



**MIKRON
HSM ProdMod
600, 600U, 800**

GB

+GF+

AgieCharmilles

With its MIKRON HSM ProdMod series of machines, GF AgieCharmilles offers the best HSC technology adapted to production needs. These machining centers reach incredible, dynamic performance that allows for optimal machining conditions as well as maximum productivity.

Both the flexibility and the ergonomics of the MIKRON HSM series ensure that it is a new standard for automated vertical machining centers. An efficient management of chips, extended tool-storage capacities, and a large choice of automating systems are among the solutions offered by the ProdMod series.

MIKRON HSM ProdMod: molding requirements are made available for the production of medium to large quantities of parts with high added values.



MIKRON HSM 600 ProdMod

Performance at the service of productivity. The ideal equipment for the automated production of machined parts using 3-axis high speed machining.

Content

Applications	4	Tool magazines	15
Highlights	6-7	Options	16
Automation	8-9	smart machine	17
Table variations	12-13	Product range GF AgieCharmilles	18
High-tech spindles	14		



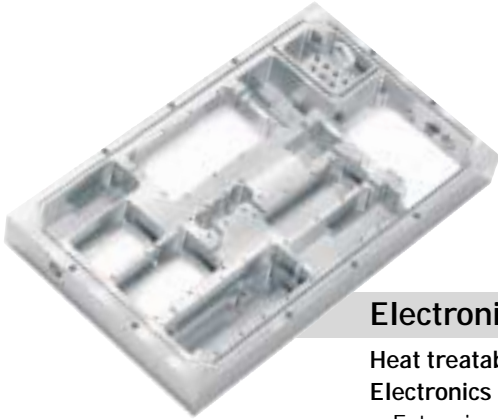
**MIKRON
HSM 600U ProdMod**

Flexibility at all levels. The universal, highly capable solution for machining work pieces on 5 sides.



**MIKRON
HSM 800 ProdMod**

Efficient, large-volume machining. A good balance between dynamic axes and a spacious workspace.



Electronical housing

Heat treatable steel
Electronics industry

- Extensive positioning movements
- High material removal rate
- Lubrication with internal coolant supply



Aircraft integral part

Titanium alloy
Aerospace industry

- Machining from solid
- High material removal rate
- Multiple parts setup



Aircraft integral part

Titanium alloy
Aerospace industry

- Machining from solid
- High material removal rate
- Multiple parts setup



Tool insert holder

Heat treatable steel
Tool construction

- Production of machined parts using 5 axes
- Limited tolerances
- Series production with high quality parts



Compressor wheel for turbo charger

Aluminium
Automotive industry

- 5 axes simultaneous machining
- High number of revs per minute
- High material removal rate

No lost time!

The goal remains the same in both the 3-axis and 5-axis processes: to produce the components to the quality required as quickly as possible. The machining centers of the MI-KRON HSM ProdMod series offer a high performance means of production.





Highlights

High-tec equipment



Mikron machining centers are characterised by their unusual ergonomics. The MIKRON HSM ProdMod machines stand out due to an unrivalled accessibility, regardless of the respective configuration of the machine.

The MIKRON HSM 600, 600U and 800 ProdMod offer a high-speed series of machines to suit all production needs. The proven HSM base machine acts as a basis, which is impressive due to its dynamics, compactness, diversity of variants and its ergonomics. The ProdMod series additionally offers a tool storage tower, which provides space for 75, 120, 170 or 220 tools, workspace covers with washing nozzles for the chips as well as different solutions for management of the chips and coolant treatment. In addition to the pallet changers, an interface for connecting to an external robot is available.

A Mikron HSM is the base



Safety and accessibility know no compromise

- Access from 3 sides by opening a single smooth-running door - also used for crane loading
- Side window for optimal monitoring of the process
- Ergonomic working height
- Low loading height
- Tilting control panel from the workspace to the pallet storage area

Tool storage for up to 220 tools

- Tool storage varying in size with choice of 75, 120, 170 or 200 tool capacity
- Less than 2 seconds to change tools
- Less than 10 seconds needed to prepare tools
- Tool dimensions up to 160 mm in diameter, up to 270 mm long
- Tool weight up to 6 kg

Chip conveyor for each application

The chip conveyor concept has a modular design and is individually adjustable so that large volumes of chips and refined chips like nail chips, break chips, floating bending light alloy chips and even shaving particles can reliably be collected. A belt filtration unit is also available with actively cooled 580 l tank for processing and filtering the cooling lubricant. Adjustable pressure and flow rate of the internal coolant supply.



Automation

More parts in a shorter time -
produced at a lower cost



MIKRON HSM 600U ProdMod with system 3R workmaster robot system



The disc-type magazine - the fully integrated solution for diverse industrial standards

- Rotary 7 or 9 pallet storage
- Up to 80 kg load
- system 3R Dynafix (280 x 280 mm)
- system 3R GPS 240 (240 x 240 mm)
- Erowa UPC (320 x 320 mm)



The linear magazine - the universal automation for heavy work pieces

- Linear 4 pallet storage
- Up to 800 kg load
- Pallet size 600 x 600 mm
- Pallet size 800 x 600 mm

Fully integrated pallet changer

A pallet clamping chuck is available with integrated zero point chuck parts. These components allow fully automated production owing to the custom-made pallet changers. The economic solution for your complete work piece automation.

Pallet management directly via the machine controls

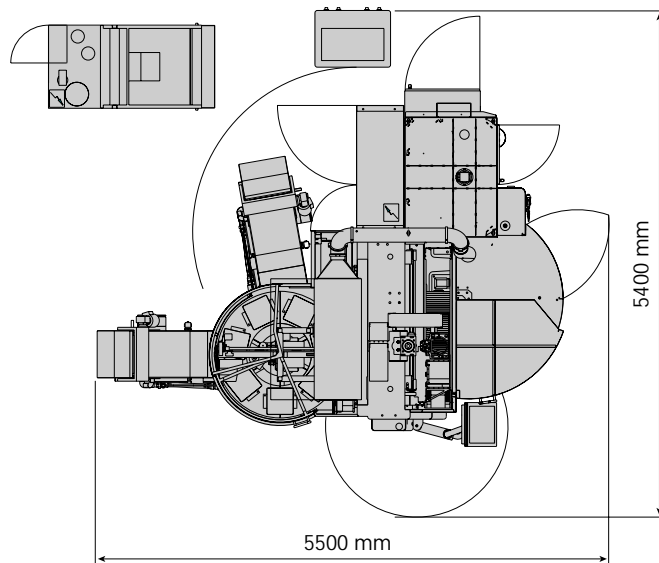
- Best cost-benefit ratio
- Accessibility or view to the work-space is not restricted by work piece automation
- Ergonomic loading station



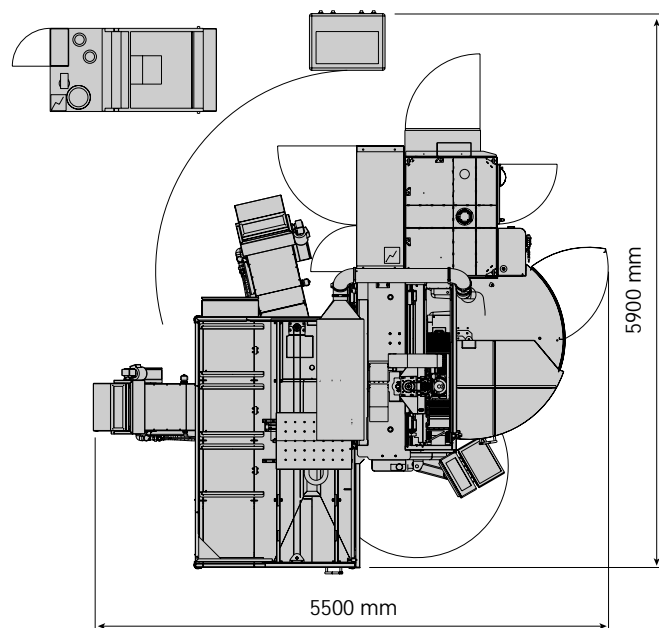
Interface for external robot

An example of lateral work piece automation of the Mikron HSM ProdMod using a robot. Owing to the standardised robot interface the MIKRON HSM ProdMod can be equipped with a robot system by well-known suppliers.

MIKRON HSM 600U ProdMod with disc-type magazine



MIKRON HSM 600 and 800 ProdMod with linear magazine





Achieve more...



**MIKRON
HSM ProdMod**



**MIKRON
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HSM 800 ProdMod**

Table variations

Clamp your work pieces firmly and precisely

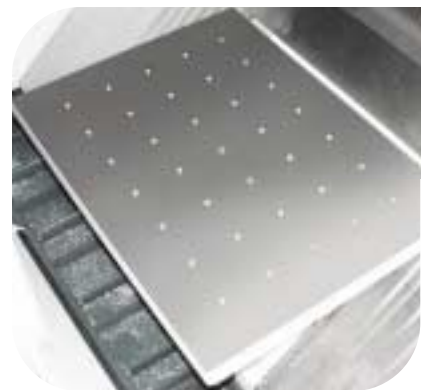


Work table with zero point clamping system

Pallets with tapping holes pattern

On this casting pallet 100 mm pattern tapping holes M12 are cut on a ground surface. The pallets are available in the following standard sizes:

- 600 x 600 mm
- 800 x 600 mm

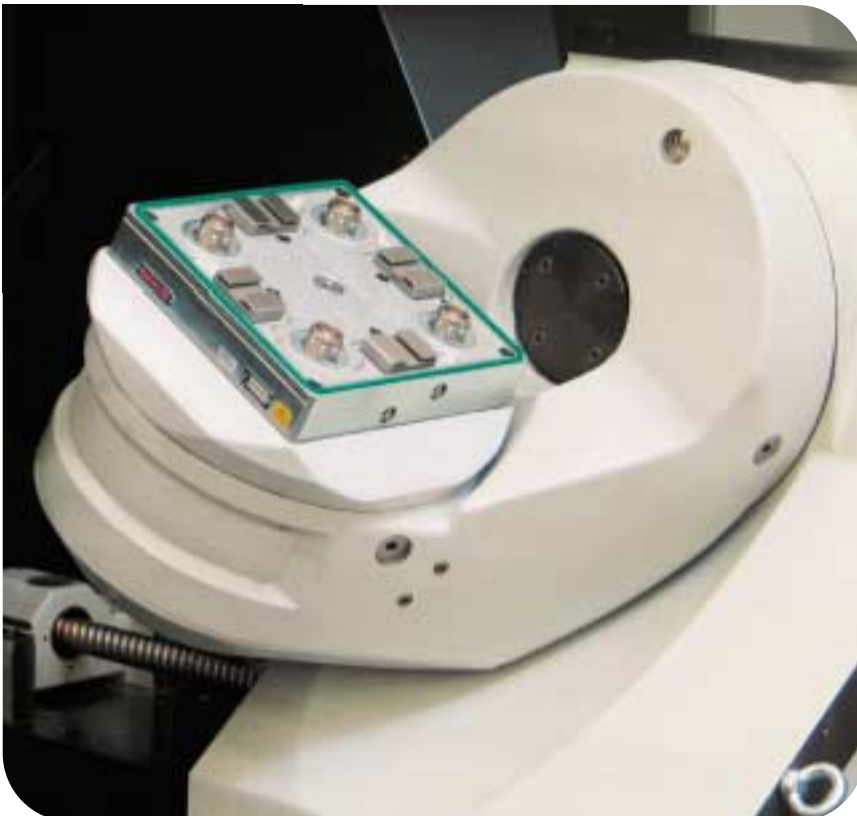




Work table with integrated clamping systems

Owing to the palletisation systems the changeover time on the machine is dramatically reduced. The equipment therefore does what it was created for - producing. While the machine works, the next job is prepared, with ease, precisely and at the right time.

- Integrated hydraulic lifting unit
- Zero point clamping systems



Rotary swivel table with direct drive

The tremendously quick rotary swivel table with direct drive enables HSC simultaneous working on all 5 axes. The rigidly designed L-shaped construction offers unbeatable process reliability owing to the perfect view during the machining process and also offers trouble-free removal of chips.

- Extremely fast: Rotating and swivelling mechanisms (200 rpm / 360 rpm)
- Extremely flexible: integrated zero point clamping system
- Most dynamic for rotating and swivelling: High-torque direct drive
- Extremely stable: Hydraulic clamping in the turning and swivelling axes
- Ergonomic and accurate: without disturbing the edges for best access and optimal case for chips
- All feed motors are liquid cooled
- Extremely accurate: direct angle measurement with an optical measurement system

High-tec spindles

Dynamic power packages -
high-frequency spindles

We offer two extremely capable spindles for either the HSC- or a conventional milling method, which suit the dynamics and the load volume of the MIKRON HSM ProdMod. You receive the most modern Step-Tec spindle technology: vector control, very stable spindle bearing system, spindle cooling jacket to maintain constant temperatures during the entire machining process.



smart machine inside

Since the high-speed spindle is closest during the machining process, it is best suited to monitor the work process. The spindles contain a complete set of sensors, which, thanks to the manifold supply of smart machine modules, makes the milling process an intelligent one.



24,000 rpm

Spindle cone HSK-A63

- 22 kW; 46 Nm @ S6
- Continuous speed range 100-24,000 rpm
- full torque even at low rotation speeds thanks to vector drive
- short acceleration and breaking time at 2.4 sec.
- ceramic-hybrid bearing with oil/air lubrication
- also for internal coolant supply

36,000 rpm

Spindle cone HSK-E50

- 30 kW; 20 Nm @ S6
- Continuous speed range 100-36,000 rpm
- full torque even at low rotation speeds thanks to vector drive
- short acceleration and breaking time at 2.5 sec.
- ceramic-hybrid bearing with oil/air lubrication
- also for internal coolant supply



Through spindle coolant

This optional equipment carries coolant with a pressure of up to 70 bar to the cutting edge and offers longer tool life, higher rotation speeds, better peck-drilling and pocketing in hidden sectors, as well as shorter cycle times.

Tool magazine

Tools compactly stored

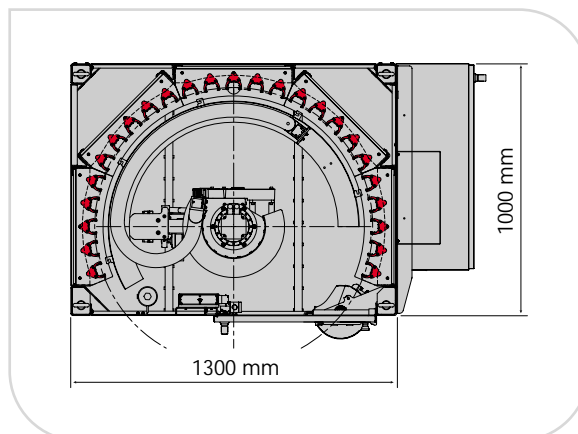
ATC tool magazine for HSK-A63 and HSK-E50

The tool storage device is built as a circular hanger. It is thus almost completely scalable.

As a standard, there are 75, 120, 170 or 220 tool positions. The central gripper is separated from the delivery mechanism so that a short wait occurs when switching. Thanks to a "double tool handling", changeover times under 2 seconds can be attained. From clamp to clamp it takes about 5 seconds. It is loaded from outside through a convenient sluice door.



Circularly arranged magazine with a handling system for 75, 120, 170 or 220 tools.



The machines allow a great number of options. Thus you can easily and optimally configure the equipment to fit the needs of your production process.



Preparation for a setup probe
Preparing the machine before attaching an infrared setup probe to the direction.



HSK-E50 setup probe
Infrared probe for setting up pieces and for geometrical calibrations.



Minimal lubrication
A minimal lubrication system with two nozzles that specifically applies a microfilm of lubricant, which covers the cutting edge of the tool with high flow speed.



Rotating view window
Optimised processes and improved work ergonomics and productivity thanks to a work procedure that is not at all hidden by coolant.



Optical operating indicator
Light column that optically indicates the operating status of the machine.



Mist exhauster
A compact, electrostatic aircleaner with multiple levels of filtration that is specially adapted to the filtration of oil and emulsion mist.



Cooling system for emulsion
Maintains the cooling lubricant at a constant temperature.

Further Options:

Infrared setup probe

HSK-A63

- Sets up work piece point of origin
- Sets up work piece position
- Checks the measurements of the work piece dimensions
- 3D shape control of a work piece

Operating mode 3 and 4

With these special operating modes you can safely work directly on a piece or intervene directly in the work process.



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 considerably improving the performance. Thirdly, the machine optimises the milling process improving process safety and the quality of the work piece - above all in unmanned operation.

The facts

- Greater accuracy in shorter machining times
- Increase in the work piece surface quality as well as the surface and shape accuracy
- Recognition of critical machining strategies
- Improvement in process safety
- Reduction of the machine costs 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

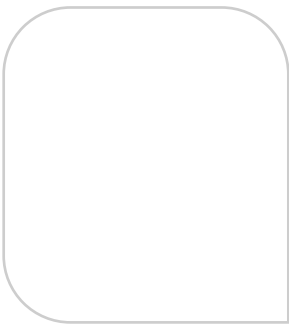
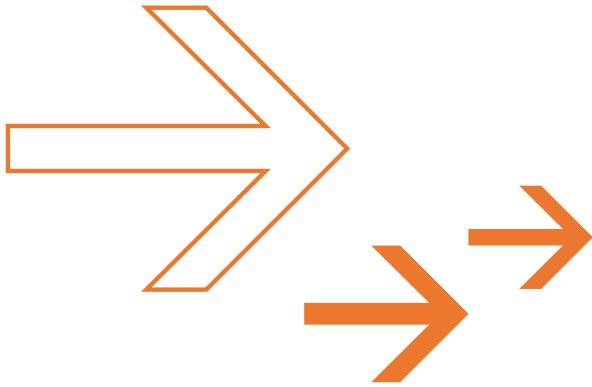
Tooling, Automation, Software

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.

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