

EMCO



Turning / milling center for
the complete machining



HYPERTURN 200 PM

MULTI- FUNCTIONAL PROFIT CENTRE

The perfect interplay of turning and milling expertise:

Benefit from more power, more precision, more productivity in the machining of large workpieces – and all this in just one clamping operation.



Demo part (Steel Ck45)

1 MAIN SPINDLE

- / Double-gear motor for zero backlash C-axis
- / Impressive performance:
84 kW – 6410 Nm – 1800 rpm
- / Spindle nose A2-15"

2 X, Z, Y AXES

- / Heidenhain glassscales in all axes
- / High feed force
- / NC-controlled tailstock and steady rest
- / High and stable dimensioning in all axes

3 MACHINE DESIGN

- / Optimal use of space
- / Innovative chip and coolant protection system
- / Large work area
- / Ergonomic accessibility
- / Chip flushing system in the work area (standard)

4 TOOL MAGAZINE

- / Optimal accessibility for tool assembly and inspection
- / Up to 200 tool stations
- / 3 additional stations for boring bars and long tools
- / Additional magazine for special tools on the right side

5 CONTROL

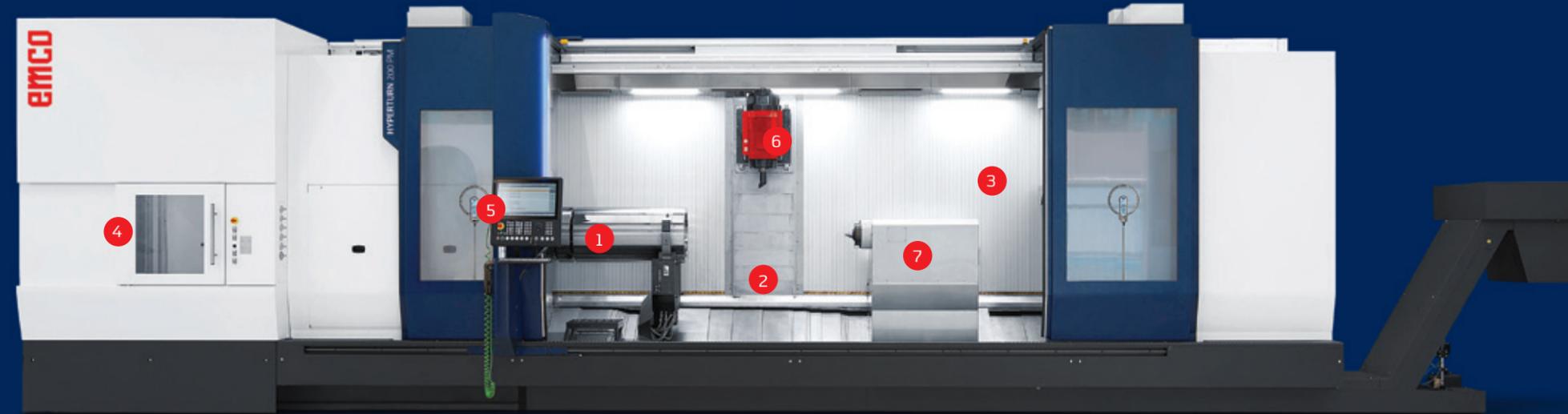
- / Sinumerik with 22" color screen
- / USB interface
- / Swivelling and movable control panel
- / EMCO technology cycles
- / EMCONNECT process assistant

6 MILLING SPINDLE

- / RAM system in Box-in-Box structure
- / Choice of 2 milling spindles: both with a motor power of 80 kW, high torque and high speed (630 Nm, 6500 rpm or 340 Nm, 10000 rpm)
- / Stable Y-axis: travel 600 mm

7 TAILSTOCK

- / Hydraulic quill
- / Integrated bearings
- / Eccentric quill settings for simplified cutting process
- / Positioning with NC axis
- / 100% programmable and monitored
- / Powerful counter spindle, identical to the main spindle



DESIGN

1 MACHINE BED

- / Single machine construction
- / Torsion-resistant welded steel construction
- / 4 available bed lengths with space between the centre 3200 / 4200 / 5200 and 6200 mm

2 MAIN SPINDLE

- / Main and counter spindle identical design
- / Wide speed range up to 1800 rpm (2500 rpm)
- / C-axis for milling operation
- / Additional holding brake
- / Spindle connection DIN A2-15" (-11" optional)
- / Full clamping cylinder with clamping stroke monitoring
- / Two motor-drive technology with automatic 2 step gearbox

3 MILLING SPINDLE

- / Tools connection HSK-T100 / PSC80 (Capto C8)
- / Max. tool length 600 mm (opt. 1500 mm)
- / Max. tool diameter 120 (240) mm
- / Max. tool weight 25 kg
- / Max. internal coolant pressure 80 bar (opt. 150 bar)

4 STEADY REST

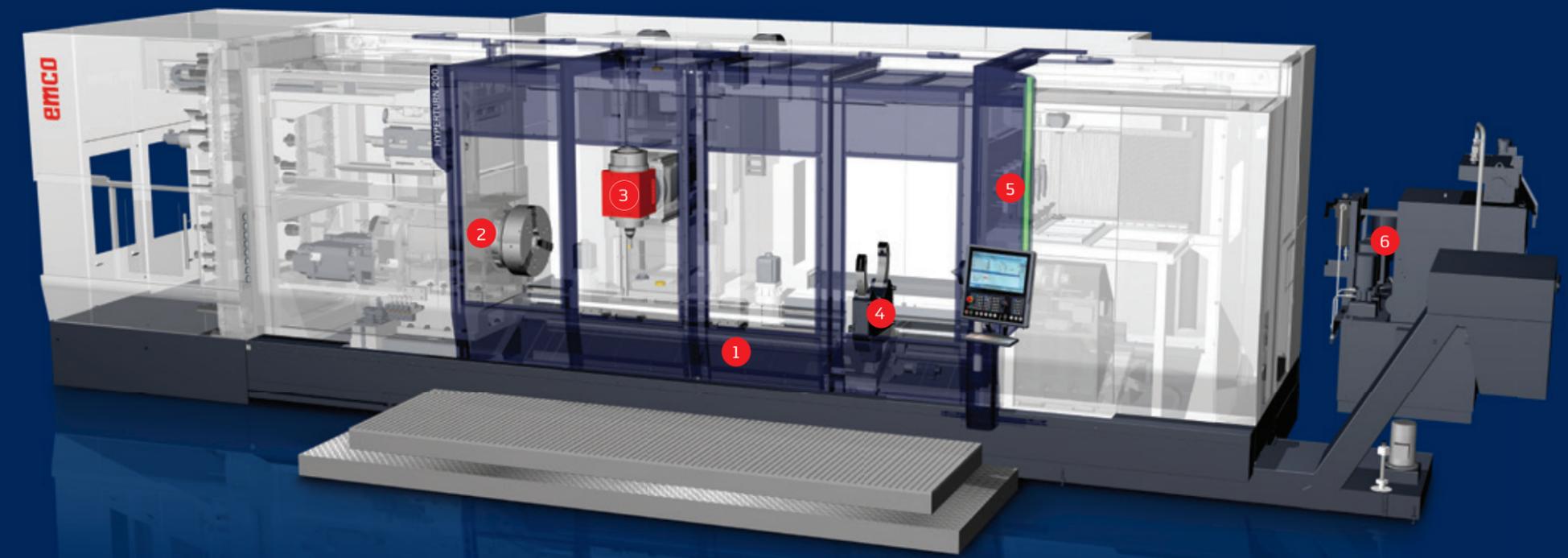
- / Steady rest slide with NC-axis
- / Max. diameter 685 mm
- / Flushing and sealing air unit
- / 100% programmable and monitored
- / Customized special solution

5 TOOL MAGAZINE RIGHT SIDE

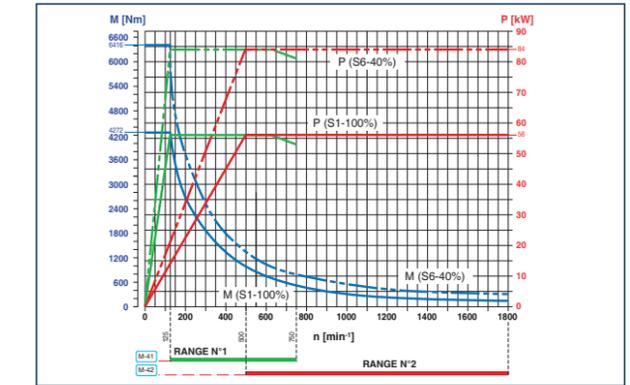
- / Optional up to 1500 mm boring bar holder
- / Customized solutions up to 90 kg with additional tool clamping

6 BAND FILTER SYSTEM WITH HIGH PRESSURE COOLANT PUMP

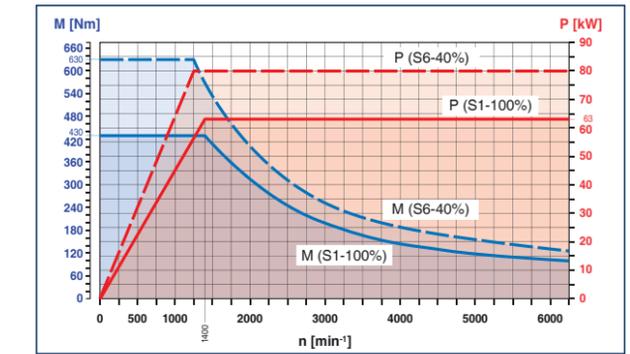
- / Standard equipment with 40 / 20 / 10 bar pumps
- / 1400 liters, optional with temperature monitoring
- / Standard equipment with clean flush gun and workspace flushing



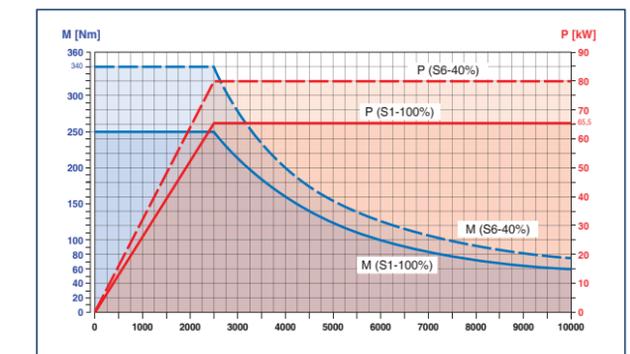
Power and Torque



Main spindle and counter spindle. With performance data that make all machining possible without compromise. The EMCO spindle design has two servo motors that also act as C-axis. The motors operate in opposition, guaranteeing the balancing of the play and enabling the achievement of the power and torque as can be seen in the diagram beside. The main spindle is also equipped with a special EMCO cooling system that optimizes the temperature stability and guarantees maximum precision with any length of machining.

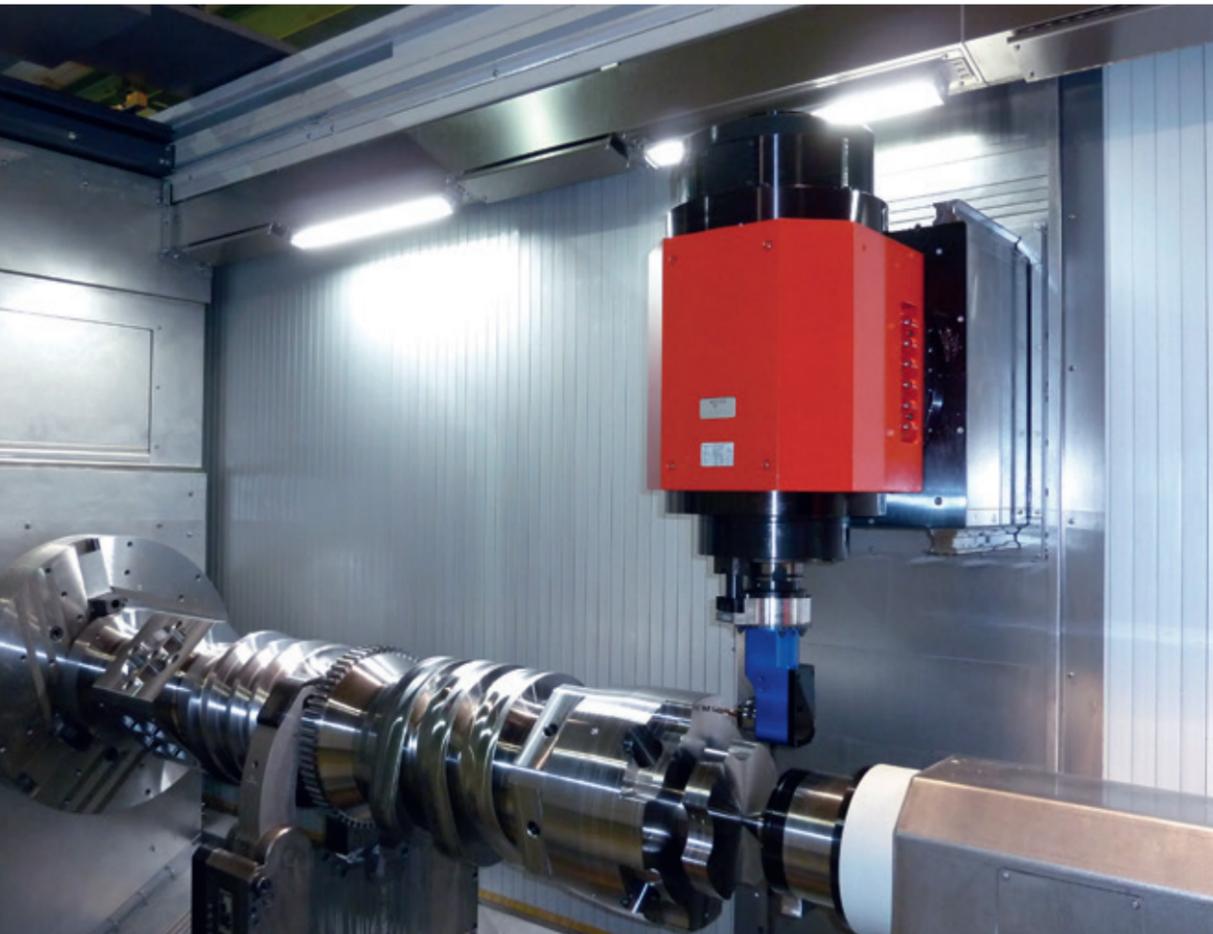


Milling spindle. Ready for use in the standard version with 6500 rpm for all turning, drilling and milling operations and technologies. The water-cooled ISM (Integrated Spindle Motor) is available up to 80 kW and 630 Nm torque and with the HSK-T 100 or PSC80 (Capto C8).



Milling spindle. Optional version with 10000 rpm. High speed for turning, drilling and milling operations, complex technologies usable for light alloys, aluminum, etc. The water-cooled ISM (Integrated Spindle Motor) is available up to 80 kW and 340 Nm torque and with the HSK-T 100 or PSC80 (Capto C8).

TECHNICAL HIGHLIGHTS



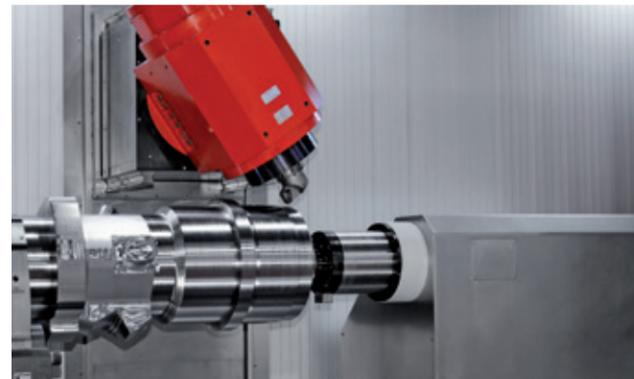
MACHINING OPTIONS

From an angular tool holder to an additional U-axis – all machining processes are possible and feasible in a customised way.



MAIN SPINDLE

For turning and milling operations, equipped with 84 kW and 6400 Nm torque. Sealing air, working area coolant and programmable clamping pressure are standard features on the Hyperturn 200. One or more programmable NC-steady rest can assist the processing.



TAILSTOCK

The tailstock is 100% programmable using the control. With the high quality and precisely dimensioned MK6 quill, all operations can be supported or extended with the counter spindle thanks to the machine's modular construction.



MILLING SPINDLE

For stable, precise and flexible drilling and milling operations. Up to 80 kW and 630 Nm of torque and 10000 rpm. Sealing air, internal high pressure coolant up to 40 bar and externally up to 14 bar with a 1400 liter paper band filter system as standard (80 bar option). The B-axis can be used at any angle or with an indexed B-axis in steps of 2,5°.



POWERFUL COUNTER SPINDLE

The counter spindle and main spindle are identical when it comes to their specifications and construction. Thus, it is possible to machine even more complex parts in one setting. This results in more flexibility, increased productivity and lower storage costs for the customer.



XL MAGAZINE

Equipped with a 3-positions pick-up magazine, it includes tools up to a length of 1000 mm.



MOVING COLUMN

Like on EMCO MECOF's machines, it is conceived with a „Box-in-Box“ RAM structure. Thus, optimum rigidity and stability are ensured and high accuracy machining is guaranteed. The B-axis is equipped with a torque motor and integrated into the RAM design.

HIGHLIGHTS

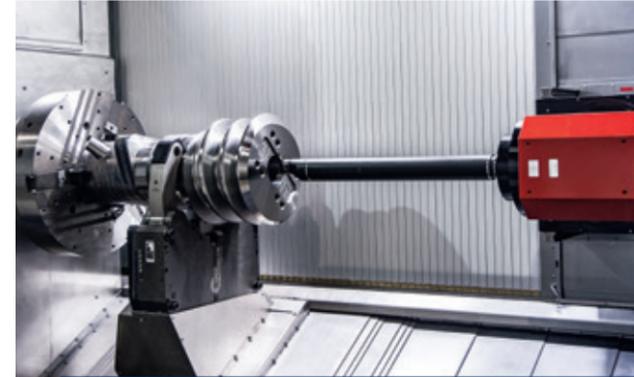
- / Very large work space for the complete machining of large workpieces up to a turning diameter of 1000 mm with a maximum length of 6100 mm
- / Moving column with Box-in-Box structure for maximum stability
- / High-performance main spindle and counter spindle for heavy cutting at 84 kW and 6400 Nm
- / Dynamic and precise B-axis with high torque and power
- / Two versions of milling spindles with 6500 or 10000 rpm, with HSK-T 100 or PSC80 (Capto C8)
- / Multitasking-control – Multi-technology: SINUMERIK
- / Main spindle and counter spindle for high-performance processing with vibration-damped boring bars up to 1000 mm, including a special magazine (optional)
- / Automatic tool presetting and workpiece measuring probe
- / One or more NC steady rest
- / 100 / 200 tool magazine stations
- / High-speed milling spindle at 10000 rpm
- / Boring bar pick-up system
- / 5-axis simultaneous machining
- / Coolant pressure 80 bar
- / Virtual machine – collision monitoring
- / EMCO REMOTE SUPPORT
- / Tool load monitoring
- / Made in the Heart of Europe

TECHNICAL HIGHLIGHTS



MACHINE'S ERGONOMICS

The handheld terminal (▲) ensures higher flexibility and maximum access to the work area. The operator can position himself very close to the tool and thus have a safe view of the process at all times.



BORING BAR

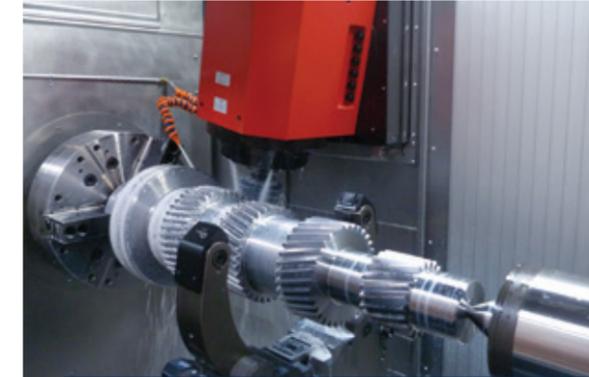
Boring bar with vibration absorption featuring a diameter of 100 x 100 mm for internal turning operations. There are three specifically dimensioned tools available.

Flexibility, accuracy and maximum productivity with high cutting performance.



DEEP HOLE DRILLING

Deep hole drilling for diameters of up to 6 x 500 mm with a maximum of 80 bar



GEAR MILLING

State-of-the-art technology such as highly productive gear hobbing from gear teeth with the stable and accurate EMCO solution.



TOOL MAGAZINE

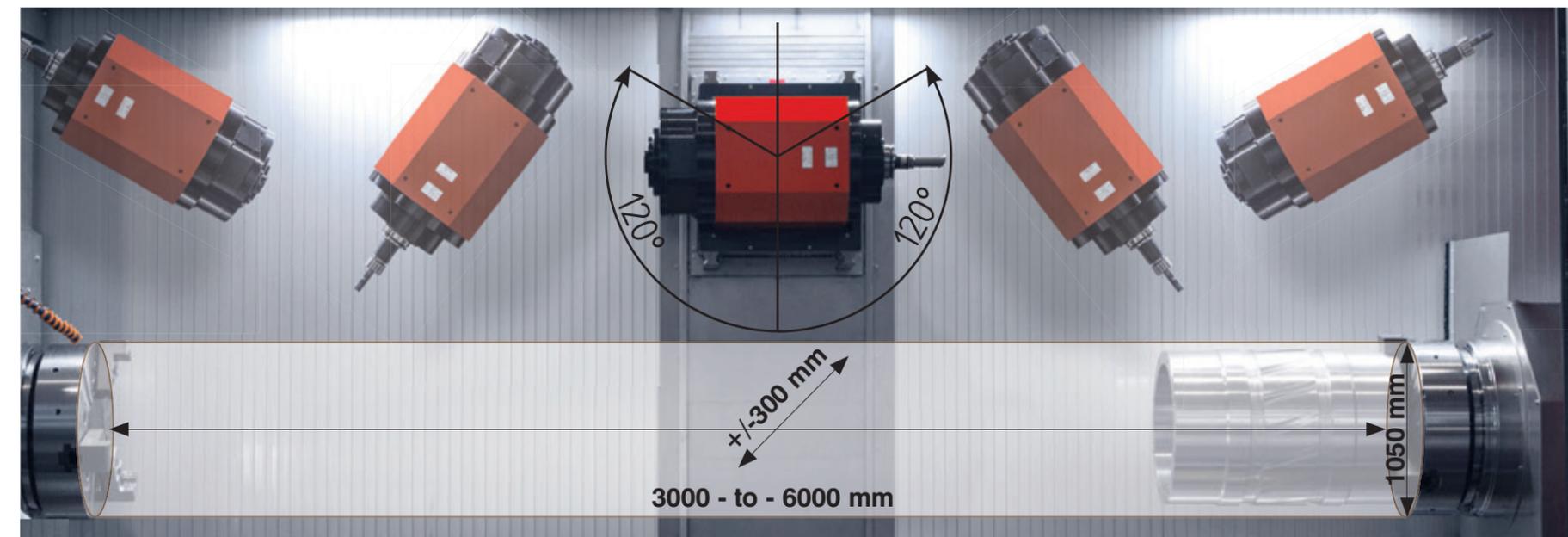
Ergonomic loading of the tool magazine with tools weighing up to 25 kg and measuring more than 600 mm. Ergonomic-friendly access to the work area



TOOL MEASUREMENT

The entire tool measurement is integrated in the process and guarantees high precision as well as measurements during the machining process.

Measuring touch probe for high productivity, a safe manufacturing process and ease of use.



NETWORKS ARE CREATED INDIVIDUALLY – OUR SOLUTIONS AS WELL



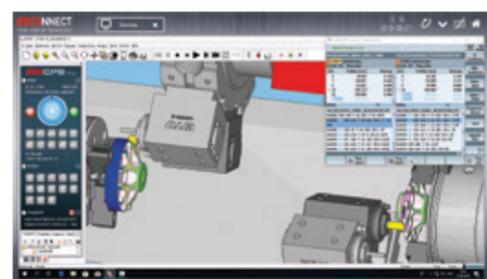
Staying in touch is important not only among human beings. Persons, machines and the whole production environment must also be connected perfectly and safely in order to ensure efficient procedures during the production process. With EMCONNECT, the machine is optimally equipped for this purpose. The 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

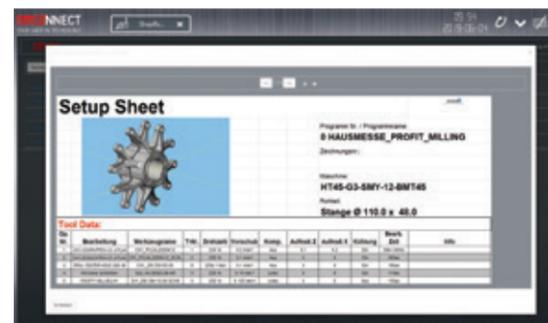
EMCONNECT offers several possibilities of operation according to different situations. For quick access, apps may be used simultaneously in the side panel of controlling.

In this way, you can always look at your familiar numerical control, the well-known centrepiece of the machine.



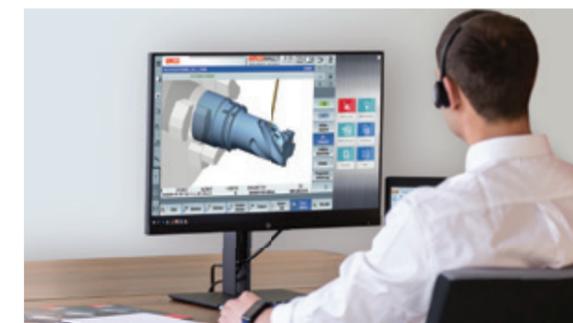
An innovative concept

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

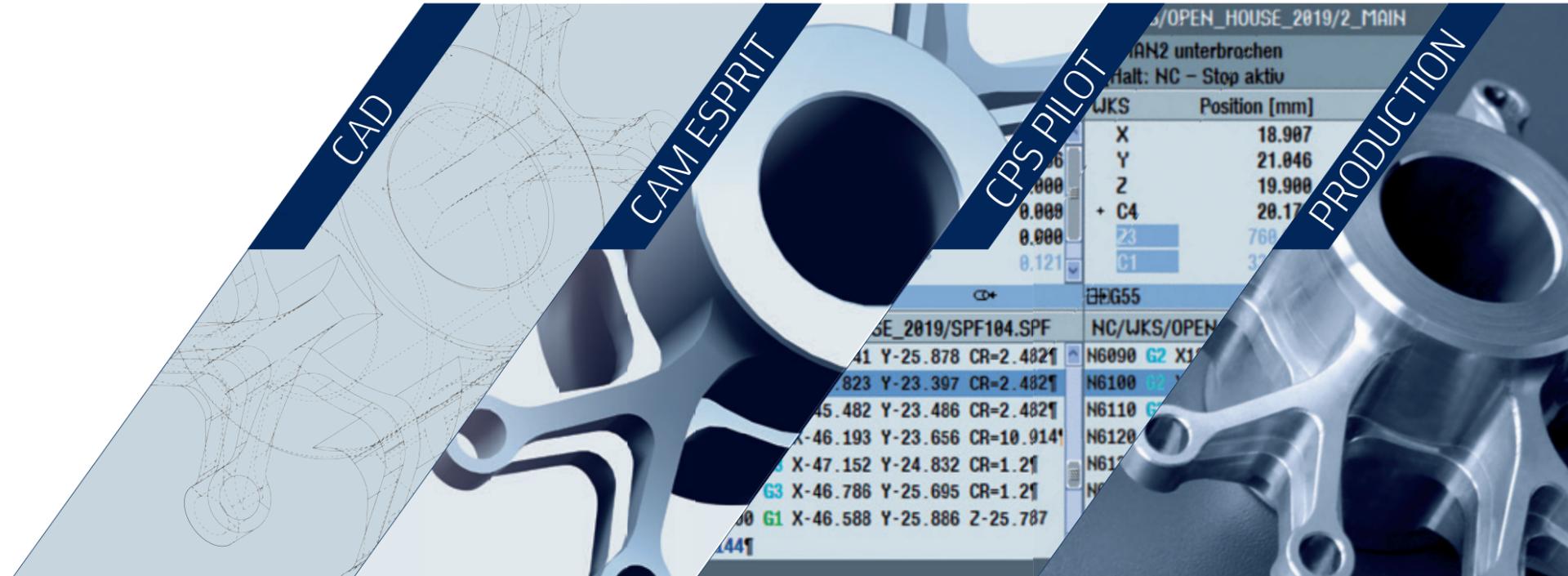
Standard Apps

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



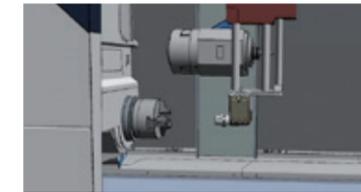
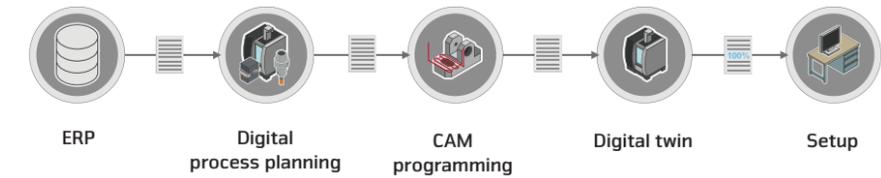
VIRTUAL MACHINING PROCESS



Whoever wants to design scenarios for the future, needs as much information as possible from different sources. EMCO's Virtual Workflow enables you to simulate and optimise your processes. This helps you test processes and train skilled workers without any downtime.

- / From drawings to good parts in a fast and straightforward way
- / Continuous digital process chain in cooperation with an experienced partner

A CONSISTENT PROCESS CHAIN AS A PREREQUISITE FOR DIGITAL PRODUCTION



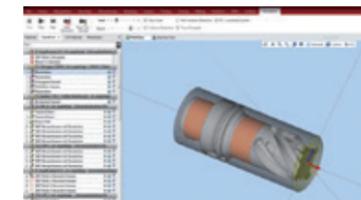
CHECKitB4

- Quick and straightforward process validation of the machine, setup and tool data
- / Tools can be easily moved over the workpiece - without NC codes
- / Collision detection and identification of axis travel limits
- / No CAD/CAM skills required
- / Easy and innovative design of clamping situations and complete tools
- / Creation of blanks
- / Interfaces for connection to many CAM systems



CPS PILOT

- The machine's digital twin ensures workshop-oriented programming during industrial engineering
- / 100% identical with the machine including its control and machine-specific parameters
- / Original virtual control (Siemens, Heidenhain)
- / Reliable collision detection and identification of errors prior to production
- / Interfaces for many CAM systems
- / Reduced risk and setup times
- / Maximized machine utilization



CAM PROGRAMMING

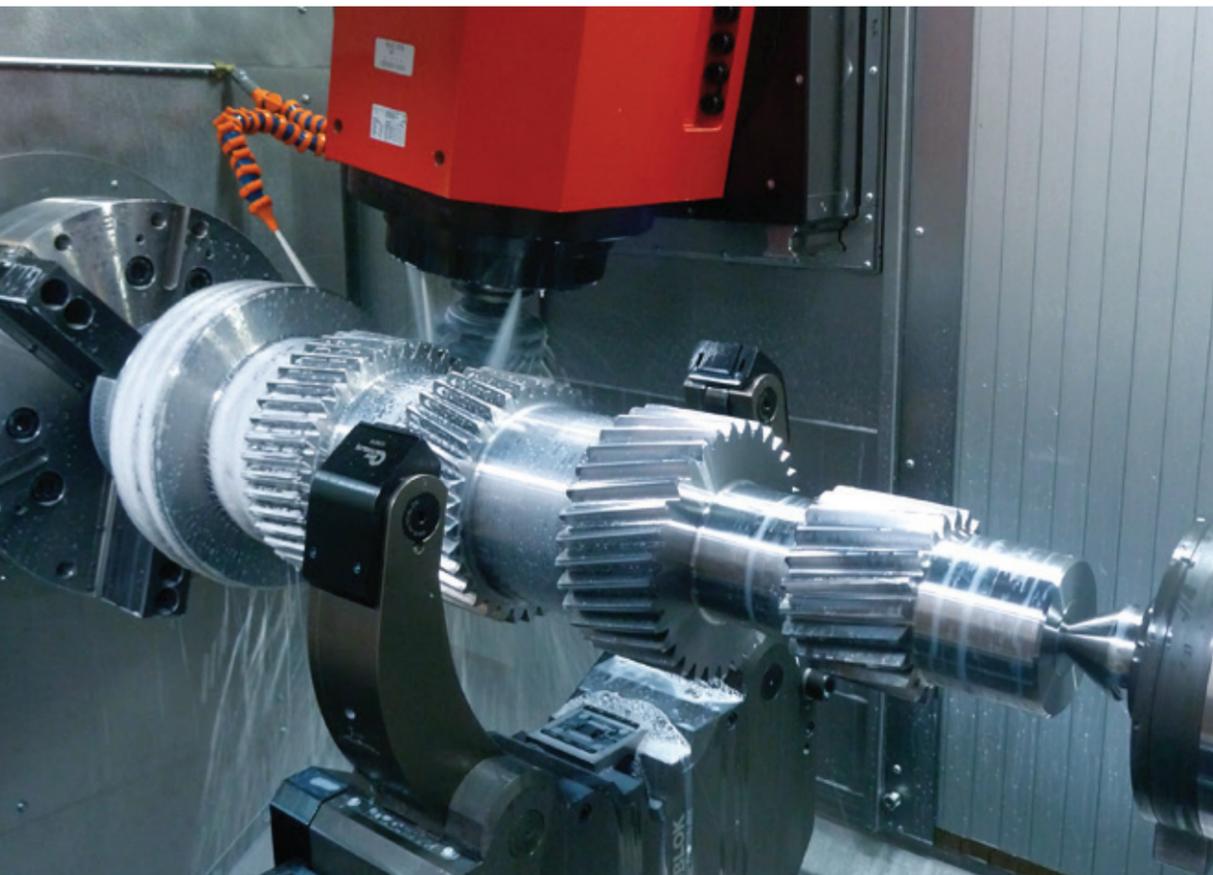
- Program each and every EMCO machine:
- / Quick and easy programming of milling and multi-channel turning machines
- / Quick and easy learning
- / High-performance strategies for roughing operations
- / Knowledge-based machining with partially or fully automated programming
- / Data import from any CAD system
- / Certified post-processors



PRODUCTION

- / Reduced setup costs
- / Reduced downtimes
- / Reduced repair costs
- / Ideal machine utilization

OPTIONS



COMBINATION OF HIGHEST FLEXIBILITY, POWER AND PRECISION.

As a turning and milling center for small to medium-sized series, the Powermill meets all the requirements that are needed on the production of highly complex and high-precision workpieces.



INSIDE TURNING AND MILLING

Outside or inside turning operations are possible with the stable milling spindle indexing in 3° steps. Optional a vibration-damped boring bar up to a length of 1000/1500 mm and a 2x3-fold pick-up magazine can be added.



PAPER BAND FILTER SYSTEM WITH 40 BAR AS STANDARD

If required, a coolant pressure of 80/120/150 bar can optionally be implemented with or without temperature control. This enables the optimal use of coolant-flooded drilling, milling and turning tools



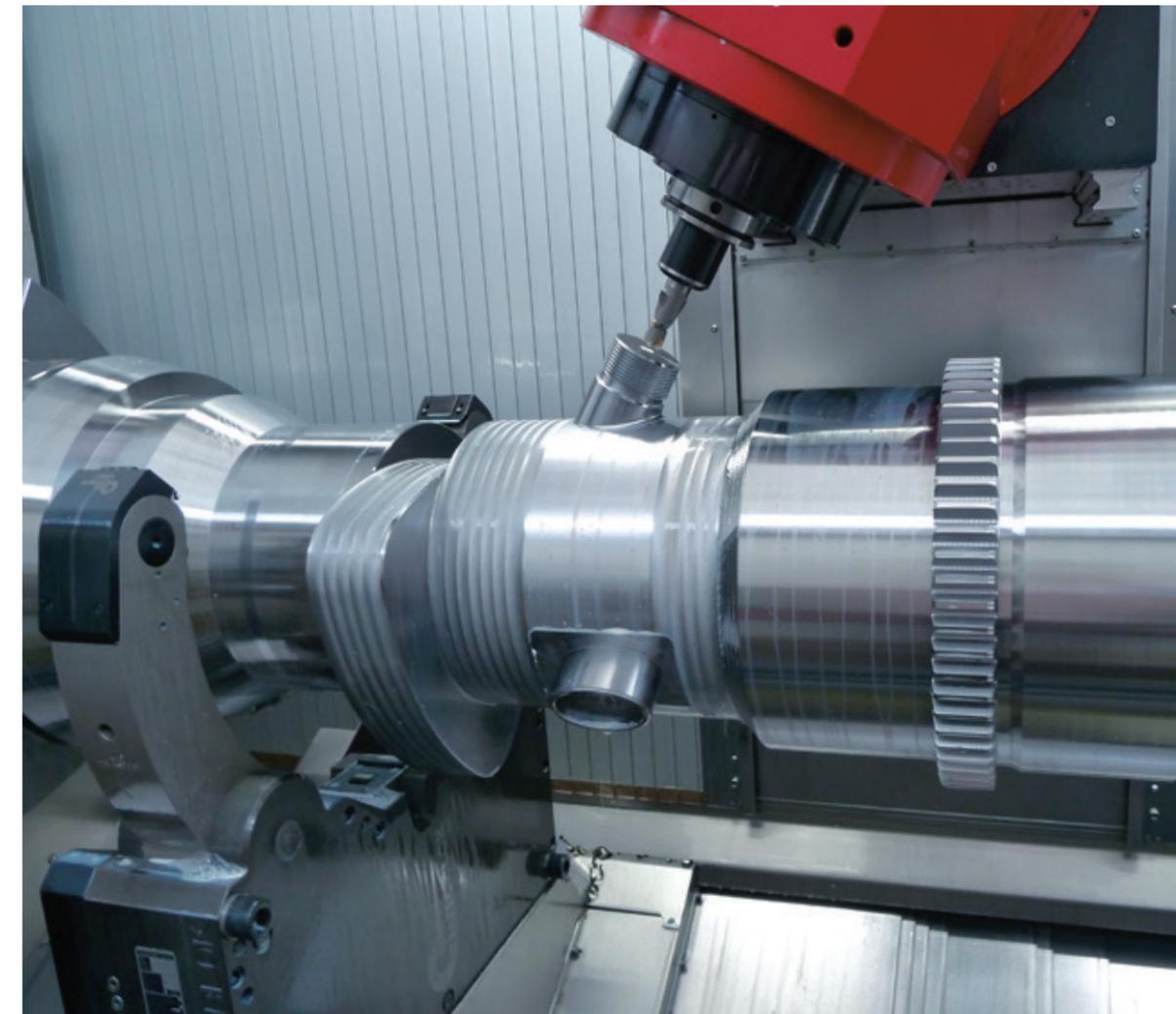
TOOL MEASUREMENT

With the tandem laser measuring system (with measuring probe) mounted above the main spindle, tools can be measured in the milling spindle without contact and can be process-reliable monitored.



XXL PICK-UP MAGAZINE

With an XXL pick-up magazine, you have the option of automatically and smoothly inserting the various tools you need up to a length of 1500 mm and a weight of approx. 100 kg into the machining process.



NC-STEADY REST

Various steady rests and support solutions are available for shaft machining: e.g. NC-steady rest with centering area 680 mm, with integrated flushing, pressure and position monitoring.

SINUMERIK CONTROL. OPEN, STRONG, FLEXIBLE.

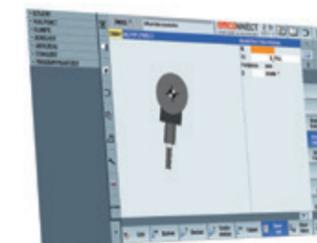
The Sinumerik control with Operate user interface is ergonomically located to the left side of the work area and it can be swiveled of approx. 120° and also be moved. Shopturn dialog programming, RJ45 and a 230 volt socket on the side are included in the standard version. The control panel is equipped with an industrial 22" multi-touch display.



EMCO TECHNOLOGY



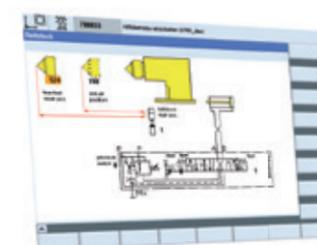
Tool management
Simple and open operation using the integrated tool management for all tool types and data.



5 axes simultaneous machining
The interpolation of the milling spindle enables milling operations with free-form surfaces on the main and counter spindle and a continuous process with high surface quality and optimal transition.



EMCO Power Skiving process
It can machine straight and inclined external or internal and splined shaft gears. This fulfills the complete machining of the workpiece, with main or counter spindle all run by the control and cycle.



EMCO diagnosis
For quick and easy analysis of the entire machine (example: tailstock hydraulic scheme and quill position monitoring).



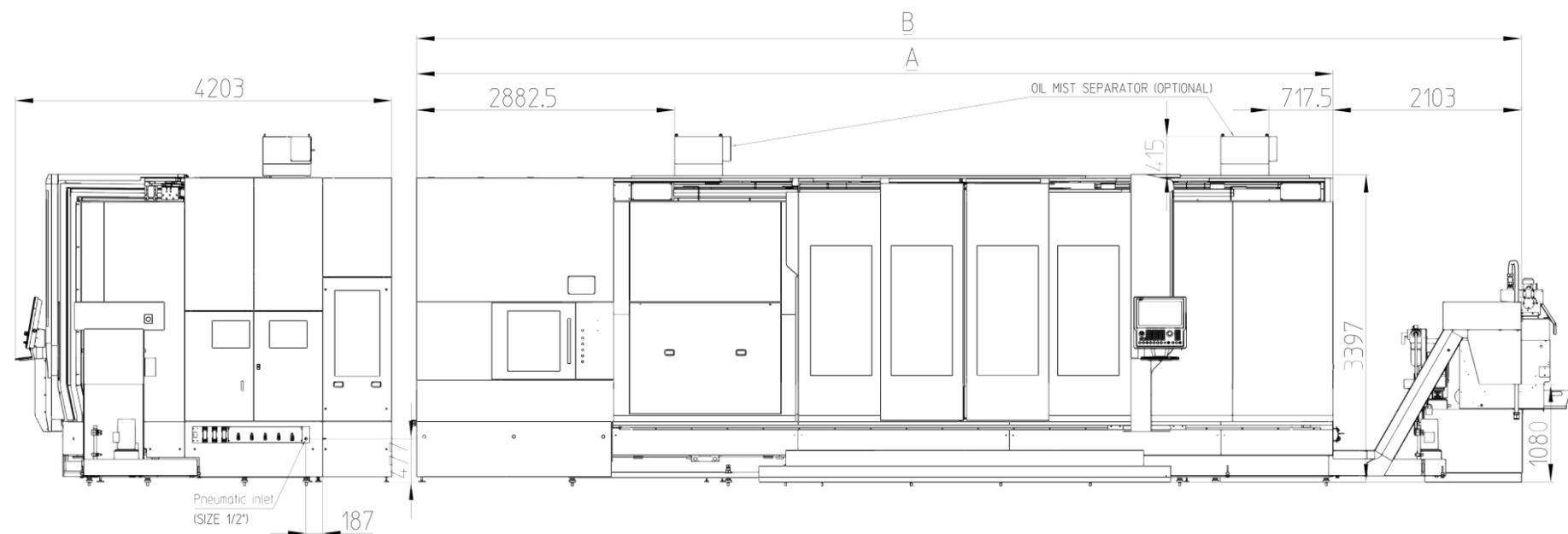
Eccentric machining
The turning / milling of eccentrics places high demands on the production technology and thanks to an EMC customer-specific cycle stored in the NC-control it can be implemented as a simple solution.



EMCO tool breakage and wear monitoring / ONE
This system is used to monitor the cutting forces during machining. It checks if the set limit values for tool breakage, tool wear or a tool are missing, leading to the machine stop.

INSTALLATION PLAN

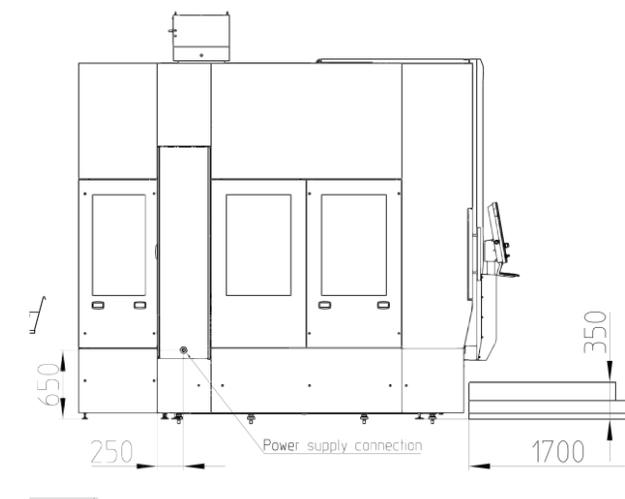
Installation plan HT200 PM as standard



Indications in millimetres

INSTALLATION PLAN

Installation plan HT200 PM as standard



Indications in millimetres

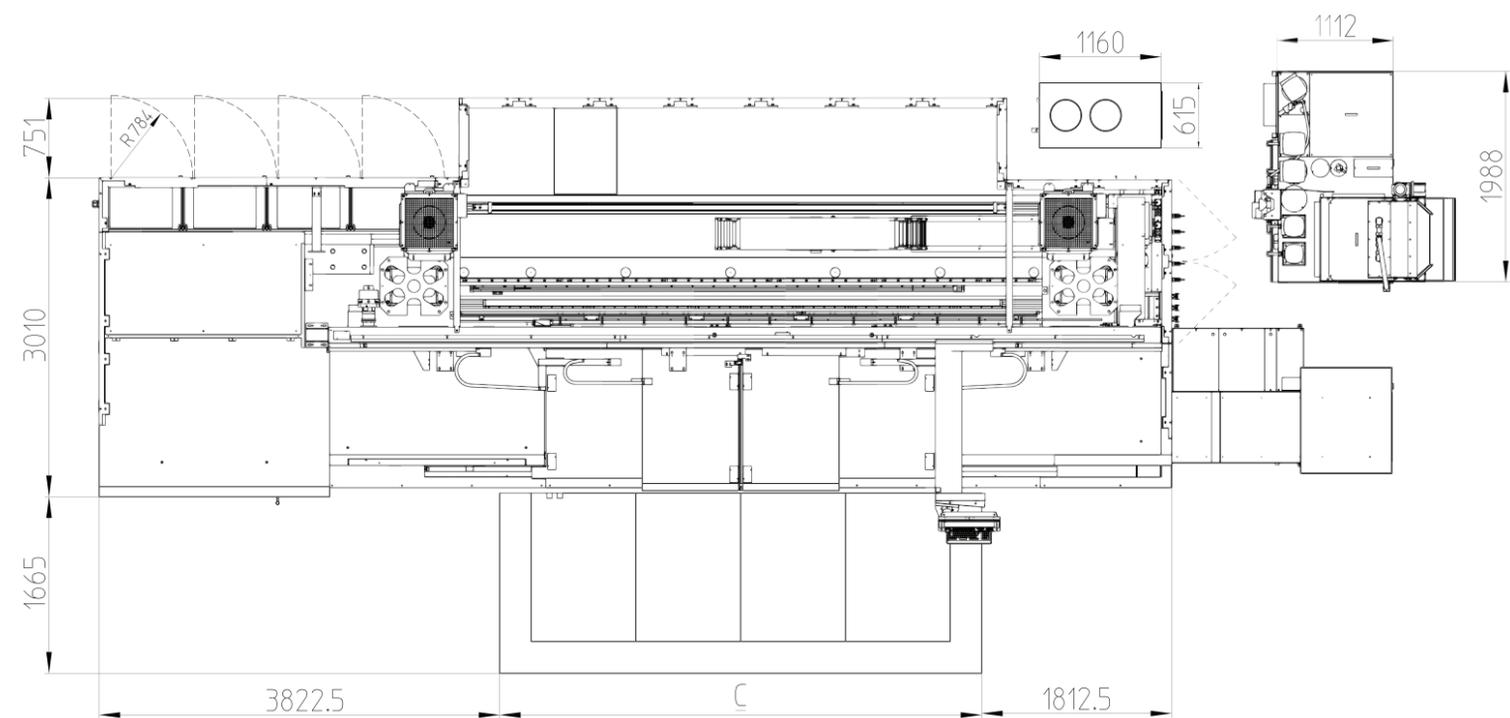
MACHINE VERSION	A	B	C
3000	10235	12654	4600
4000	11235	13654	5600
5000	12235	14654	6600
6000	13235	15654	7600

MACHINE DIMENSION FOR TRANSPORT (without box) (*)				
MACHINE VERSION	Length	Width	Height	Weight (**)
3000	10500	3200	3500	40 t
4000	11500	3200	3500	45 t
5000	12500	3200	3500	50 t
6000	13500	3200	3500	55 t

* It is necessary a second pallet for chip conveyor, coolant tank and additional parts
 ** The weight is referred to standard machine configuration and must be verified according to the customer configuration

INSTALLATION PLAN

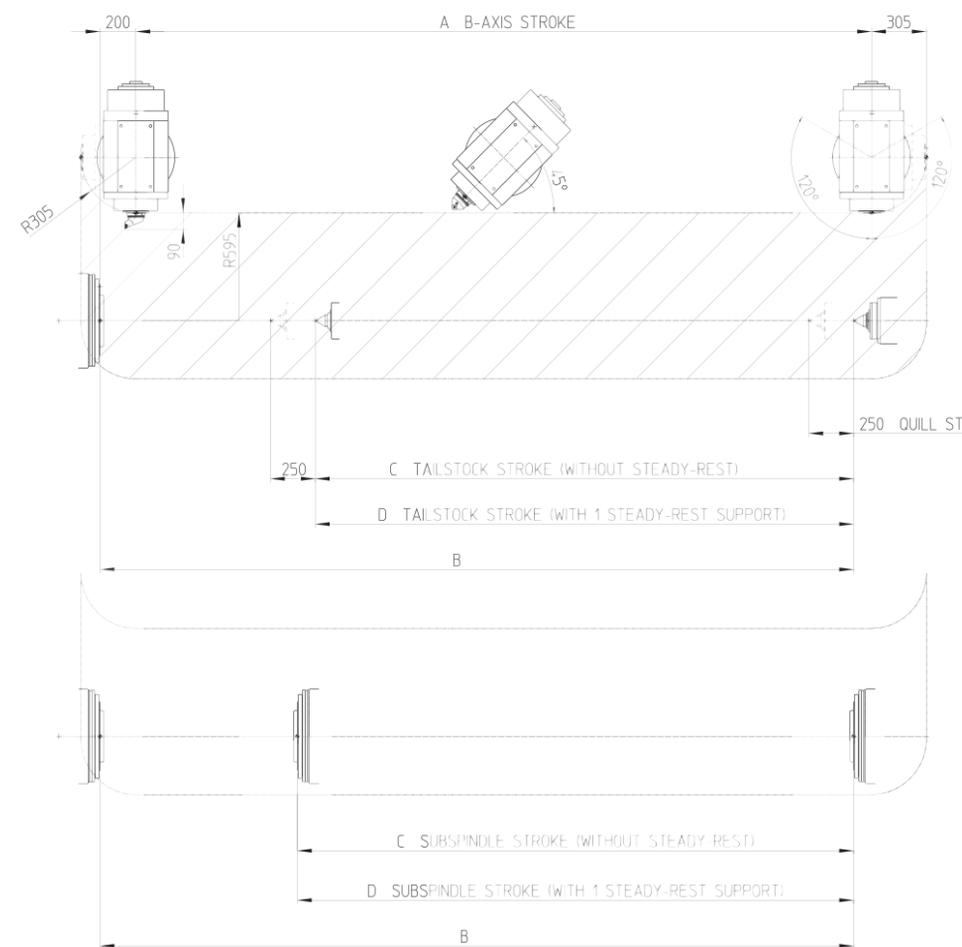
Installation plan HT200 PM as standard



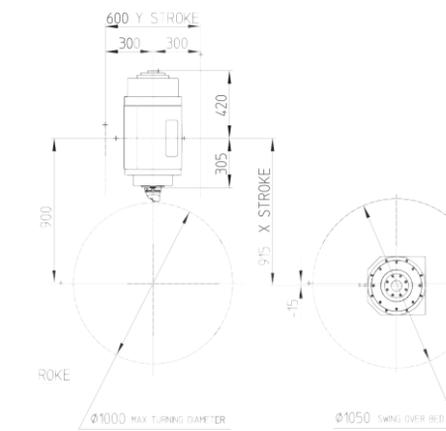
Indications in millimetres

WORK AREA

Work area HT200 PM as standard



Indications in millimetres



		MACHINE LENGTH			
		3000	4000	5000	6000
A	A	3100	4100	5100	6100
B	B	3200	4200	5200	6200
C	C	3000	4000	/	/
D	D	2100	3100	4100	5100

TECHNICAL DATA

Work area

Swing diameter over the bed	1050 mm
Max. turning diameter	1000 mm
Distance between spindle and center (MK 6)	3200 / 4200 / 5200 / 6200 mm
Stroke X-axis	915 mm
Stroke Z-axis	3100 / 4100 / 5100 / 6100 mm
Stroke Y-axis	+/- 300 mm

Main spindle and counter spindle (optional)

Spindle connection (DIN 55026)	A2-15" (A2-11")
Power chuck diameter	500 / 630 / 800 mm
Max. spindle speed (with gear)	1800 rpm (2500 rpm)
Max. power	84 kW (53 kW)
Max. torque	6410 Nm (4400 Nm)
Max. weight including feed	1500 kg (700 kg)
Max. weight between the centers including feed	6000 kg (2500 kg)

Tailstock with quill

Travel without steady rest	2100 / 3100 / 4100 / 5100 mm
Quill travel	250 mm
Quill diameter	200 mm
Max. contact pressure	40000 N
Tailstock travel speed	15 m/min
Bore tape dimension (integrated bearing)	MK 6

X-, Z-, Y-axis

Rapid traverse speed X/Y/Z	30 / 30 / 30 m/min
Feed force X	30000 N
Feed force Z	30000 N
Feed force Y	20000 N
Diameter X-axis ball screw x pitch (2 times)	63 x 20 mm

C-axis of main spindle

Angular resolution	0,001°
Max. torque	5000 Nm
Spindle brake - holding torque	6000 Nm
Max. speed	100 U/min

Milling spindle / B-axis

Tool system	HSK-T 100 / PSC80 (Capto C8)
Max. drive power	80 kW
Max. spindle speed (opt.)	6500 (10000) rpm
Max. torque (opt.)	630 (340) Nm
B-axis stroke	240°
Rapid traverse speed, B-axis	50 rpm
Max. torque with B-axis indexation	15000 Nm
Max. torque with B-axis interpolation	2130 Nm
Smallest indexation	2,5°
Smallest B-axis increment	0,001°

Tool magazine

Tool magazine positions	50 – 100 – 200
Max. tool length	600 mm (opt. 3x1000-1500 mm)
Max. tool diameter	120 mm
Max. turning tool weight	25 kg

Coolant system

Coolant pressure	40 / 20 bar
Flow rate at 20 bar	30 l
Filter system	40 micron
Coolant tank capacity	1400 l

Power consumption

Power rating	125 kVA
Compressed air connection	6 bar

Dimensions

Height above floor	1550 mm
Total length with chip conveyor and cooling system	12654 – 15654 mm
Height	3400 mm
Width with control panel	4200 mm
Weight (depending on the type and accessories)	40 / 55 t
Transport dimensions L x H x W	10,5 / 13,5 x 3,5 x 3,2 m

beyond standard /

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