

**MIKRON
UCP 600 Vario**



GB



The MIKRON UCP 600 Vario by GF AgieCharmilles is an impressive 5-axis solution for automated production. In addition to the compact basic machine, the Vario system has a wide variety of high-performance milling spindles, a scalable, modular tool magazine system, the well-proven MIKRON pallet magazine as well as a suitable cleaning and disposal solution for each chip/coolant situation. The customer is free to decide how variable his MIKRON UCP 600 Vario should be. However, one point is guaranteed not to change - accessibility to the machine and its peripheral units is as unique as ever!

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MIKRON UCP 600 Vario

System Vario - the solution
for automated production

Applications

Wide range of workpieces...



Light Alloy Support

Aluminum

Aircraft industry

- 4-side machining in one clamping
- High spindle speed
- High cutting volumes



Forging Die for Drive Train

Manganese steel

Automotive industry

- 5-axis machining
- Difficult-to-cut material
- Micro- and needle chips
- Contouring accuracy
- High spindle speed



Endoscope Device

Moulded blank with high content of chrome/nickel

Medical technology

- Multi fixture systems
- High position and molding tolerances
- High positioning accuracy
- Difficult to cut and high-strength material



Ventilator Housing

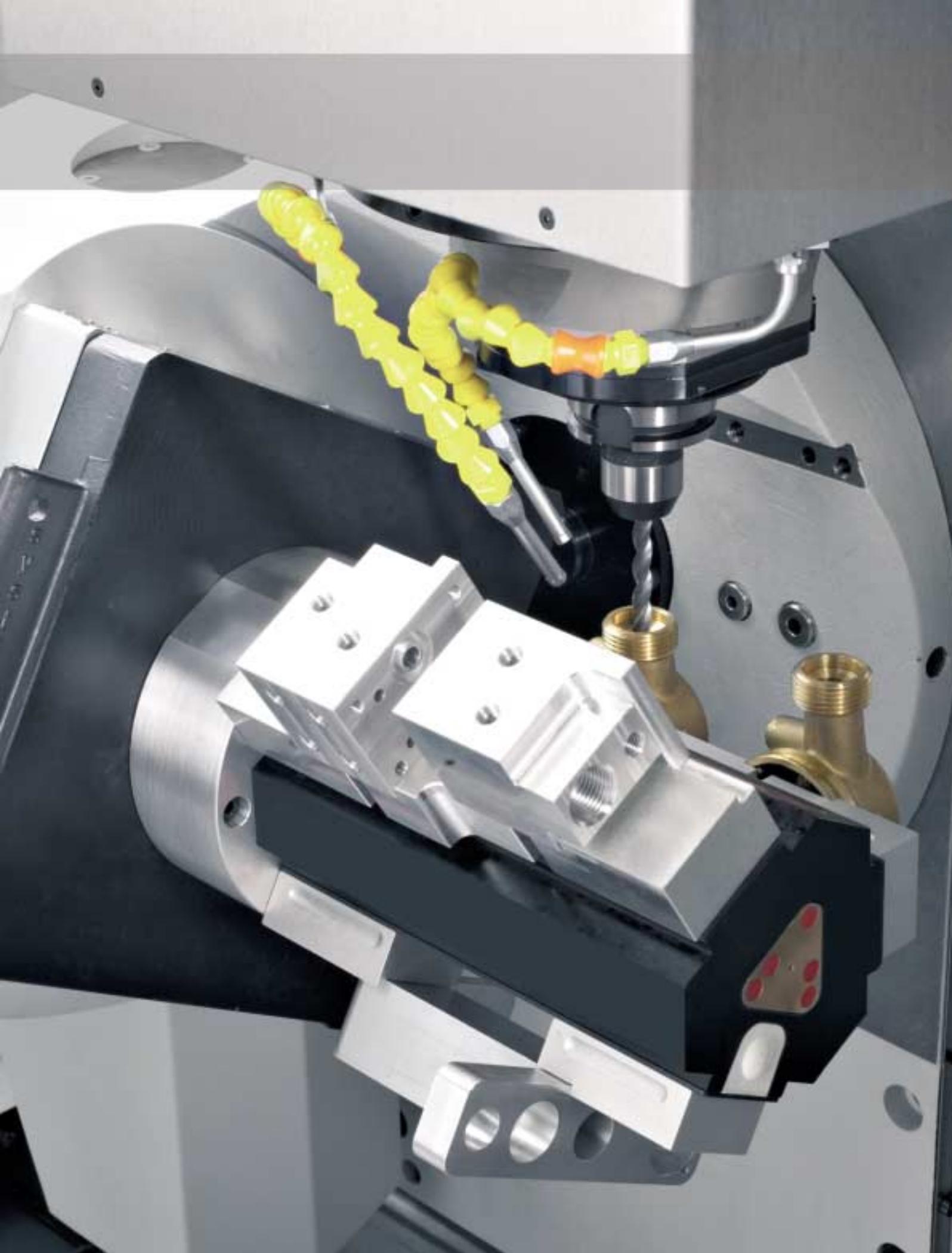
Aluminum

Ventilation technology

- 5-axis positioning machining
- High material removal rate
- High positioning accuracy
- Flexible production

The standard version of the rotary tilting table is most suitable for machining workpieces in multiple clamping devices.





Wide range of workpieces...
Specifically for 5-axis simultaneous machining

The MIKRON UCP Vario with Torque Rotary Tilting Table

for high performance 5-axis simultaneous machining.



Cylinder Head

Aluminum alloy

Motorcycle industry

- Complete machining in one clamping
- Combined 5-axis positioning/simultaneous machining
- High positional tolerance



Cutting Roller

Hardened steel

Paper industry

- High precision
- Tailstock required
- High spindle speed
- Workpiece automation possible



Bone Rasp

Special alloy

Medical technology

- High performance milling of high-alloyed materials
- Tailstock required
- Workpiece automation possible



Blower Housing

Aluminum

Aircraft industry

- High 5-axis simultaneous part
- Tailstock required
- Workpiece automation possible

Due to the Tailstock, long thin parts can also be machined on the direct driven table.





Highlights

The MIKRON UCP 600 Vario can be turned optimally to the customer's requirements



The outstanding feature of MIKRON machining centers is their exceptional ergonomics. What is impressive about the MIKRON UCP 600 Vario is its unrivalled accessibility, which is not dependent on the machine's configuration.



Software modules for efficient and controlled work



Ergonomic, effortlessly accessible, clear insight

Enthusiasm in the workplace can be bought! Due to its accessibility and view on the workpiece, the Vario series is the most valuable asset for helping employees of any company to be even more efficient.

- Impressive design - ergonomic protective cabine enclosure with large windows ensures excellent illumination and an optimal view to the machining process
- Elaborated working area design prevents a built up of chips
- Heavy workpieces can be easily loaded by crane
- Abrasion-resistant screens and the rotating viewing window ensure perfect view on the machining process at all times (option)



Full chip control

In the working area of the MIKRON UCP 600 Vario, any collection of chips is consistently avoided.

Due to the elaborate detailed engineering, chip accumulation is avoided until the flowing chips have been reliably and economically separated from the coolant and disposed of.

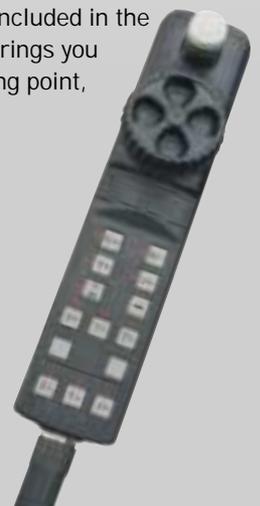
- A 400 mm wide scrapper chip conveyor removes all types of chips
- An edge filter integrated in the internal coolant system reliably separates the smallest chips from the coolant
- Overload protection with automatic return function in the event of chip build-up
- Mini belt filter to remove the finest chips from the coolant
- Easy-to-clean equipment
- Through-spindle coolant supply with belt filter and infinitely variable, adjustable pressure (18 to 70 bar)



Heidenhain digital control system

The latest generation Heidenhain iTNC 530 digital control system and a clearly structured operating panel make the MIKRON UCP 600 Vario a process-sure and user-friendly machining center:

- Process reliability including short briefing and safe operation by means of pre-defined working cycles
- Ethernet connection for fast CAM data flow
- Simple dialog-controlled programming
- Parallel programming, free contour program, free definable sub-programming
- The hand wheel included in the scope of supply brings you close to the cutting point, if required



Automation

Automatic workpiece magazine enables unmanned production.
smart machine SIGMA FMC and RNS render services.



The pallet magazine proves its superiority

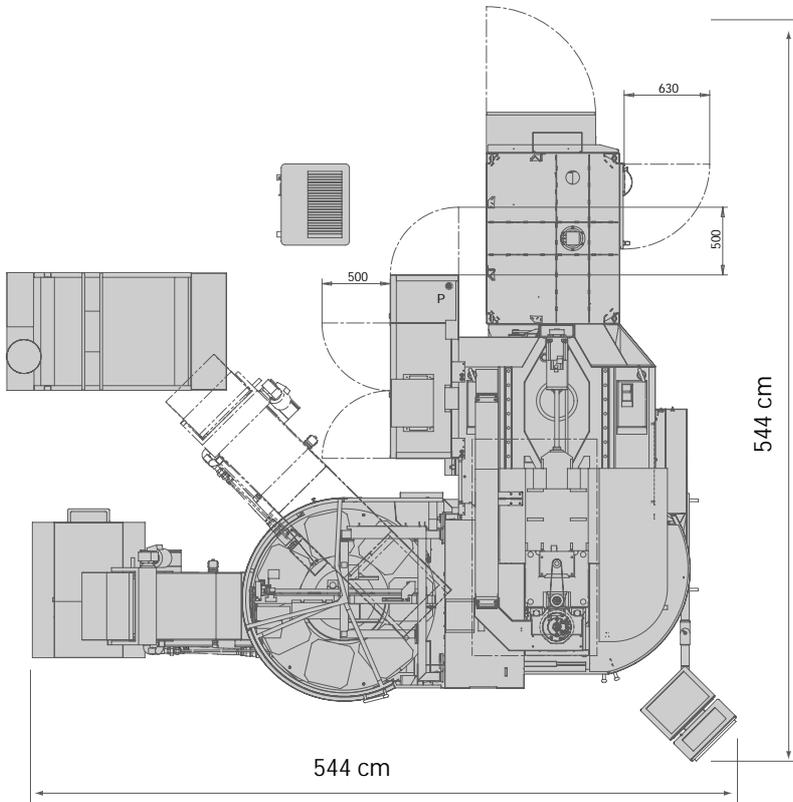
With the MIKRON UCP 600 Vario, automatic production is ensured by the low-cost integration of the pallet magazine. Supplemented with the modular tool magazine, the compact milling center becomes a highly productive and flexible manufacturing cell.

- Configuration as System 3R (Dynafix GPS) or Erowa (UPC) version. Others on request.
- Repetitive machining is executed without interruption in multi-shift operation.
- The machine's efficiency is increased with an accordingly higher profit



Tool magazine

The tool magazine is structured as a circular hanging shelf. Therefore it is almost arbitrarily scalable. 75, 120, 170 and 220 tool positions are available as standard. Separation of the central gripper from the transfer handling results in a short changing time.



We recommend: SIGMA FMC (Flexible Manufacturing Cell) and RNS (Remote Notification System). These and other Smart Machine modules ensure still more flexibility and process reliability in the production of high-quality components.



MIKRON UCP 600 Vario with workpiece automation via the WorkMaster 3R system



Interface for robot solution

An example of automation on the workpiece side of the MIKRON UCP 600 Vario via a robot solution. Due to the robot interface, the MIKRON UCP 600 Vario can be fitted with robot systems from reputable suppliers.



MIKRON
UCP 600 Vario



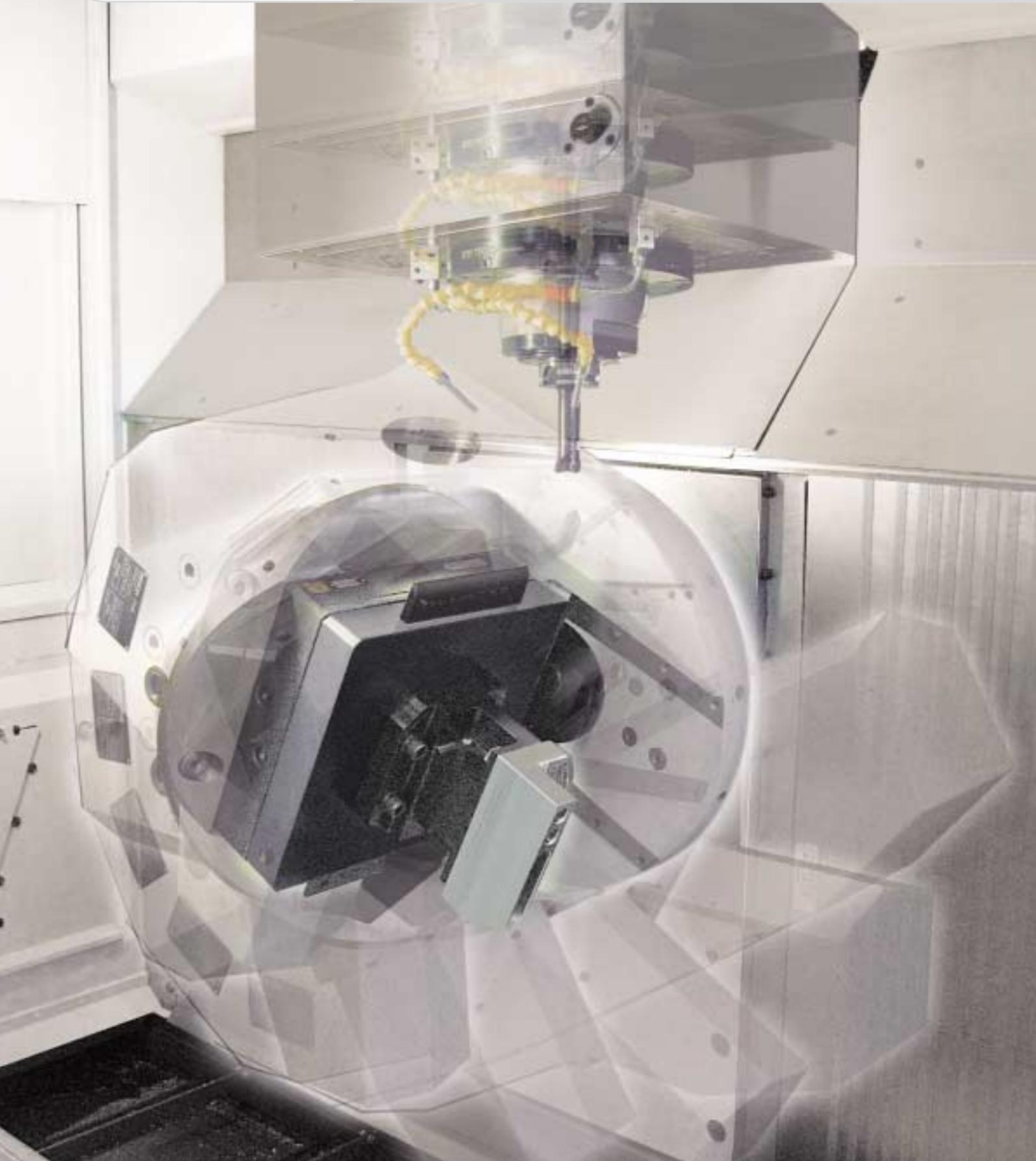
Achieve more...



MIKRON
UCP 600 Vario

Table variations

Clamping workpieces, powerful and precise





Rotary tilting table with radial grooves



Rotary tilting table with parallel grooves



Rotary tilting table for GPS 240

5-side/axis machining in one set-up

5-axis machining offers considerable advantages for large and small components. By means of 5-axis technology it is possible to machine a wide variety of shapes and surfaces in one chucking.

- Most suitable for 5-sided, 5-axis-positioning and up to 5-axis contour machining
- Rotary tilting table available as pallet version: System 3R (Dynafix, GPS) or Erowa (UPC)
- Rotary tilting table available as generously dimensioned table top version (ø 450 mm with star-shaped or parallel T-slots)
- Cartesian (rectangular) alignment of the axes - results in coherent tool/workpiece movement during the milling process
- Direct measuring on the B and C-axis
- Optional version with increased precision available

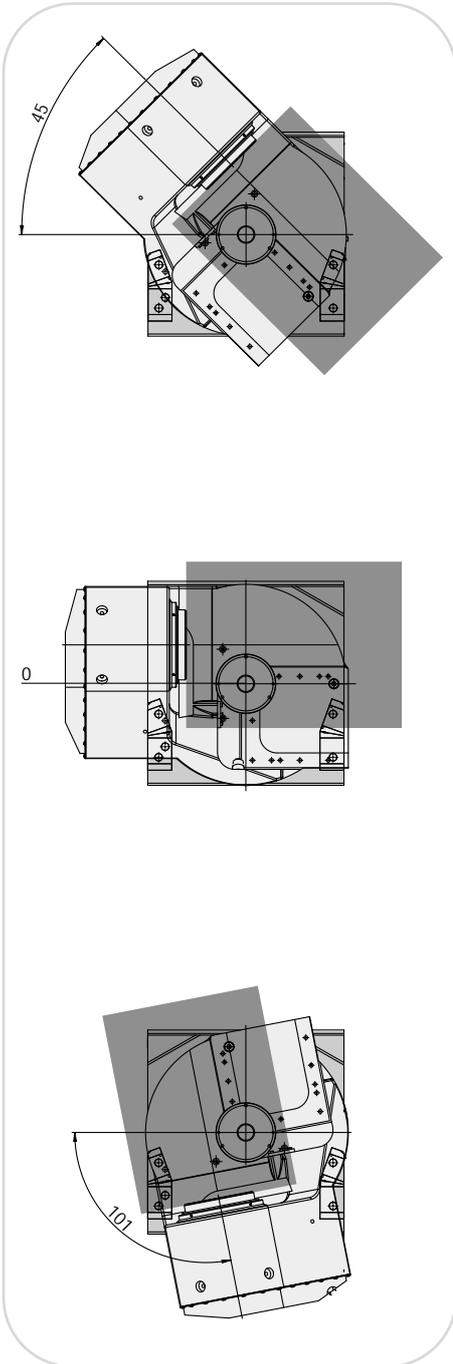


The scope of supply includes:
 smart machine module
 ITC-5X (Intelligent Thermal Control for 5-axis) for higher precision with 5-axis machining.



The large tilting range of the MIKRON UCP 600 Vario rotary tilting table enables 5-sided complete machining in one chucking.

MIKRON UCP 600 Vario with torque rotary tilting table (Torque RTT)



The System 3R MacroMagnum 156 pallet can be overstretched:
Maximum workpiece diameter with dismantled tailstock: 350 mm
Maximum workpiece diameter with mounted tailstock: 300 mm



Tailstock for special applications

The tailstock also enables longer, thinner parts to be machined on the MIKRON UCP 600 Vario with torque rotary tilting table (Torque RTT). If required, the overarm can also be dismantled, in order to machine workpieces without.

Unmanned production is also ensured here. Workpiece automation is likewise possible using the tailstock.

Directly driven rotary and tilting axes

The MIKRON UCP 600 Vario is most suitable for 5-axis simultaneous HPC machining (High Performance Milling). The A and B-axis are driven by torque motors.



The maximum workpiece height is
450 mm loaded manual and
350 mm loaded automatical.

High-tech spindles

Tool spindles for demanding machining

Tool spindles for demanding machining

Whichever machine configuration you choose, with a MIKRON UCP 600 Vario you get the most up-to-date tool spindle technology:

Vector control, highly stable ceramic hybrid spindle bearing, and spindle casing cooling using a controlled internal coolant system for consistent temperatures for the entire working duration.

- Optionally 12,000, 20,000 or 42,000 rpm
- Precise high performance - from the conventional to the universal to HSC machining
- Vector control for full torque in the lower speed range



The scope of supply includes: smart machine APS (Advanced Processing System) for reliable measuring and display of milling vibrations, and ITC (Intelligent Thermal Control) for higher workpiece precision.



12,000 min⁻¹

For conventional tool technologies and programs:

- ISO 40 spindle taper
- Infinitely variable speed range - no slump in performance
- Set up with internal coolant supply for use in production
- Acceleration and braking time: 1 second each
- Ceramic hybrid bearing with life-time lubrication

20,000 min⁻¹

For machining a wide variety of materials:

- HSK-A63 spindle taper
- Infinitely variable speed range - no slump in performance
- Set up with internal coolant supply for use in production
- High retention powers
- Face stop of the tool taper - better run-out
- Ceramic hybrid bearing with oilmist lubrication

42,000 min⁻¹

In combination with a high performance control system, this high-speed spindle enables access to HSC machining.

Special HSC tool technologies are:

- HSK E-40 spindle taper
- Infinitely variable speed range - no slump in performance
- Finely balanced 3-phase motors
- Specific tool holders - exceptionally precise work
- Optimum run-out due to face stop of the tool holder
- Ceramic hybrid bearing with oilmist lubrication

Tool Magazine

Standard
and higher
demand



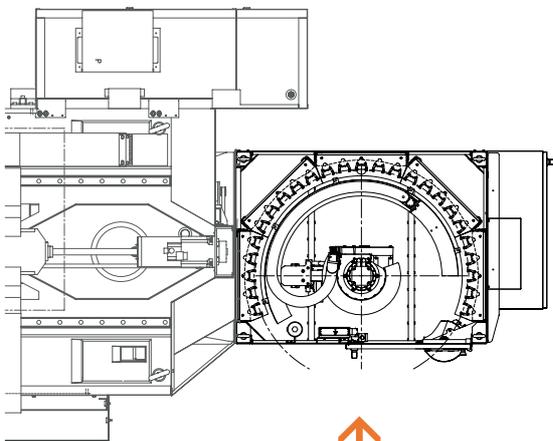
Magazine integrated in the machine base

- For 30 (ISO 40, HSK-A63) or 36 (HSK-E40) tools



External magazine for up to 220 tools

- With optionally 75, 120, 170 or even 220 tool positions
- Short tool changing and tool preparation time
- Small machine footprint



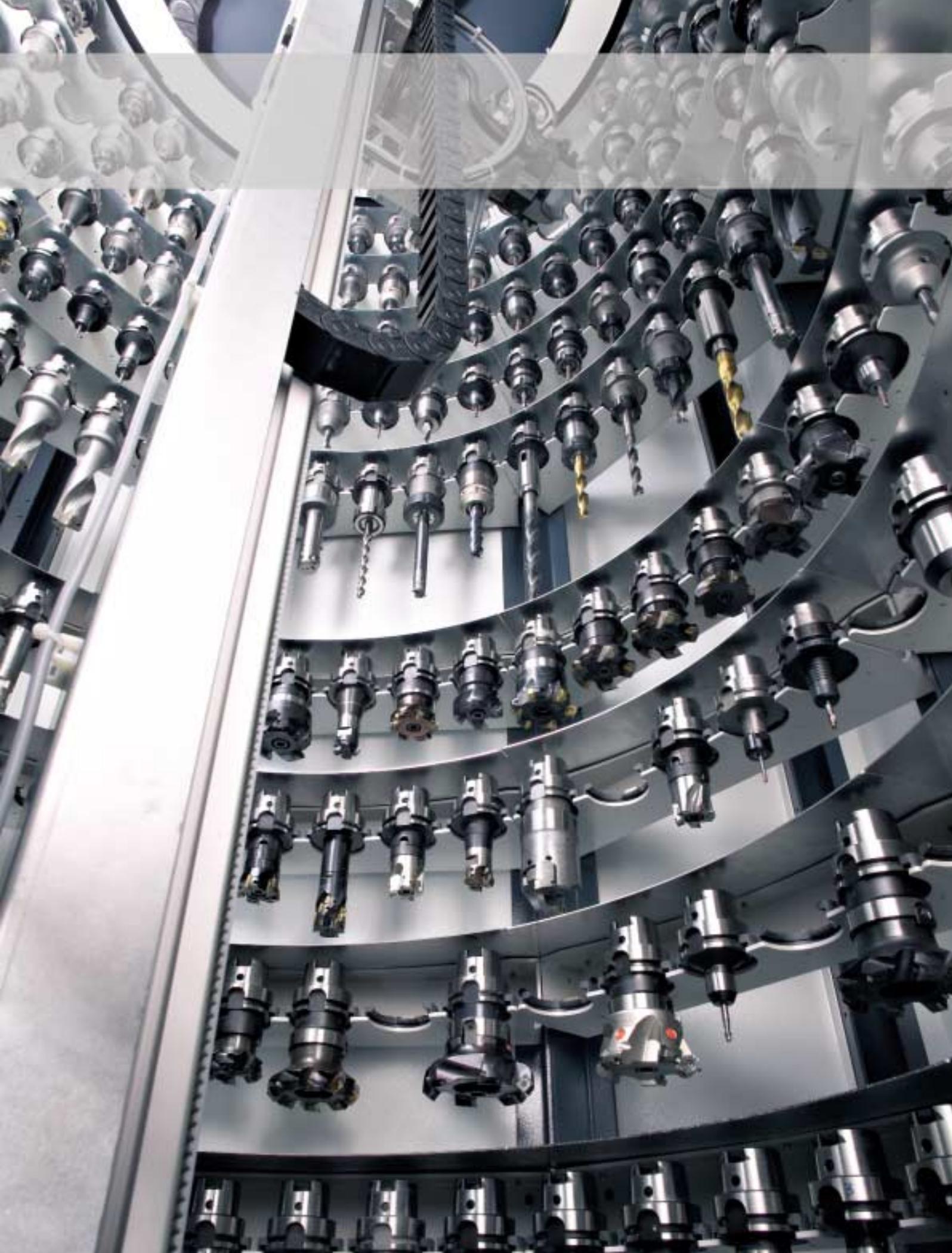
Tool loading made easy: good accessibility at all times, even during machining.

Optional

- Laser tool measuring
- Tool cleaning by air blast
- Sigma FMC for efficient tool management

Circular arranged magazine with handling system for 75, 120, 170 or 220 tools





Options

The machines are geared up for a multitude of options. Consequently, they can be simply and optimally configured.



Minimum quantity cooling lubrication



Mist extraction system



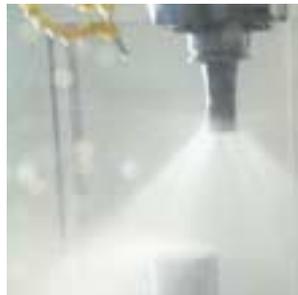
Chip conveyance for higher requirements



Belt filter unit System High performance



Belt filter System Basic



Through-spindle cooling



Laser tool measuring



Infrared touch probe



Dust extraction system



smart machine module



Cleaning pistol



Rotating viewing window



Signal light



Operating mode 3+4



Pallets

Further options:

- Extended accuracy
- Abrasion-resistant screen
- Extended warranty
- Robot interface



Bringing intelligence into the milling process is the intended aim of "smart machine".

This includes a range of modules that are collectively referred to under the generic term "smart machine" and that fulfil various functions. In order to make the milling process "intelligent", various requirements have to be implemented.

First of all, establishing comprehensive communication between man and machine, which makes precise information that the operator requires to assess the milling process available to him. Secondly, supporting the operator in the optimisation of the process, which considerably improves the performance. Thirdly, the machine optimises the milling process, which improves the process safety and the quality of the workpiece - above all in unmanned operation.

The facts

- Greater accuracy in shorter machining times
- Increase in the workpiece surface quality as well as the surface and shape accuracy
- Recognition of critical machining strategies
- Improvement in the process safety
- Reduction of the machine set due to longer service life
- Higher availability
- Better operating comfort
- Considerable increase in reliability in unmanned operation

smart machine construction kit system

Each of the modules fulfils a specific task. Just like in a construction kit, the user can select the modules that seem to him to be the best option for improving his process.

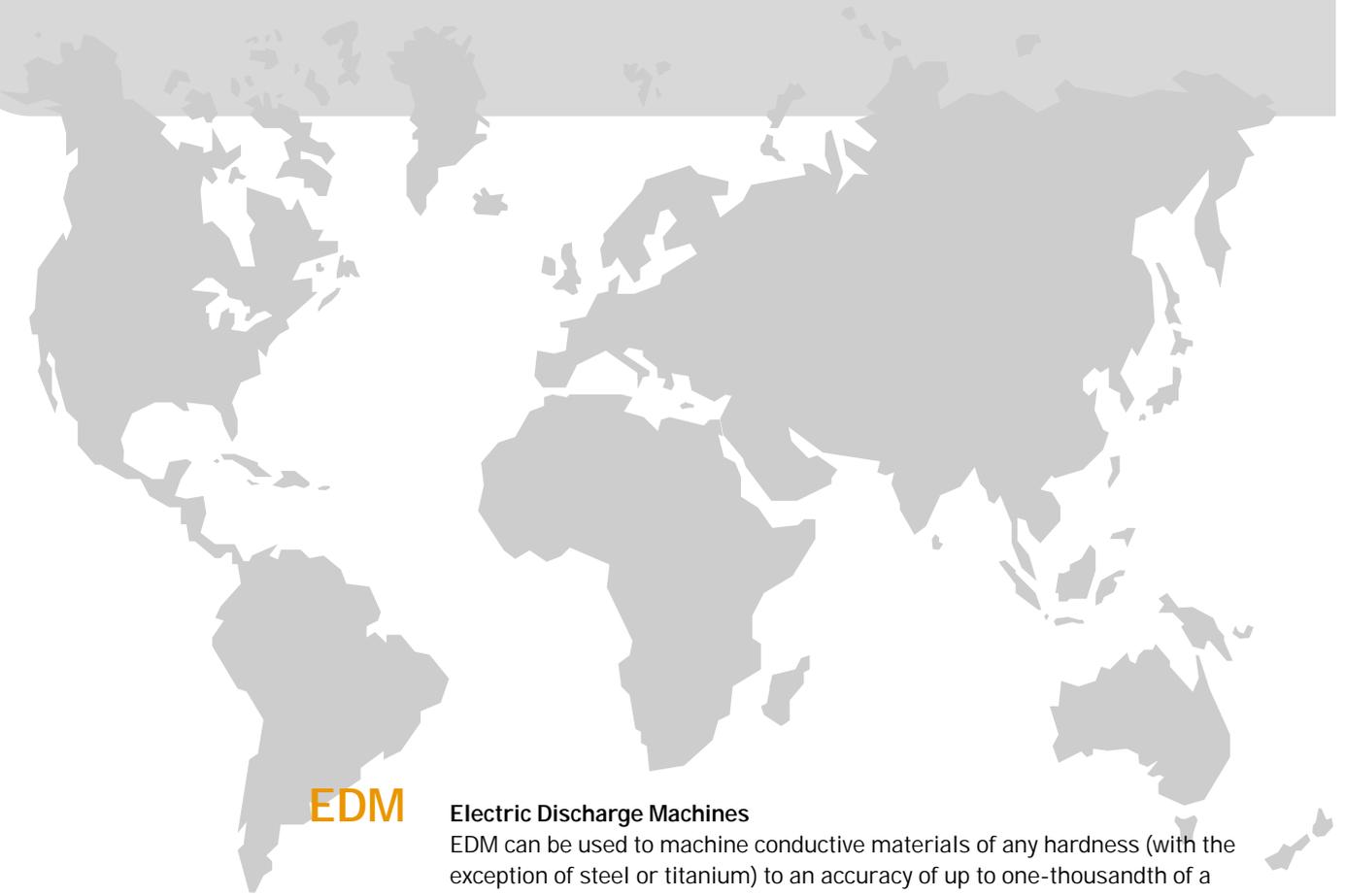
Your benefit

Producing the workpieces in a process-secure and precise manner, increasing the reliability in unmanned operation, increasing the service life of the machine and significantly reducing production costs.

The smart machine is constantly being developed further.

The currently available modules can be found at www.gfac.com





EDM

Electric Discharge Machines

EDM can be used to machine conductive materials of any hardness (with the exception of steel or titanium) to an accuracy of up to one-thousandth of a millimeter with no mechanical action. By virtue of these properties, EDM is one of the key technologies in mold and tool making. There are two distinct processes – wire-cutting EDM and die-sinking EDM.

Milling

High-Speed and High-Performance Milling Centers

In terms of cutting speed, HSM centers are 10 times faster than conventional milling machines. Greater accuracy and a better surface finish are also achieved. This means that even tempered materials can be machined to a condition where they are largely ready to use. One essential advantage of HSM is that with systematic integration, the process chain can be significantly shortened. HSM has developed alongside EDM into one of the key technologies in mold and tool making.

Spindle

HSM Spindle Technology

Development, production and sale of the motor spindles that form the core components of modern HSM centers. The spindles rotate at speeds between 10 000 and 60 000 rpm.

Automation

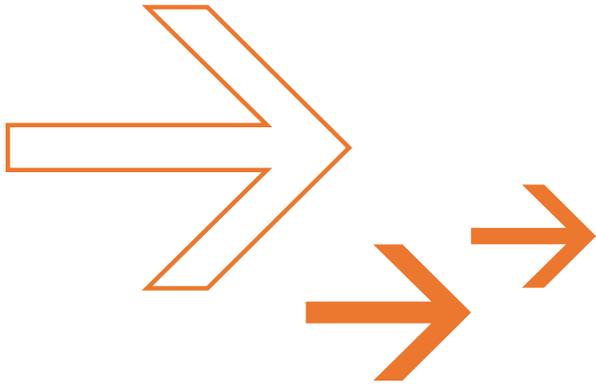
Tooling, Automation, Software

Tooling for fixing workpieces and tools; automation systems and system software for configuring machine tools and recording and exchanging data with the various system components.

Service

Services and Consumables

Service, maintenance, spare parts and consumables for EDM, milling and HSM systems as well as for other machine tools; consumables include filters, wire, graphite, copper electrodes and special resin.



GF AgieCharmilles

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM and Automation solutions. A comprehensive package of Customer Services completes our proposition.

Achieve more

We commit to a promise. That promise is "Achieve more." It's a commitment to create the right conditions for our customers to obtain competitive results. When our customers win, we win.

Contact

Mikron Agie Charmilles AG
Ipsachstrasse 16
CH-2560 Nidau
Tel. +41 (0)32 366 11 11
Fax +41 (0)32 366 11 66
info@mikron-ac.com

www.gfac.com

+GF+

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