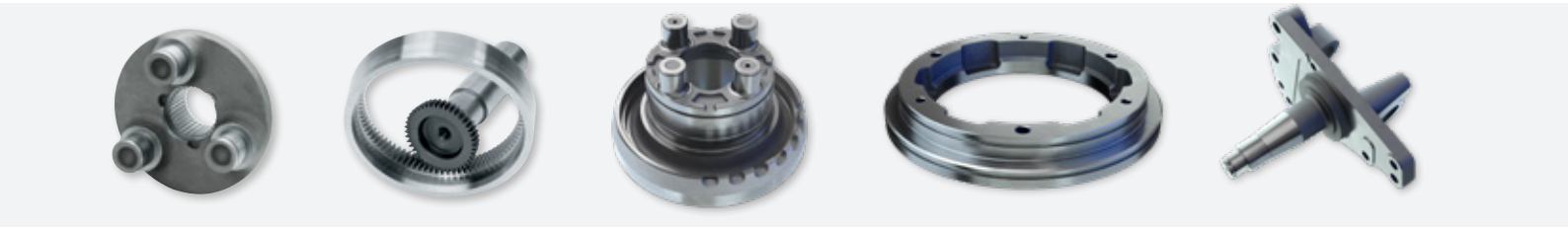
VM / VMC SERIES

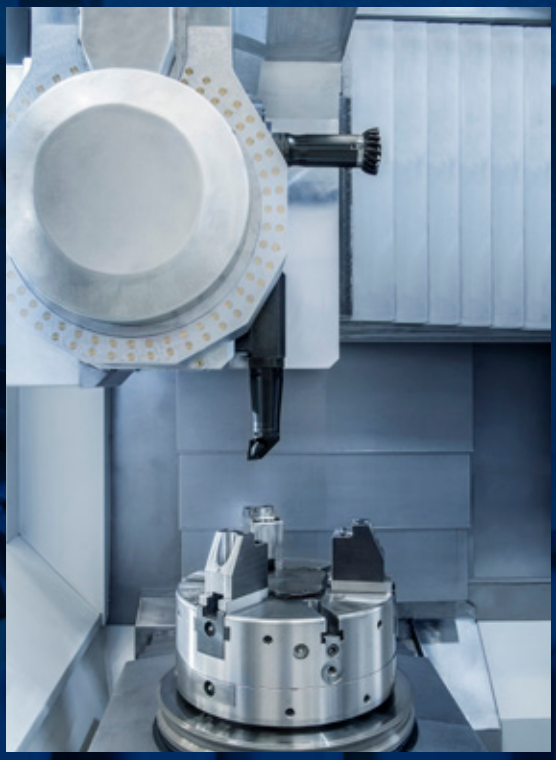


EMAG

VMC 450-5 MT

FIVE-AXES FOR COMPLEX GEOMETRIES AND MULTITECHNOLOGY

The VMC 450-5 MT allows heavy components to be produced with angled boreholes and surfaces. This machine extends the basic VMC 450 MT by two additional axes – the indexing B-axis with integrated turning/milling spindle, and a Y-axis with an integrated main spindle. These allow for the production of extremely complex workpiece geometries, and make the VMC 450-5 MT a genuine high performance production center for chucked parts.

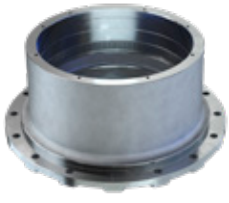


BENEFITS

+ Rigid B-axis with integrated turning/milling spindle and additional tool holder for turning tools
+ Y-axis with integrated workpiece spindle – travel distance: 14 in
+ Complete machining with hob peeling
+ Complete machining and shortening of the process chain

TECHNICAL DATA

		VMC 450 5 MT (YB)
Max. chuck diameter	mm inch	630 25
Swing diameter	mm inch	800 31
X-axis travel	mm inch	780 31
Z-axis travel	mm inch	500 20
Y-axis travel	mm inch	350 14
Indexing range B	Degrees	±95
Tool magazine	Quantity	up to 80 positions



INTEGRATED QUALITY ASSURANCE

For consistent quality management and maximum component quality, the VMC and VMC MT machines already feature several complementary measuring systems. The laser measuring bridge outside the machining area monitors the wear and diameter of the tools and always ensures that the machining process is uninterrupted. A radio probe, which is available as an interchangeable system, monitors the quality of the workpieces.

TOOL INSPECTION

+ Outside the machining area
+ Diameter check
+ Tool length
+ Inspection for fractures
+ Blade wear
+ Tip to base distance for turning tools

WORKPIECE INSPECTION

+ High-precision two-point measurement
+ High-precision workpiece positioning with direct loading by robot

HIGHLIGHTS

1 WORKPIECE SPINDLE

+ Maintenance-free direct drive with up to 3,000 rpm
+ Heavy-duty machining with torque up to 1,450 Nm
+ Maximum productivity using high performance cutting materials (CBN/ceramics)
+ Free chip flow all around the spindle
+ Ergonomic loading height

2 TURNING/MILLING SPINDLE

+ Maintenance-free direct drive with up to 12,000 rpm
+ Capto C6 and Capto C8 tool interfaces
+ Turning tools hydraulically clamped
+ For complete machining with the turning, drilling, milling, and gear cutting multitechnologies

INDUSTRY 4.0 – EMAG MACHINE STATUS

Detailed data collection and analysis of tool condition using integrated laser measuring bridge

3 TOOL CHANGE

+ Generous tool magazine for up to 80 tools
+ Shortest chip-to-chip time due to two-way gripper
+ Tool loading parallel to the machining operation
+ Automatic RFID read-write unit for default tools
+ For automated manufacturing with maximum overall equipment effectiveness (OEE)

4 QUALITY ASSURANCE SYSTEMS

+ Workpiece measurement using radio probe
+ Tool measurement using laser measuring bridge
+ Tool breakage monitoring

COMPLETE MACHINING & POWER SKIVING

COMPLETE MACHINING FOR MAXIMUM QUALITY AND PRODUCTIVITY

The VMC machines provide users with major benefits for the complete machining of complex components in a single clamping operation. A few of these include the large tool storage area, the use of different machining technology and the entire range of possibilities available to users of the VMC series.

Even a demanding technology, such as skiving, can be performed without any problems thanks to the optimal combination and precision when controlling the individual axes and modules. Maximum freedom with process design, tool concepts and machining technologies characterize the VMC series.

BENEFITS OF COMPLETE MACHINING FROM MULTITECHNOLOGY

+ Considerable cost savings thanks to:
  - » Reduced personnel costs (machine supervision, set-up)
  - » Reduced investment costs
  - » Reduced logistics costs
+ Higher process reliability and quality assurance thanks to:
  - » Minimized reclamping errors
  - » Secure and robust process
  - » Flexible usage in machining different components
+ Higher equipment effectiveness (OEE)
  - » More quality products per unit of time

BENEFITS OF SKIVING TECHNOLOGY

+ Higher quality: Pre-machining of the tip circle diameter and subsequent gear cutting in a single clamping operation
+ High productivity: Faster machining than conventional turning & gear shaping
+ Simple handling: No parts logistics between operations
+ Reduced idle times: No additional loading time
+ High flexibility: Quick, continuous machining of external and internal gears even against a plane shoulder or with indentation
+ Universal usage: Spur and helical gears are both possible