emco group

Designed for your profit

HYPERTURN 95/110

The new generation of ‘multitasking machines’ for the highest levels of productivity and flexibility

TURNING

EMCO-WORLD.COM

HYPERTU

1 MAIN SPINDLE

- A choice of 2 spindle solutions: A2-8, A2-11
- Main drive power of up to 52 kW (A2-11)
- High torque of up to 2480 Nm (A2-11)
- Large speed range of up to 3500 rpm (A2-8)
- Bar capacity diameter 95 mm (A2-8)
- Liquid-cooled headstock
- Stable and robust spindle bearings

2 CONTROL UNIT

- Sinumerik 840D sl
- USB interface on the control panel
- Emco diagnosis
- Pivotable and mobile
- Clear arrangement of function keys
- Large monitor and PC keyboard, optional

3 TOOL MAGAZINE

- Integrated tool magazine with 40/80 positions
- Easy access for inspection and manual magazine loading

4 MACHINE COVER

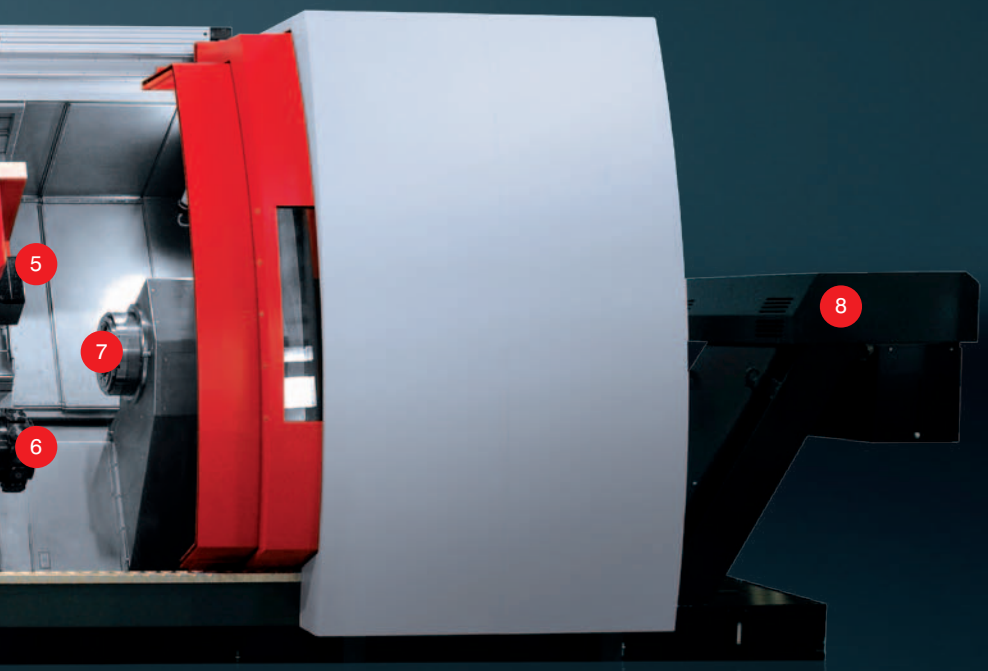
- All-round protection
- Optimum accessibility
- Large work space opening
- Suitable for top-loading
- Chip conveyor and HD coolant pumps as standard

Shaft
(steel)

Connection nozzle
(stainless steel)

RN 95/110

The Hyperturn 95/110 was designed to enable further increases in productivity in mass production. Whether rod, shaft, flange, or cubic parts, the modular design of the many Hyperturn 95/110 models enables them to cover a wide range of machining tasks.
They are particularly suited to the series production of workpieces in the automotive industry, mechanical engineering, plain-bearing technology, and aviation.



5 UPPER TOOL TURRET

- Compact milling spindle
- Speed range up to 7000 rpm
- Latest spindle motor technology
- High torque of up to 128 Nm
- Internal coolant supply of up to 80 bar
- Quick tool change
- Large and easy to program travel range
- 12-station tool turret available
- Both spindles in use
- Y axis stroke +/- 120 mm

6 LOWER TOOL TURRET

- 12-station tool turret
- Max. turning diameter of up to 650 mm
- Fully covered guides
- VDI40 quick-change system
- 12 driven tool stations
- Servo-controlled - short indexing times
- Both spindles in use

7 COUNTER SPINDLEL

- A choice of 2 spindle solutions: A2-8, A2-11
- Up to 42 kW power with high torque of up to 1040 Nm (A2-11)
- Large speed range of up to 3500 rpm and up to 30 KW power (A2-8)
- Same connection for main and counter spindle
- Partial hollow clamping
- Liquid-cooled headstock
- Stable and robust spindle bearings

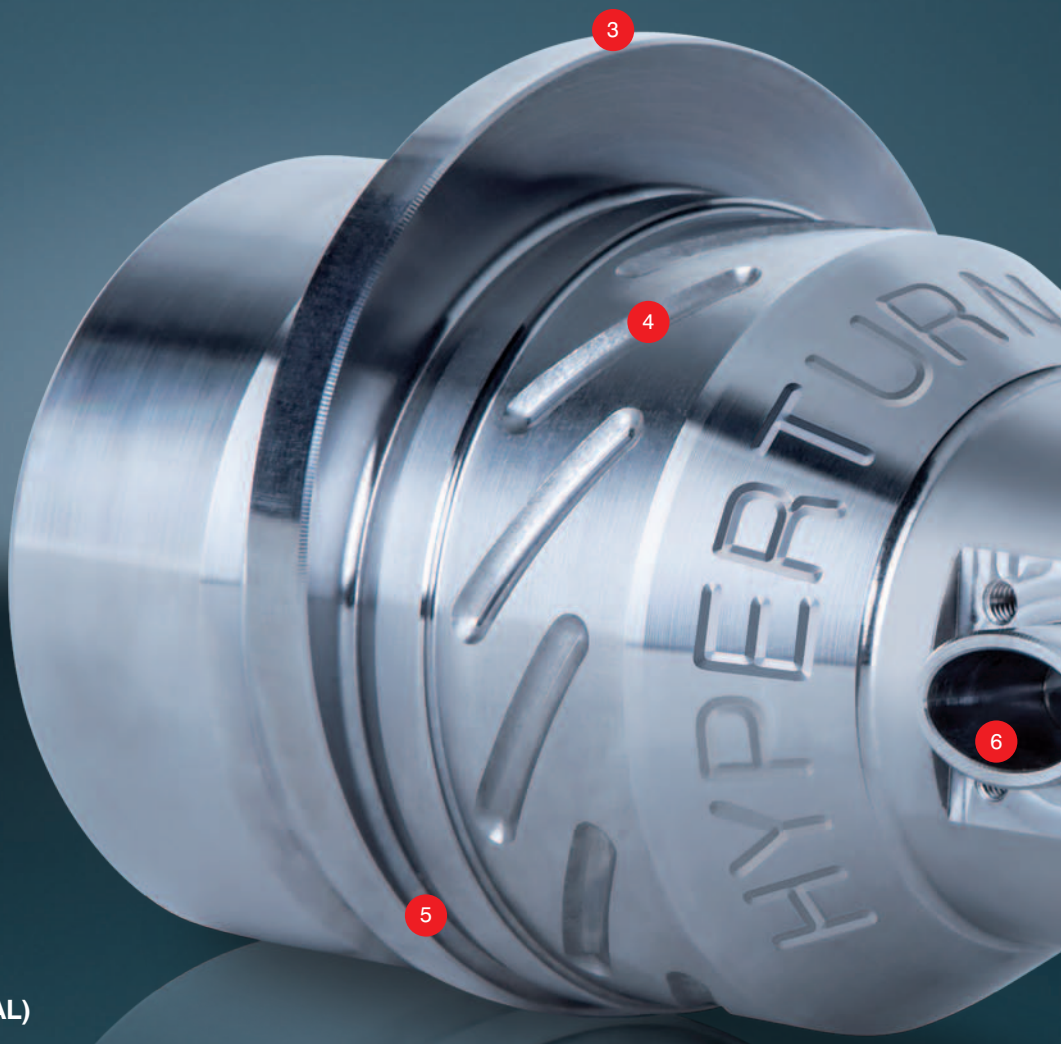
8 CHIP CONVEYOR

- Slat-band conveyor belt
- Integrated coolant tank 690/740 l
- Turret pumps 2 x 14 bar
- Flushing pumps 2 x 6 bar

Radial cam housing
(tempered steel)

Hyper-Flexibility

1. THREAD MILLING
2. 3D FREE-FORM MILLING
3. TURN-MILLING OF ECCENTRICAL DIAMETER
4. MILLING SLANT SLOTS
5. UNDERCUT FORM E/F
6. CONTOUR MILLING (ELLIPTICAL)
7. HOLE PATTERNS CENTERING, DRILLING, TAPPING RESP. GROOVING



Machine flexibility is often sacrificed for the sake of productivity. Not with the HYPERTURN: with its high-performance and exceptionally mobile milling spindle and an almost inexhaustible tool magazine, the HYPERTURN can do nearly anything - and very quickly.

8 **GEAR MACHINING (GEAR HOBBING)**

9 **CIRCULAR SPITGOT MILLING**

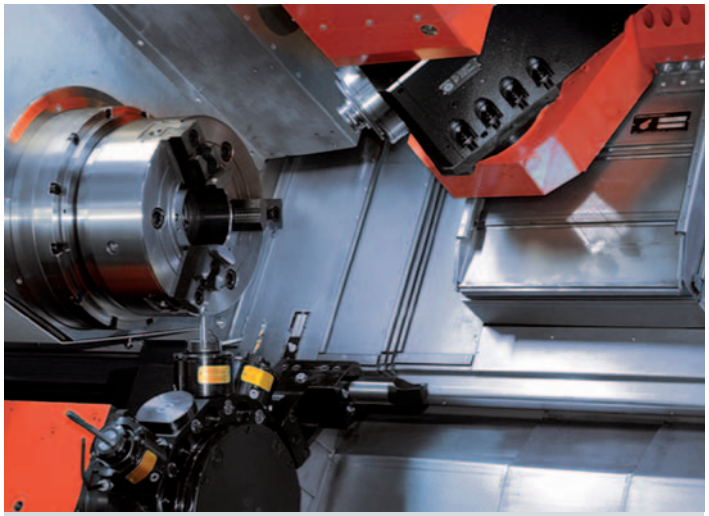
10 **DEEP-HOLE DRILLING**

11 **I.D. GROOVING**

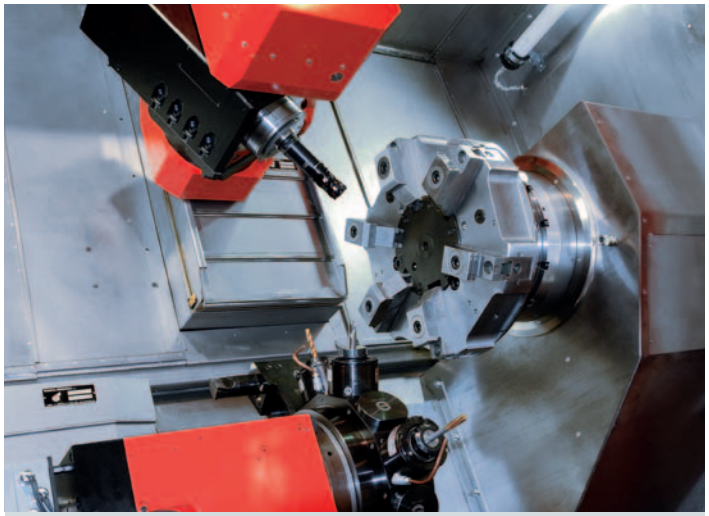
12 **I.D. THREADING**

13 **I.D. BORING**

14 **AUTOMATED IN-PROCESS MEASURING**



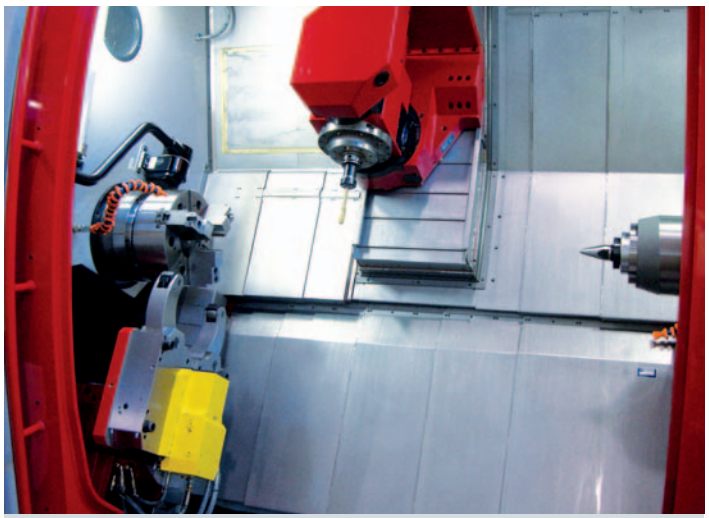
Main spindle view with clamping device Ø 315 mm and milling spindle. The lower tool turret is unrestricted when machining workpieces with large diameters.



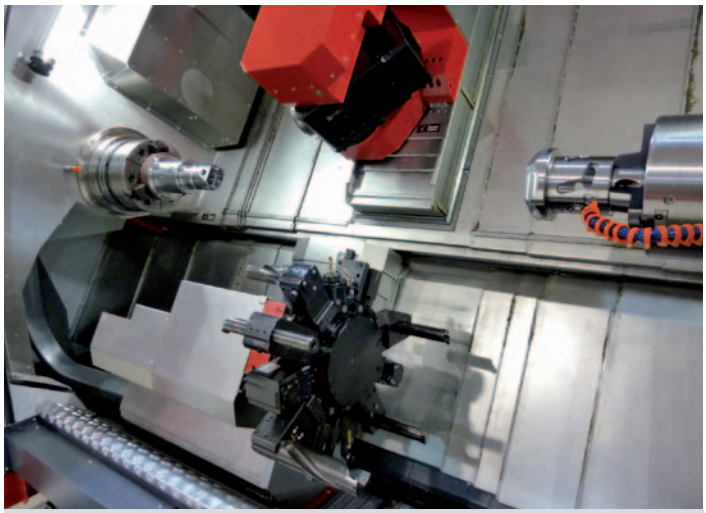
Counter spindle view with 6-position jaw chuck Ø 500 mm. The upper turret is replaced by a 21 kW liquid-cooled milling spindle in the B axis version. The B axis travel range is 205°. This is infinitely variable with 0.001° resolution. In addition, the B axis can be clamped in any position with 5° indexing.

The work area provides the highest level of ergonomics with excellent accessibility to the individual components. Generous amounts of free space ensure optimal chip flow, even when machining complex materials. All guides are covered in stainless steel sheets to prevent damage.

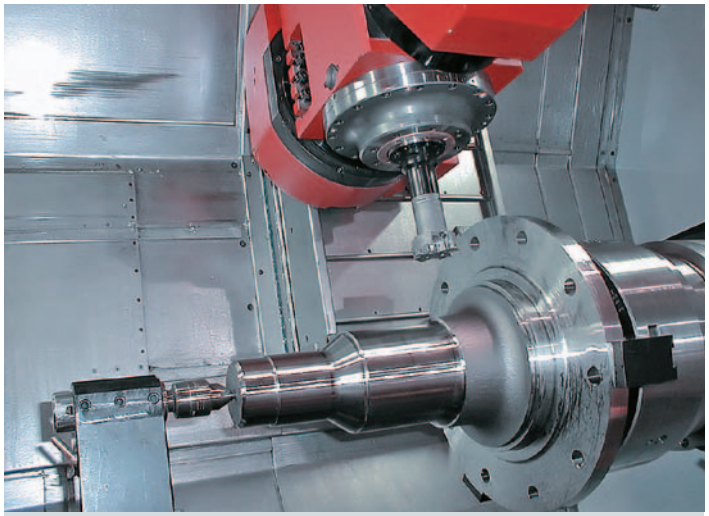
HYPERTURN 95/110
Technical



The modular machine concept also enables the use of a tailstock in combination with an NC-controlled steady rest instead of the lower tool turret, depending on the customer's requirements. The steady rest can be hydraulically lowered 250 mm if required.



Tool turret: Fast indexing 12 station tool turret for standardized VDI40 or CDI80 (CAPTO) tooling. All stations can be used with driven tools for drilling, milling and tapping operation. The turret indexing movement can be controlled by the operator at any time. Max. turning diameter for lower turret is 650 mm.



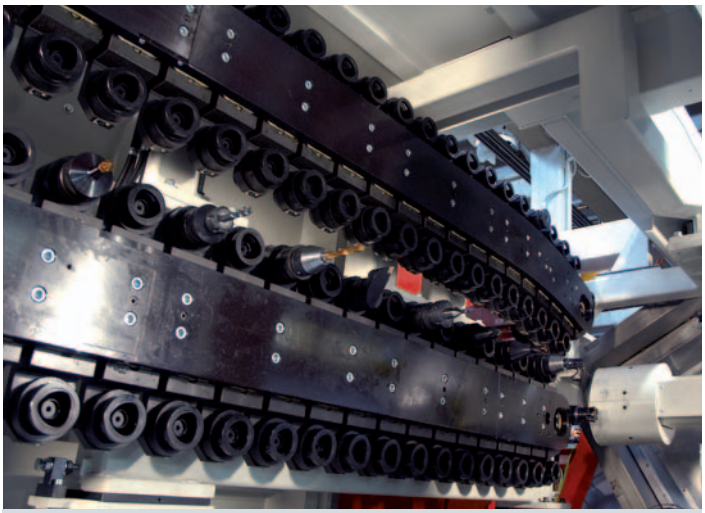
The lower tool turret can be fitted with a live center point and can act as a tailstock for machining large workpieces.

For complex, complete machining, the system uses a modular, building block system with two base lengths (1700 or 2300 mm), two spindle sizes, with a milling spindle and a B-axis or with two turrets.

Highlights

Highlights

- **Main and counter spindle for complex complete machining**
- **Two tool turrets with VDI rapid change system, high pressure and/or hydraulic steady rest**
- **Large work area for optimal ergonomics and a wider range of parts**
- **Stable and precise C-axis for accurate contour milling and milling-turning work**
- **Strong Y-axis with a large stroke**
- **Dynamic B-axis with “PowerMill” milling spindle for maximum flexibility**
- **Full NC tailstock with integrated quill for complete machining of shafts**



Tool magazine with 80 pockets integrated to machine layout.

Turret steady rest: Hydraulically operated steady rest for diameter 8 – 125 mm to guarantee highest flexibility when machining shafts.

Automatic return on investment

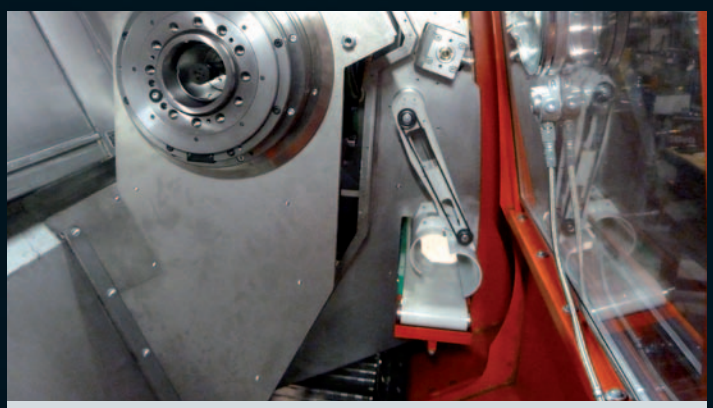
As a highly productive industrial machine, the EMCO Hyperturn needs high-performance automation peripherals. The LM 1500 short bar loader is the perfect solution for automatic feeding and loading of cut-to-length bars. With a small footprint and short loading times this loader can be used immediately as a plug-and-play solution. A dedicated control unit guarantees the perfect connection to the machine interface. The LM 1500 offers comprehensive cycle support and is aligned to the machine spindle length. It may also be used to load individual workpieces.

Technical data	SL1500
Bar diameter	Ø 16 – 95 mm
Max. bar length	1550 mm
Min. bar length	150 mm
Material support	approx. 550 mm
Feed rate	0 – 60 m/min
Bar change time	approx. 14 sec
Dimensions (L x W)	2500 x 1140 mm
Weight	approx. 550 kg

The benefits

- Small footprint
- Easy to operate
- Short feed times
- Fast, straightforward changeover
- Option to load individual workpieces
- Central diameter adjustment
- Dedicated control unit
- Bar stock is placed and stored at front side

Infeed belt with prismatic rollers



Parts catcher with conveyor: Finished parts are ejected with a coolant fed part ejector into the parts catcher and transferred with a conveyor to a storage area.

The EMCO gantry loader. Individual process optimization.

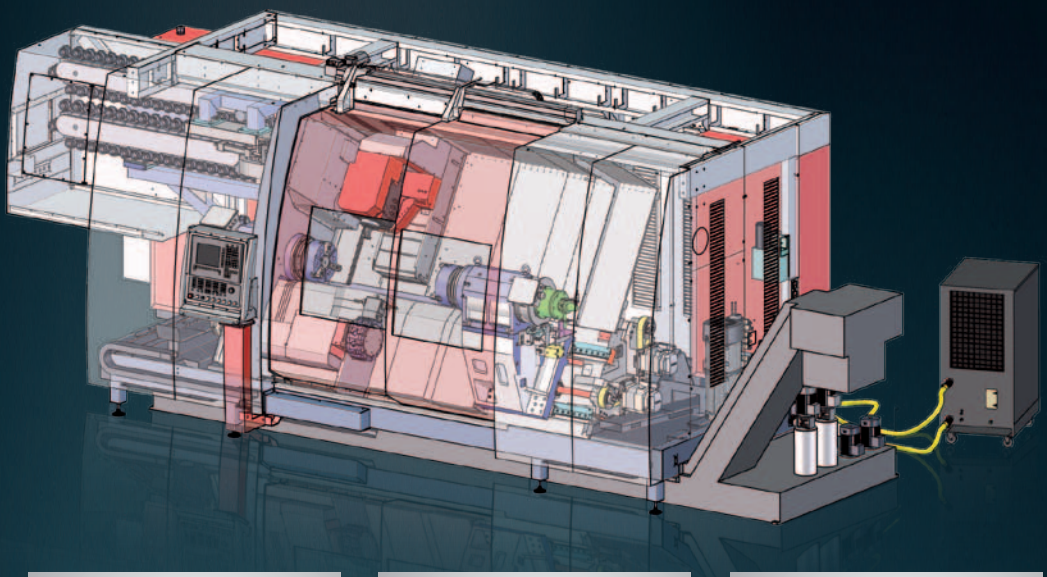
1 **GANTRY LOADER**

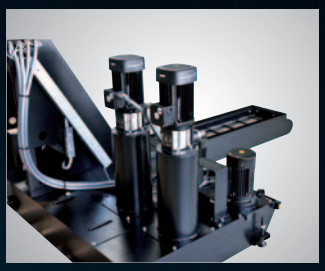
2 **PALLET MAGAZINE**

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.
- Short spare time due to a load

Quality Components





Coolant pumps

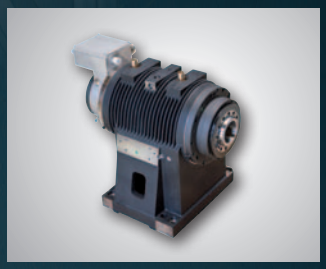
Low-maintenance immersion pumps for pressures of up to 25 bar and flow rates of up to 1500 l/min provide optimum conditions for machining and enable reliable chip transportation.

Clamping cylinder / chuck

Hydraulically activated clamping cylinders and chucks guarantee the precise, safe clamping of work pieces. Programmable sensors are used for stroke monitoring. There is no need for time-consuming adjustments of contactless limit switches.

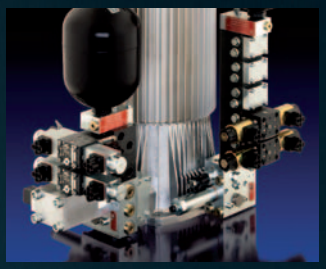
Tool holder

Innovative, fully developed tool holder systems form the basis for cost-effective machining. High changeover accuracy and stability result in short setup and cycle times.



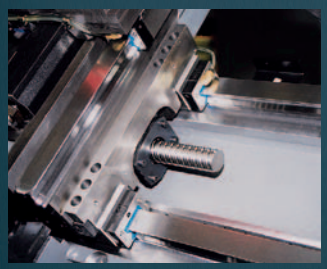
Headstocks

The design and manufacture of headstocks are two of EMCO's core competencies. During engineering, the focus is on precision, robustness, high rigidity, precise rotational characteristics, and a long service life.



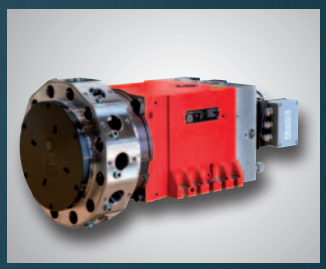
Hydraulic systems

Compact dimensions, quiet operation, and high energy efficiency - just some of the advantages of the hydraulic assemblies used by EMCO. Monitored pressure switches prevent the need for time-consuming manual pressure adjustments.



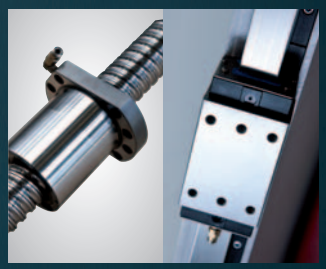
Machine bases and slides

When matching components, we place great value on high stability, good damping characteristics, and a thermoneutral design. We achieve high stability through a shorter force flow, thermal stability through symmetry, and dampening through the materials and interfaces selected.



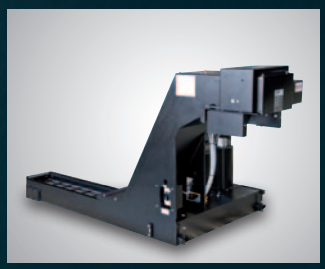
Tool turret

Rapid-indexing turrets with adjustable swivel speeds and milling drives represent the current state of the art. The backlash-free milling drive is not only ideal for milling and drilling, but also for rigid tapping, hobbing, and polygonal turning.



Ball screws and roller guides

Highly precise and generously dimensioned guide rails and ball screws with optimal pretensioning form the basis for the machining of precision parts



Chip conveyor

Slat band conveyors allow for flexible implementation and the safe removal of chips. A monitored overload clutch prevents damage from improper use.

Minimum use of resources for maximum profit.

E[M]COLOGY
Designed for Efficiency

At EMCO, we take a consistent, responsible approach to the use of resources in machine tools in order to safeguard long-term investments. From the development of our machines through to their construction and manufacture, we place a strong focus on the sensible and sparing use of raw materials and energy. This enables us to achieve parallel savings in two areas:

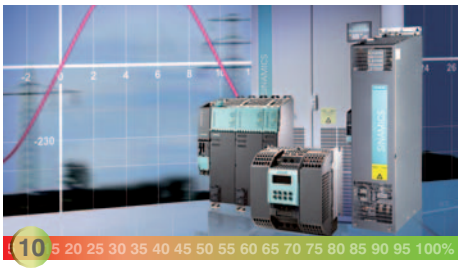
1. Reduction in the basic power consumption of machine tools, e.g. assemblies are switched on and off as required and the installed connected loads are kept to a minimum.

2. Reduction in variable consumption: This can be seen in the lighter axes, energy recovery system, increased rate of good parts, and the shorter process chain enabled by complete machining.

Through these measures, which are constantly being refined and further optimized, EMCO truly demonstrates that its slogan of „Designed for your Profit“ is not just an empty promise: EMCO products help save the environment and provide intelligent customer savings without compromising on quality and flexibility.

[Regenerative drive system]

Kinetic energy is converted into electrical energy and fed back into the grid.
Savings of up to 10%

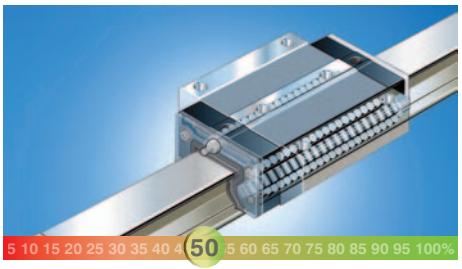


[Compact hydraulics unit with pressure accumulator]

Thanks to its accumulator charging system, the pump only runs when required. If the pressure accumulator is full, the pump switches over to closed loop circulation.
Savings of up to 90%

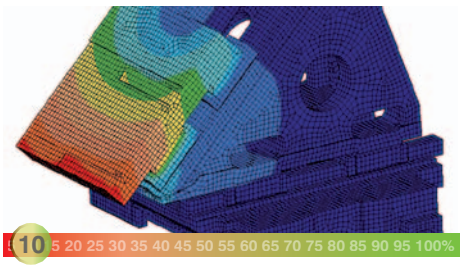
[Roller guides]

Extremely low friction losses thanks to rolling friction. Highly dynamic performance with minimal lubricant consumption.
Savings of up to 50%



[Structurally optimized mechanics]

FEM analysis is used to optimize the relevant components in terms of their rigidity while simultaneously reducing their weight.
Savings of up to 10%

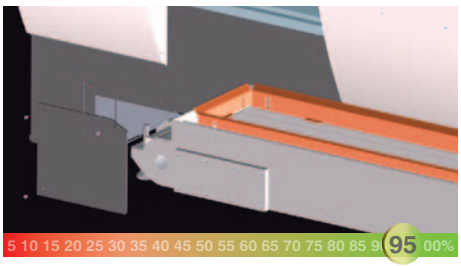


[Highly efficient motors]

The use of energy-efficient motors (IE2) in the coolant preparation area guarantee highly cost-effective operation.
Savings of up to 10%

[Synchronized chip conveyor]

Programmable interval times enable optimal use of the chip conveyor independently of of the machining process.
Savings of up to 95%

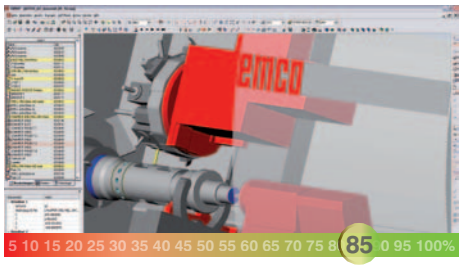


[Intelligent standby concepts]

Reduced consumption by automatically switching off ancillary units and machine space/screen illumination after a defined period of inactivity on the control panel.
Savings of up to 50%

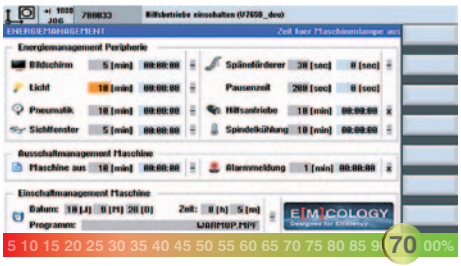
[Virtual machine]

Significant reduction in the setup and running-in times on the machine through the use of highly developed simulation and programming software.
Savings of up to 85%



[Intelligent energy management]

Intuitive data entry screens for activating the individual energy-saving functions.
Savings of up to 70%



emcoNNECT

YOUR GUIDE IN TECHNOLOGY

Your „Control Cent
the ent

DASHBOARD – For a Quick Overview of the Machine Status

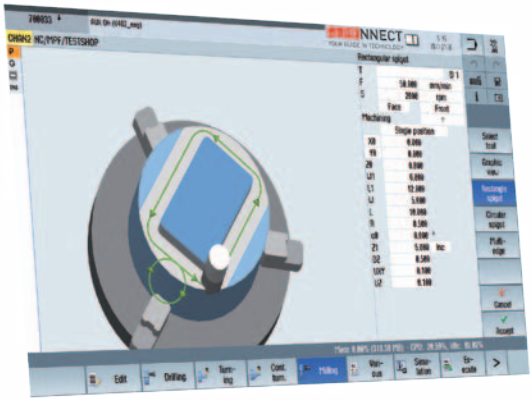
Clear and compact processing of all relevant machine and NC data depending on the configuration of the machine (number of tool systems, spindles, ...) and the active operating mode (JOG, MDA, AUTO). Know at a glance whether everything is OK or whether the machine operator will be required to interact.

emcoNNECT‘s hardware basis is a 22" industrial touch control panel combined with an industrial PC (IPC).

Highlights

- Direct interaction between EMCO Apps and the control
- Intuitive user interface optimized for touch control
- Range of available applications is continuously being expanded
- Customised and project-specific applications
- Optimized for the EMCO machine range
- emcoNNECT allows for easy and quick configuration and updating

er“ for
tire production flow



SINUMERIK - the Control and the Machine‘s Centerpiece

Thanks to the App Launcher operators may switch between the emcoNNECT Apps and the control at any time. All it takes to do so is a click on the emcoNNECT logo. To improve the work processes on the machine the control can, as shown in the picture, be operated in full screen mode or in interaction with practical apps (sidebar).

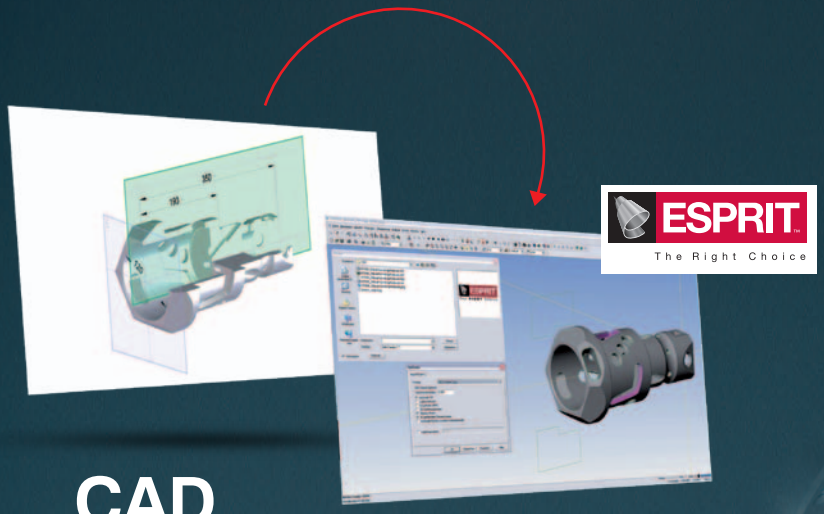
MACHINE DATA – All Data related to Productivity at a Glance

Operating data collection to inform the user about the current production status and OEE (Overall Equipment Effectiveness) values full screen or sidebar.

DOCUMENTS – A Digital and Expandable Document Collection Customised to Suit Your Individual Needs

To display PDF documents such as machine documentations, programming instructions, process descriptions …
Including favourites management - full screen or sidebar

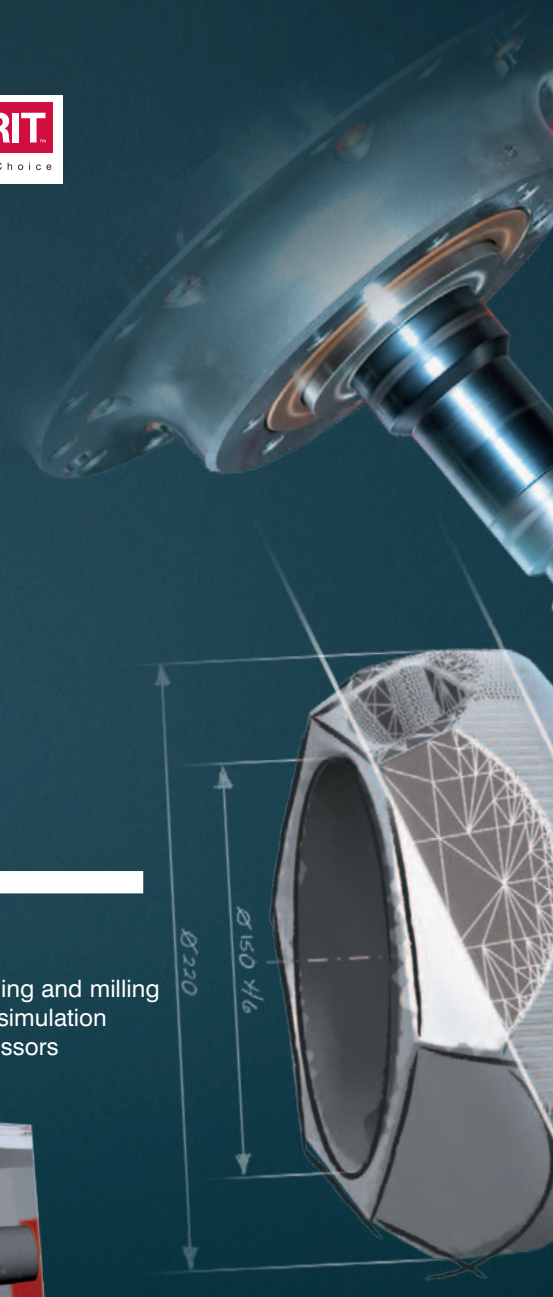
Virtual workflow.
Real benef



CAD

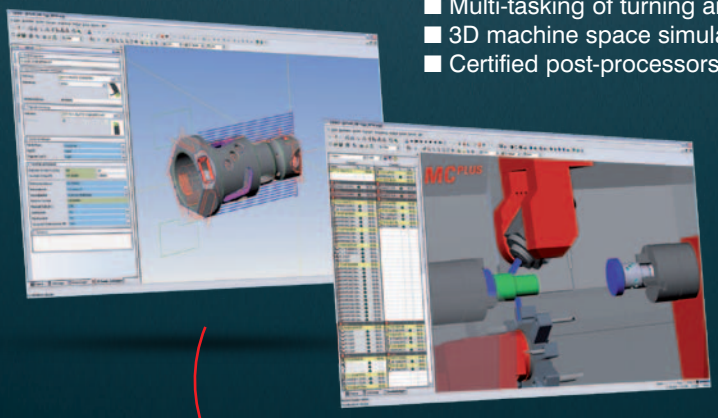
Direct CAD data import

- AutoCAD (DWG)
- Parasolid®
- Solid Edge®
- Solid Works®
- ACIS® (SAT)
- Optional interfaces: CATIA®, Pro/ENGINEER®, STEP, STL,...



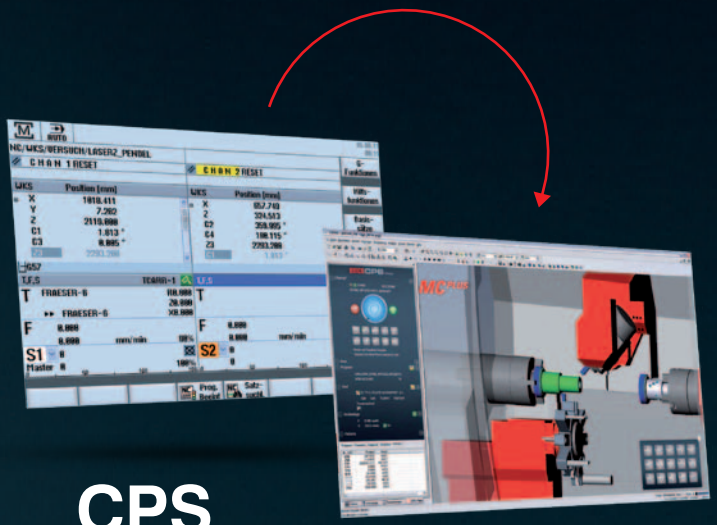
CAM

- 2-22 axis turning
- 2-5 axis milling
- Multi-tasking of turning and milling
- 3D machine space simulation
- Certified post-processors



fits.

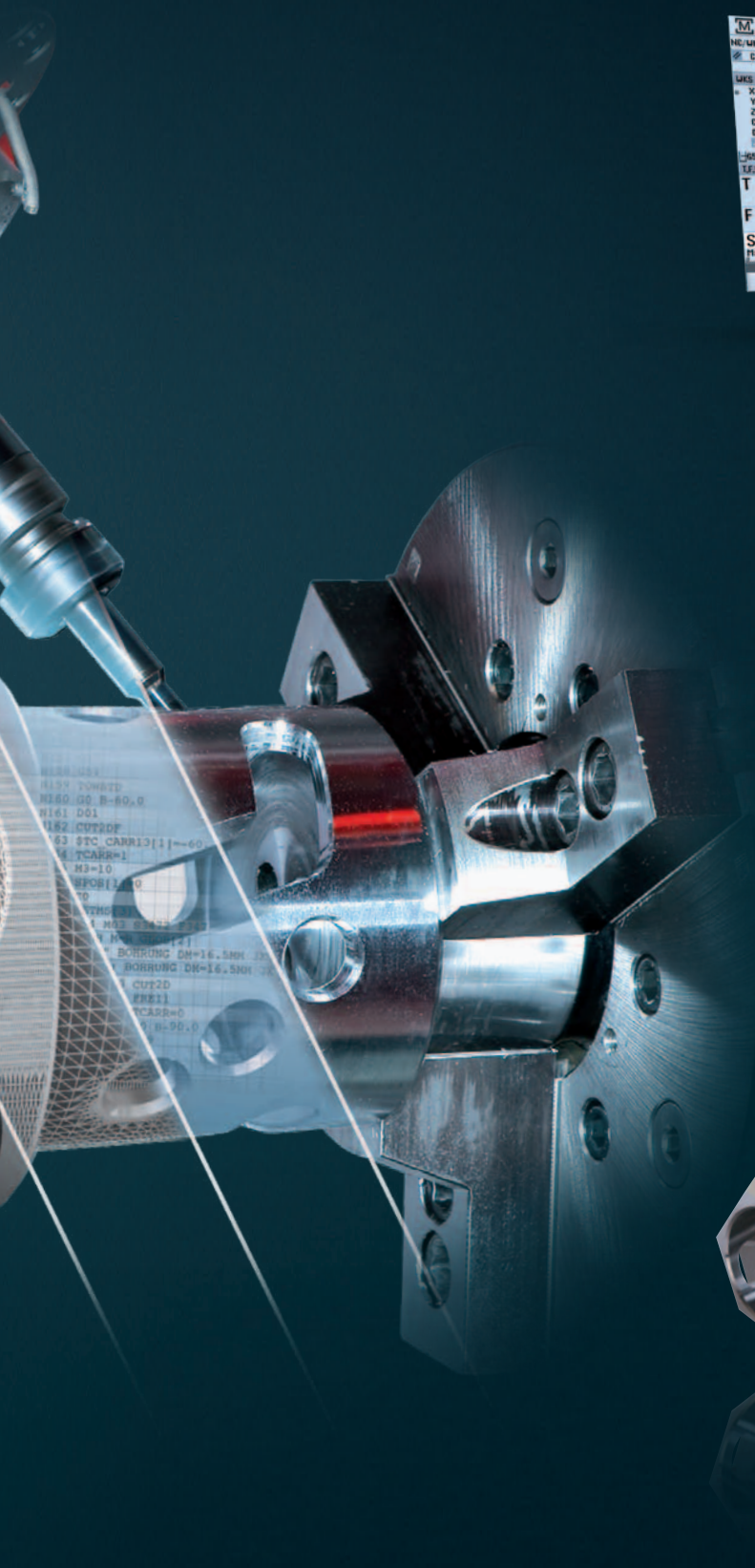
The Esprit CAM system offers high flexibility and process security, a comprehensive selection of machining cycles, maximum tool control, and cross-machine technology for your entire production facility. EMCO CPS Pilot provides for a 1:1 mapping of the real machine for defining and testing processes, optimizing machining sequences, and training new operators.



CPS

- 1:1 simulation with collision detection
- Direct connection to CAM ESPRIT
- Process optimization
- Reverse simulation of existing NC codes
- Reduction in scrap rates
- Training on the virtual machine
- Simulation of loading systems (e.g. EMCO gantry loader)

emco CPS Pilot
Die virtuelle Maschine

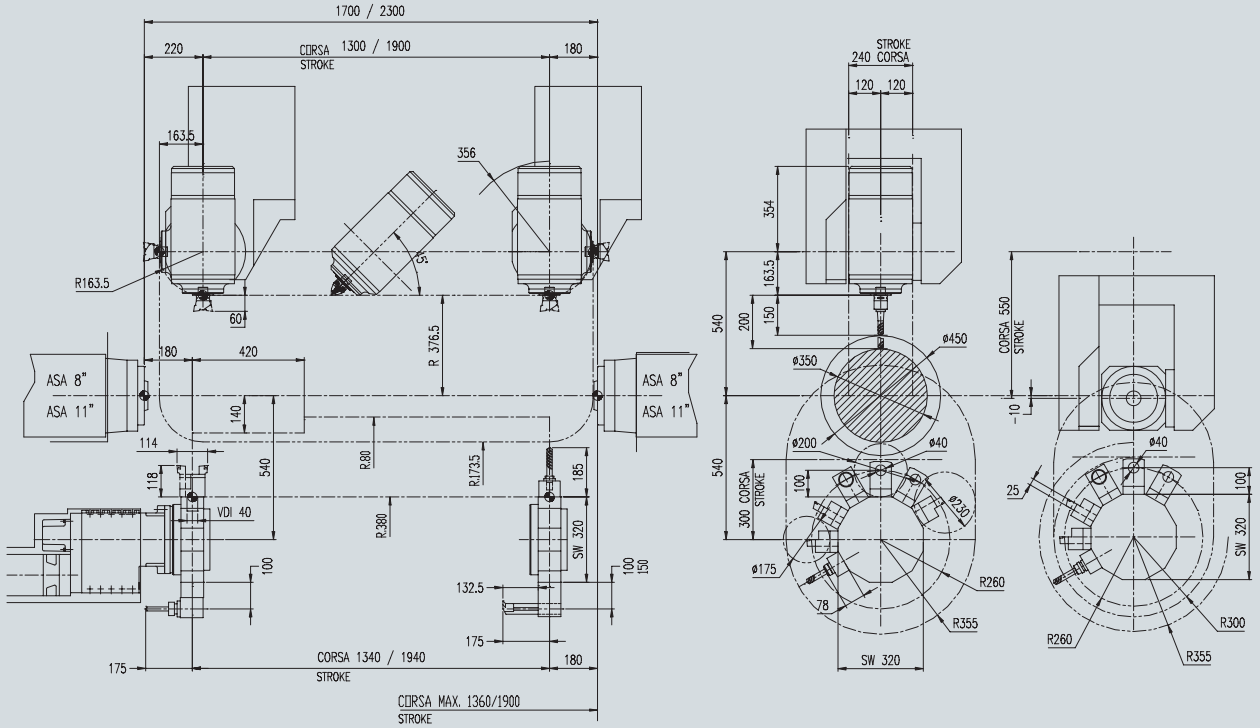


Production

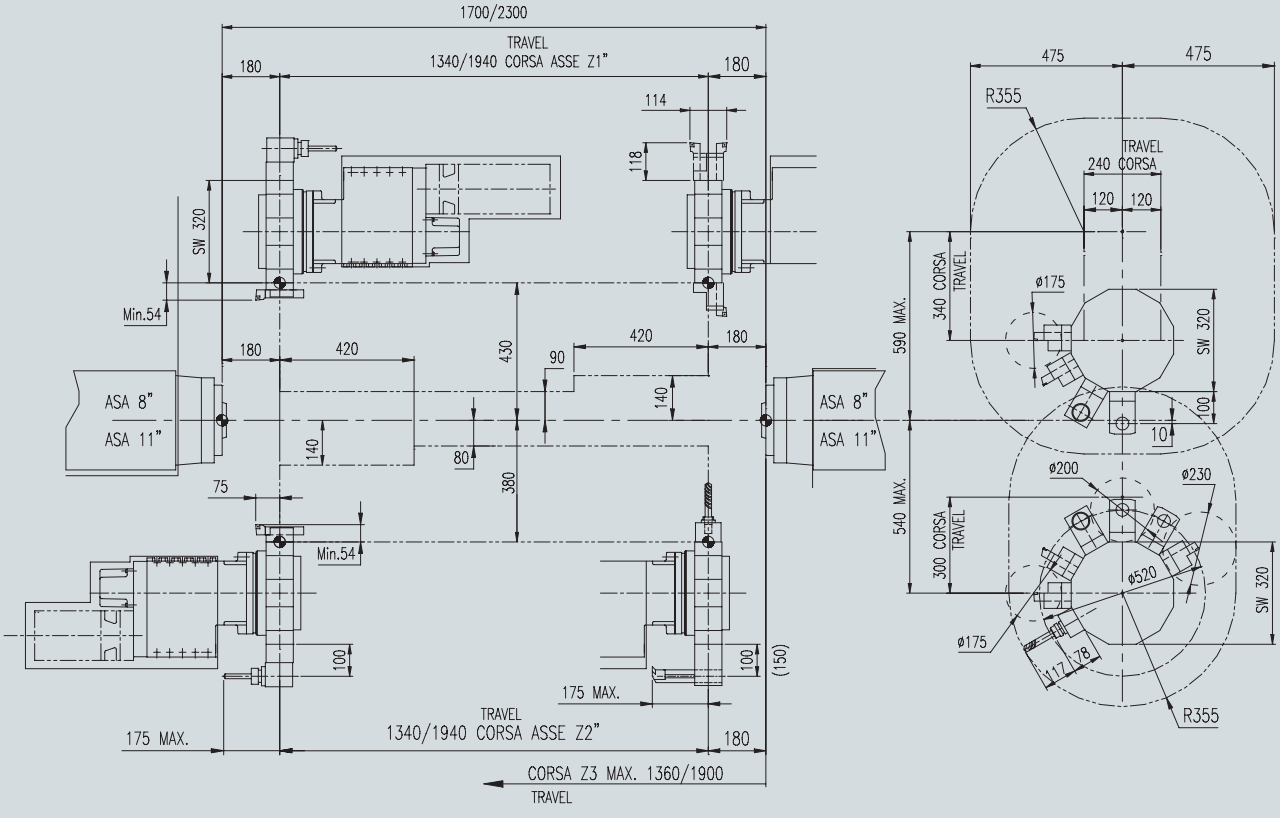
- Reduction in set-up costs
- Reduction in downtimes
- Reduction in repair costs
- Optimum machine utilization

Work area layout HYPERTURN 95/110

HYPERTURN 95/110 SMB

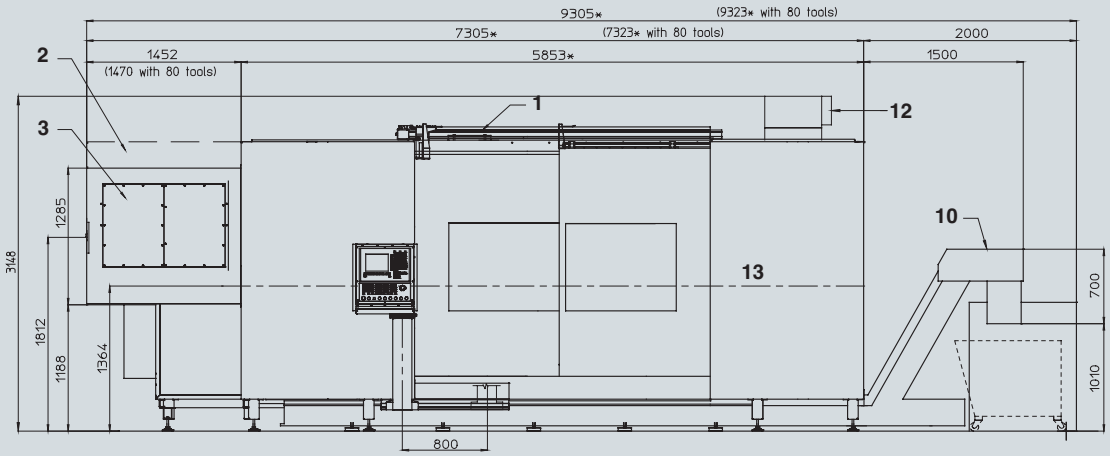


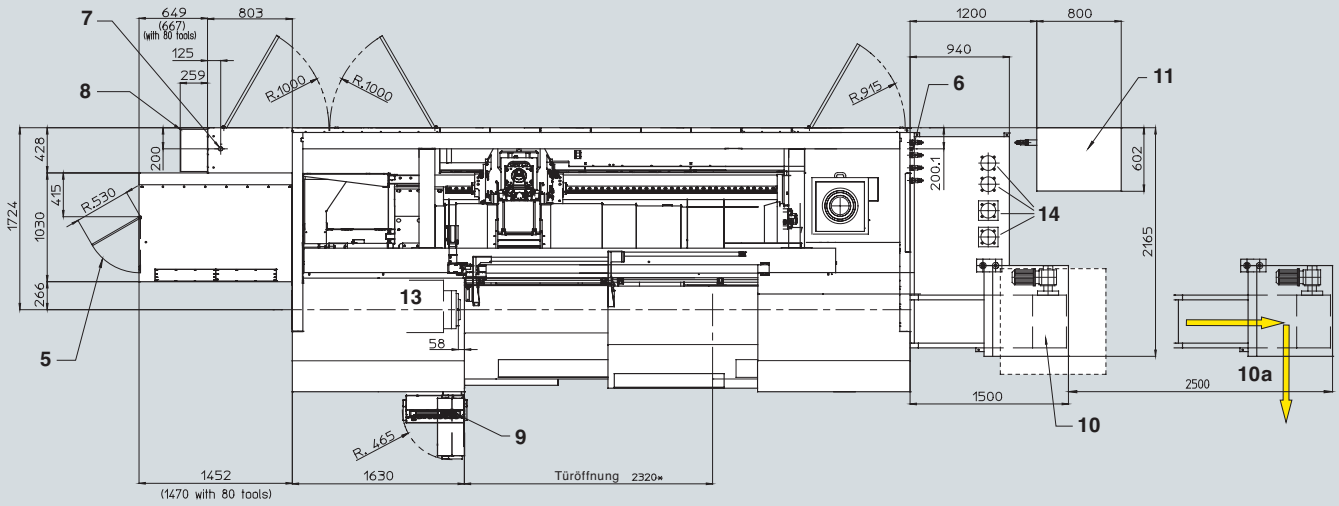
HYPERTURN 95/110 SM2Y



Indications in millimetres

Machinelayout HT95/110 SMB

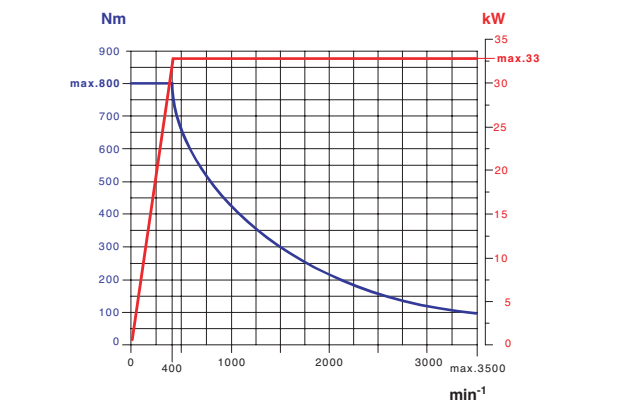




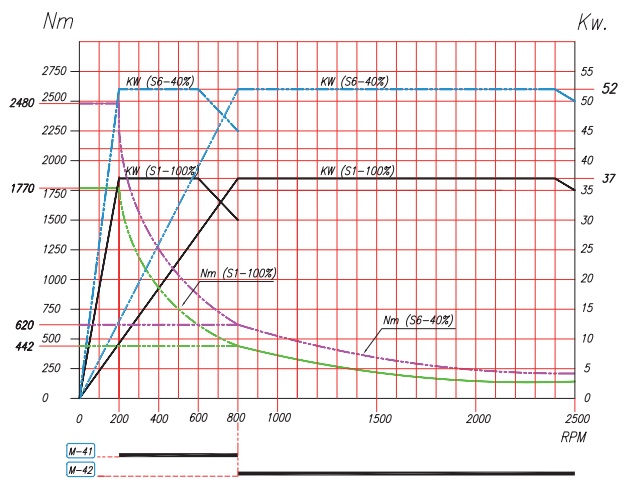
Platzbedarf für Bedienung und Wartung:
ca. 12000* x 4200 mm

Indications in millimetres

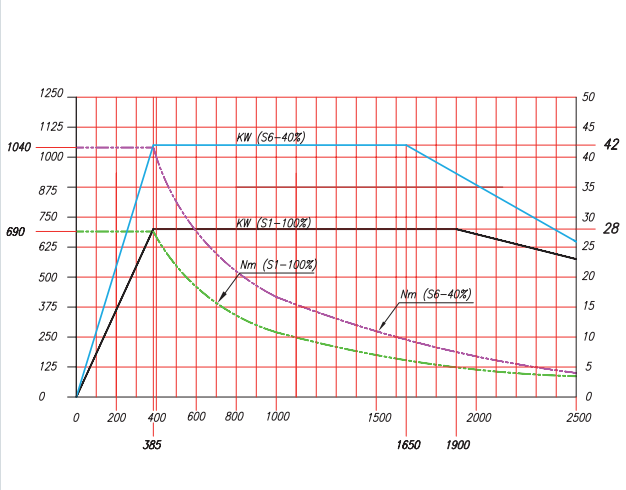
Power



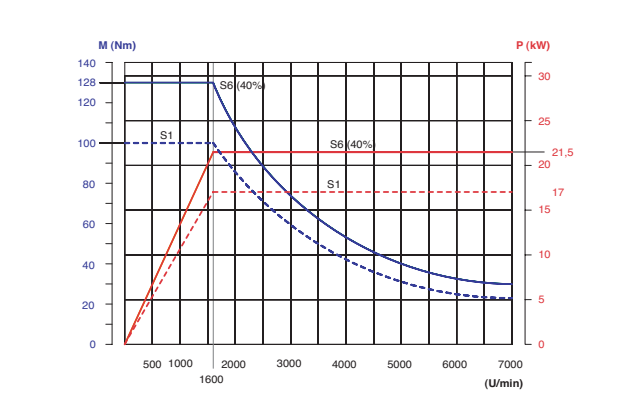
Main spindle A2-8 – counter spindle A2-8



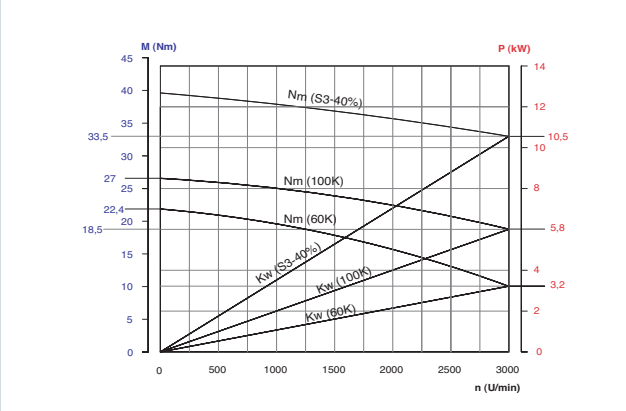
Main spindle A2-11



Counter spindle A2-11



PowerMill milling spindle



Tool turret, upper/lower

HYPERTURN 95/110

Technical Data

Work area	
Swing over bed	720 mm
Distance between spindle noses	1700 – 2300 mm
Max. Bore in Draw Tube (A2-8)	95 mm

Travel	
Travel in with milling spindle X1 / Z1	550 / 1300–1900 mm
Travel in 2 / Z2	300 / 1340–1940 mm
Y travel	240 mm (+/- 120 mm)

Main and counter spindle (A2-8)	
Maximum speed	3500 rpm
Maximum power	33 kW
Maximum torque	800 Nm

Main and counter spindle (A2-11)	
Maximum speed	2500 rpm
Maximum power - main spindle	52 kW
Maximum torque - main spindle	2480 Nm
Maximum power - counter spindle	42 kW
Maximum torque - counter spindle	1040 Nm

Tailstock	
Taper mounting (integrated bearing)	MK5
Travel in	1100 / 1600 mm
Quill stroke	150 mm
Quill diameter	150 mm

Tool turret top and bottom	
Number of tool positions	2 x 12
Tool holding shaft in accordance with VDI (DIN 69880)	40 mm

Driven tools	
Speed range	0 – 3000 rpm
Torque	40 Nm
Drive performance	10,5 kW
Driven tools	2 x 12

B-axis and PowerMill	
Travel range	210°
Tool magazine positions	40 (80 optional)
Tool holder	HSK-T63 (PSC63 optional)
Maximum torque	128 Nm
Maximum power	21,5 kW
Maximum speed	7000 (12000) rpm
Tool change time (tool - tool)	2,2 sec

Feed drives	
Rapid motion speed X / Z counter spindle	30 m/min
Rapid traverse speed in Y	15 m/min

Coolant system	
Tank volume	690 / 740 liters
Pump capacity	14 bar / 17 l/min

Dimensions	
Height of center above floor	1364 mm
Overall height	2890 mm
Space required inclusive tool magazine	8500 / 9100 x 3150 mm
Total weight	18000 – 22000 kg

Safety devices	**CE compliant**

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