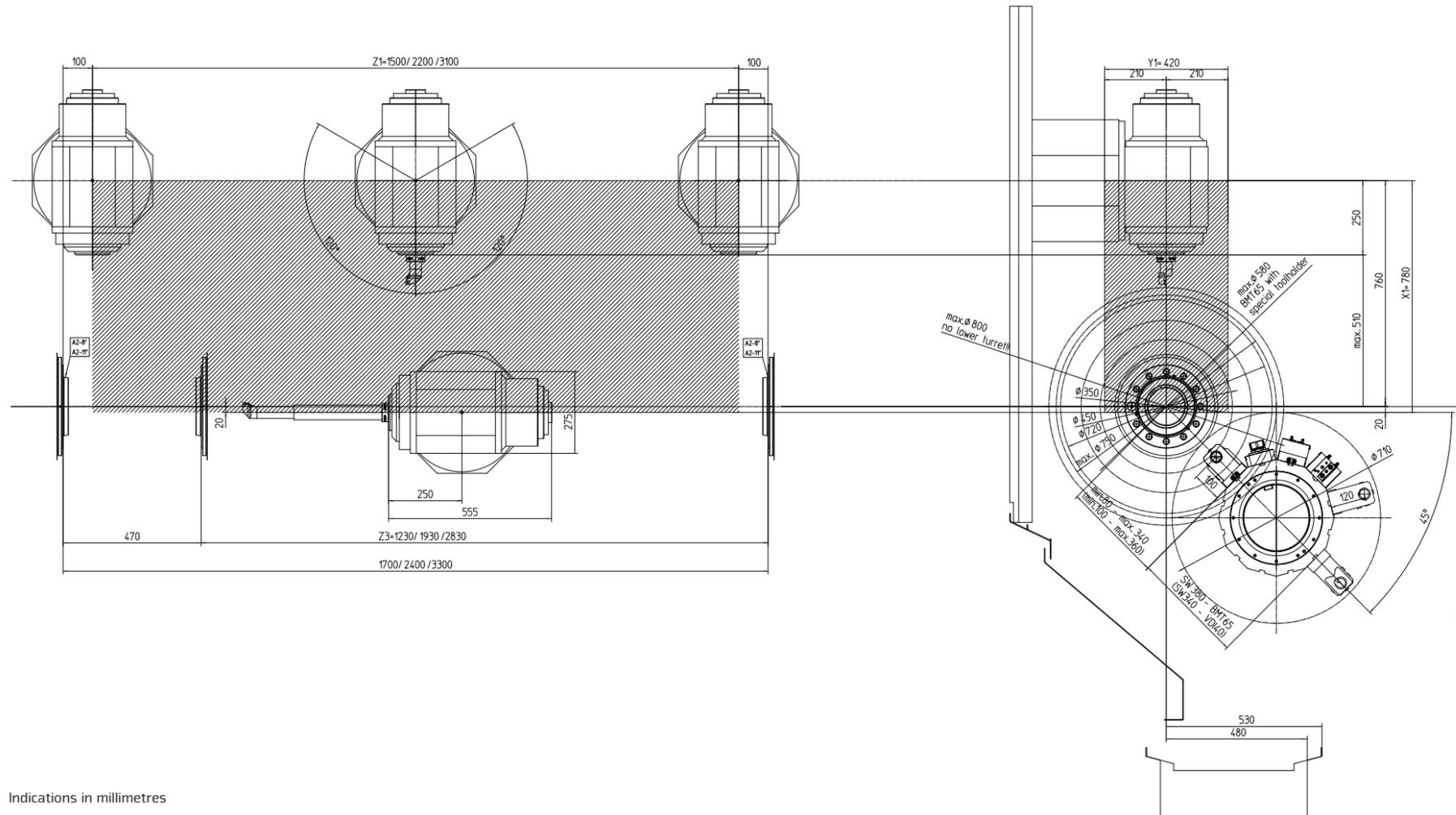
Installation plan HT 100 PM with cooling unit and band filter system



Indications in millimetres

WORK AREA

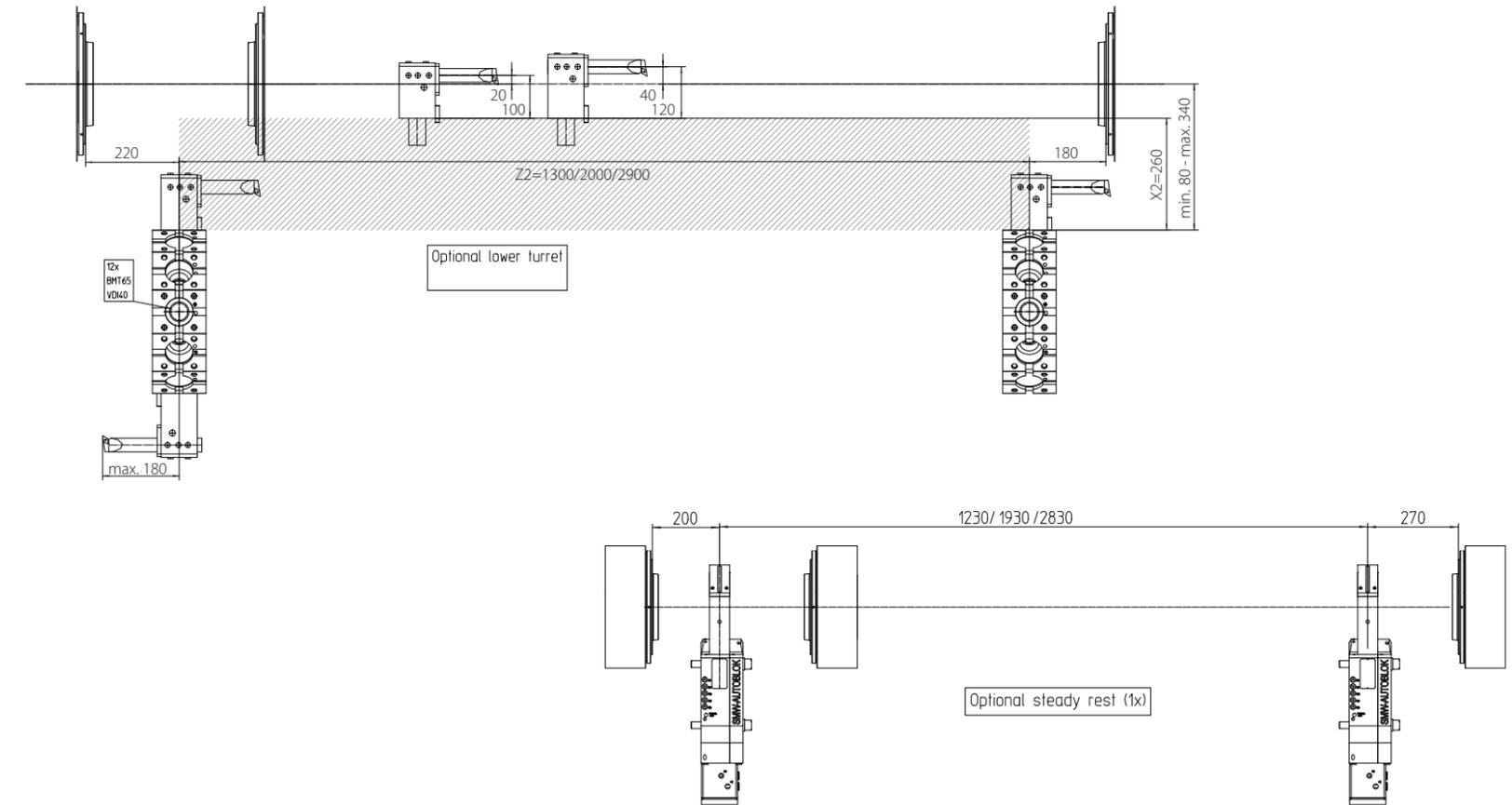
Layout HT 100 PM and side view with counter spindle, turret BMT65P



Indications in millimetres

WORK AREA

Work area
HYPERTURN 100 PM



* Various workspace solutions with options on request

TECHNICAL DATA

Work area

Swing over bed	800 mm (without tool turret)
Max. turning diameter	720 mm (with milling spindle)
Length between spindle and centre	1700 / 2400 / 3300 mm
X1-axis	780 (+760/-20) mm
Y-axis	420 mm
Z1-axis	1500 / 2200 / 3100 mm

Main spindle – counter spindle

Spindle connection (DIN 55026)	A2-8" // A2-11"
Power chuck diameter	400 // 630 mm
Max. spindle speed (11" with transmission)	3500 // 2500 rpm
Max. drive power, main spindle	33 // 53 kW
Max. torque (11" with transmission)	800 // 4400 Nm
Max. weight incl. chuck	350 // 700 kg
Max. weight between the centres incl. chuck	800 // 1500 kg

Tailstock with quill MK 5

Travel distance (without steady rest)	1230 / 1930 / 2830 mm
Travel distance, quill	150 mm
Quill diameter	150 mm
Max. contact pressure	2500 – 22200 N
Movement speed, tailstock	15 m/min

X-, Z-, Y-axes

X1-X2-Z2 / Z1 and counter spindle	30 / 40 / 20 m/min
Feed force X1 / X2	1640 daN
Feed force Z1 / Z2	1640 daN
Counter spindle Z3	1640 daN

Milling spindle – Powermill

Speed range	0 – 12000 rpm
Max. torque	165 Nm
Max. drive power	33,8 kW
Tool holder	HSK-T63/PSC63 (Capto C6)

B-axis

Travel range	240°
Detend torque of clamp	6000 Nm
Drive torque interpolated	878 Nm

Driven tool (BMT 65P - VDI 40)

Speed range	6000 rpm
Torque	62 Nm
Drive power (max.)	22 kW
Number of driven tools (max.)	12

Tool magazine

Tool magazine stations	40 / 100
Max. tool length	500 mm
Max. tool diameter	90 mm
Max. turning tool weight	12 kg

Coolant system

Coolant pressure (max. milling spindle / tool turret)	80 / 50 bar
Flushing system in the work area	2 x 14 bar
Cooling tank capacity	starting from 600 l

Power consumption (in relation to the desired machine version)

Connected load (max.)	117 KVA
Compressed air connection	6 bar

Dimensions (in relation to the desired machine version)

Height above floor	1450 mm
Total length including chip conveyor	8100 / 8800 / 9600 mm
Height	3000 mm
Width (with control panel)	3200 mm
Weight	25000 – 30000 – 35000 kg

beyond standard /

EMCO GmbH / Salzburger Str. 80 / 5400 Hallein-Taxach / Austria / T +43 6245 891-0 / F +43 6245 86965 / info@emco.at

www.emco-world.com