Flexibility, a compact and simple design, and ease of use are the hallmarks of the new 5-side milling machine from GF AgieCharmilles.

The universal MIKRON HEM 500U is especially suitable for parts production in fields such as aerospace, automotive and general machinery.

The MIKRON HEM 500U underscores GF AgieCharmilles’ commitment to meeting customers’ needs for flexible, competitively priced and easy-to-use standard five-axis milling solutions.

The MIKRON HEM 500U with its newly developed rotary tilting table is convincing with competitive performance in terms of rigidity and versatility in its class. It is the ergonomic answer to the standard production of precision parts in prototyping and single parts to small batch series productions.

MIKRON HEM 500U offers a good view of the machining process, easy loading and access to the work piece. This functional and easy-to-use milling solution comes with the Heidenhain iTNC 530 control enabling production of highly accurate work piece contours while machining at high velocity. The control’s uniformly digital design ensures high accuracy and surface quality, as well as high traverse speeds. It matches perfectly with the machine, a reliable and sturdy 5-side milling center for all kind of “3+2” milling jobs.
MIKRON HEM 500U

MIKRON HEM 500U - affordable 5-side technology brought to you by the experts in 5-axis machining.
Applications

Affordable 5-side technology brought to you by the experts in 5-axis machining.

Milling head
X8CrNiS18-9 (1.4305), stainless steel
Tool industry
- Several tools in operation
- Machining sequences in “3+2” positioning
- Good accuracy (insert pockets)

Motorbike Breakholder
C45E (Ck45), unalloyed heat
Treatable steel
Automotive industry
- Several tools in operation
- Machining sequences in “3+2” positioning
- Efficient chip removal

Surgical instrument
Alloyed steel
Medical industry
- Small tool cutter
- Surface finishing, no manual polishing afterwards
- Strong machine body
- Stable spindle

Powerdemo part
C45E (Ck45), unalloyed heat
Treatable steel
Machining test
- Several insert milling cutters and drills in operation
- Machining sequences in “3+2” positioning
- Efficient chip removal

The standard version of the round swivelling table is ideally suited to the machining of workpieces in multiple clamping devices.
**Highlights**

**Good cost performance ratio.**  
**Competitive 3+2 axis machine.**  
**Valuable output with low investment.**

A Mikron Agie Charmilles product  
[Designed in Switzerland]

One of the highest goals in design is to use proven technical components. This to keep the availability as high as possible.

**Ergonomic access to the work piece even with automation.**  
By loading the pallets from the side, there will be no restriction of work piece access.

**Easy and safe operation.**  
Bigger parts can be milled compared to competitors, because of a smart arrangement of the axis.  
**Benefit → increased flexibility.**

**Excellent accessibility and ergonomics.**  
**Benefit → ideal for job shops and small batch size production.**

MIKRON machining centers are distinguished by their exceptional ergonomics.  
The MIKRON HEM 500U is a winner thanks to unbeaten accessibility, irrespective of the particular machine configuration.

**Unique integrated automation capability.**  
**Benefit → easy and simple to retrofit on site.**

Unloading with fork lifter without any need for a crane lifting device saves handling costs.

**Very compact footprint**

**smart machine modules will be available which generates more thermal stability and operational flexibility.**
Loading of heavy parts made easy
MIKRON HEM 500U offers an excellent accessibility to the work piece. Heavy parts can be handled very easily! Due to its accessibility and view on the work piece, the MIKRON HEM 500U is the most valuable asset for helping employees of any company to be even more efficient.

- Impressively designed, ergonomic protective cabin enclosure with large windows ensures excellent illumination and an optimal view to the machining process
- Heavy work pieces can be easily loaded by crane

Efficient and reliable chip management
In the working area of the MIKRON HEM 500U, 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 sturdy 90mm worm chip conveyor removes the chips efficiently
- Overload protection with automatic return function in the event of chip build-up
- Entire system can be easily removed for service and cleaning
- The system can be equipped with a through-spindle coolant supply with up to 20bar pressure which is optional

Well proven Heidenhain iTNC 530 control
The state of the art Heidenhain iTNC 530 digital control system and a clearly structured operating panel make the MIKRON HEM 500U 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 in the scope of supply brings you close to the cutting point, if required (optional)
**Body design**

**Sturdy and thermal stiff inline spindle**

The generously sized spindle motor provides uninterrupted production both with high torque at low speeds and high power at high speeds.

The utmost accurate spindle design goes beyond expectations of standard quality to achieve the highest precision and efficiency. The design permits best balance and vibration-free milling performance at full speed.

**Strong spindle head**

The widely supported and strongly constructed spindle head enables a high-powered milling / drilling operation on the Z-axis. A closed internal coolant circuit stabilizes and controls temperature drifts of the spindle head.

**Perfect linear motions**

Pre-stressed and double anchored ballscrews ensure the perfect linear motions - an important prerequisite for high workpiece precision. Linear guides with high rigidity and high load capacity ensure the smoothness in all displacements. Higher machining efficiency is generated through coexistent superior geometrical accuracy and surface quality of the machined workpieces. The high rigidity makes for better vibration behavior with diminished vibration amplitudes and thus extends tool lives. A central oil lubrication system ensures their highest durability.

**Body sculptured machine frame**

The machine design, optimized by means of state of the art simulation and analysis tools provide solidity throughout the machining center. The generously sized cast iron construction also stands out due to its excellent vibration absorption properties with high stability and rigidity, even under full load and in continuous operation. The result is a stable milling behavior which ensures a lasting quality of a high accuracy production process.
Automation

Increases production efficiency

Tool magazine
Two different tool magazines are available. A fast disc type magazine with a capacity of 30 and a larger chain type magazine with up to 60 tools.

The pallet magazine proves its superiority
For MIKRON HEM 500U we developed completely new pallet automation. Efficient 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) or Erowa (UPC) version.
- Repetitive machining is executed without interruption in multi-shift operation.
- The machine’s efficiency is increased with an accordingly higher profit.

We recommend RNS (Remote Notification System). Smart machine modules ensure still more flexibility and process reliability in the production of high-quality components.
Working range

Roomy interior that opens new perspectives...
5-side machining in one set-up
5-side machining offers considerable advantages for large and small components. By means of 5-side technology it is possible to machine a wide variety of shapes and surfaces in one chucking.

- Rotary tilting table available as pallet version: System 3R (Dynafix) or Erowa (UPC)
- Rotary tilting table available as generously dimensioned table top version (ø 500 mm with 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

ITC (Intelligent Thermal Control) and ITC-5X for higher workpiece precision (all optional)

The large tilting range of the MIKRON HEM 500U rotary tilting table enables 5-sided complete machining in one chucking.
Performing spindle for demanding machining
The sturdy inline spindle goes up to 12,000 rpm and delivers enough power to machine various applications efficiently. Its life ball bearings are lubricated and an air barrier prevents the bearing area from becoming dirty. The tool is clamped using spring force and released by a hydraulic actuator. The inline spindle is constantly water-cooled by an external cooling unit.

12,000 min⁻¹
For conventional tool technologies and programs:
- BT/ISO 40 spindle taper
- Infinitely variable speed range – no slump in performance
- Set up with internal coolant supply for use in production (option)
Options

The MIKRON HEM 500U is prepared for a large number of options. It can be configured easily and to the best advantage.

- Production package TSC 20bar
- Mist extraction
- Oil skimmer
- Pallets
- Beacon
- Touch probe
- Tool touch measuring system
- Rotating inspection window
- Operating mode 3
- Compressed air through spindle
- smart machine

Other options:
- Lift-up chip conveyor
- Extended warranty
- Linear glass scales
- Laser measuring system
- Minimum quantity lubrication
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 further developed.

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

EDM
Electric Discharge Machines
EDM can be used to machine conductive materials of any hardness (for example 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.

Laser
Laser ablation
Laser ablation supplements and extends the technologies offered by GF AgieCharmilles. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser ablation, compared to conventional surface treatment using manual etching processes, offers economic, ecological and design advantages.

Customer Services
Operations, Machine and Business Support
Customer Services provides with three levels of support all kind of services for GF AgieCharmilles machines. Operations Support offers the complete range of original wear parts and certified consumables including wires, filters, electrodes, resin and many other materials. Machine Support contains all services connected with spare parts, technical support and preventive services. Business Support offers business solutions tailored to the customer’s specific needs.

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.