



Michigan's Exclusive GF Machining Solutions Dealer

No one rises higher than Peak

[AgieCharmilles EDM](#) | [Mikron Milling](#) | [Laser Texturing](#) | [Additive Mfg](#) | [Micromachining](#) | [Used EDM](#)

Newsletter - Week of 10/21/19



Greetings!

Faster machining of parts, coupled with higher throughput without compromising the accuracy, surface finish, and repeatability is always the focus of manufacturing.

High Speed Machining (HSM) involves faster removal of material compared to conventional machining for which feed, spindle speed and torque characteristics, depth of cut, cutting tool, NC program preparation and program transfer and execution play an important role and HSM ensures quality, surface finish extended tool life, accuracy and overall increase in productivity.

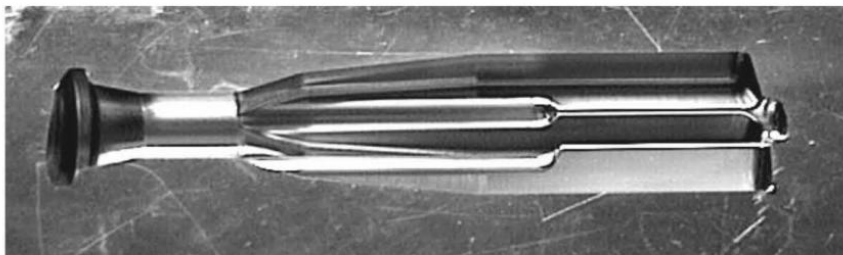
Request Test Cut or Quote

GF Machining Solutions Mikron Mill high-speed Milling machines are up to 10x faster than conventional milling machines.

Acceleration Differences Conventional & HSM



Hard milling of an injection mold cavity for screw driver handle



Ex. Influence of acceleration and the machining parameters on tool life and machining time of the cavity.

Material :	1.2344 HRC 52-54
Required operations:	7
Machines:	HSM Machine 1G acceleration conventional machine 0.2-0.3 G acceleration

Run time comparison of 1G Machine to 0.25G



Program	Tool	Vc	N	Vf	fz	ae	ap	t/1G	t/0.25G
Cavity									
Roughing	Spherical cutter FRAISA U5282-220 Ø 4	402	32'000	7'000	0.11	0.3	0.2	30'	45'
Pre finishing	Spherical cutter FRAISA U5282-140 Ø 2	239	38'000	4'000	0.05	0.15	0.12	3'	5'
Pre finishing / finishing	Spherical cutter KOBELCO VC-2MB ? 3mm	330	35'000	4'000	0.06	0.03	0.08	53'	115'
Finishing	Spherical cutter FRAISA * U5282-100 Ø 1	126	40'000	3'000	0.04	0.003 0.05	0.05	8'	15'

95' **180'**

Comparison:

- Using same technology (speed ,feed, tool and NC-Program)

The machining time is cut into half when high speed machining.

Pre finishing and finishing operation, with lots of direction changes and very fine stepovers (Ra 0.6) are the main reason of the time saving

Mikron MILL S

Request Quote

Mikron High-Speed Milling offers the **extreme accuracy** and **lightning fast cutting speeds** to ensure the **highest rates of production**

Request a test cut today to see first hand what it means to invest in EDM technology from **GF Machining Solutions: Mikron Milling**



Mikron Mill S High-Speed Machining Centers

Spindle Speeds - Step-Tec 24k to 60k RPM - High RPM, Oil/Air Lubricated 24/7 Operation - Swiss Built

Linear Drives - >1G Acceleration - Key to fast cycle times and long tool life

Heidenhain CNC - Best in Class for 5-Axis, Contouring, Fully Loaded

Direct Rotary Torque Table - Dynamic, Precise, Less Wear - Swiss Factory Built

Automation In Mind - Portal Design - Ergonomic, No Operator Interference

Polymergranite Base - Thermostabilization, Vibration Dampening, Heavy, Rigid

Integrated Chuck - Less Stack Error, Reach your tolerances easier

Symmetrical Design - High Accuracy - Stability throughout the day

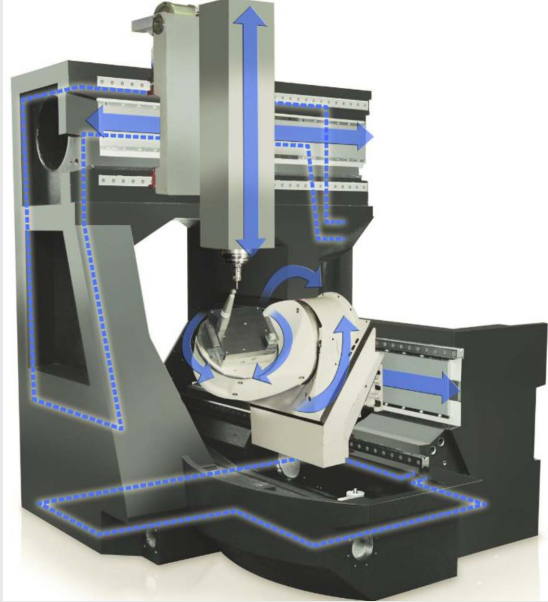
Integrated Pallet Changer - Industry Leading Affordability

[See the Video](#)

Mikron MILL S Core Components

Dynamic Accuracy

- Concrete polymer with high thermal inertia and excellent damping properties
- Optimized force distribution



Mikron MILL S

Static Accuracy

Perfect machine design with highest mechanical requirements provides the basis for a high-precision machine.

Moreover, GF Machining Solutions spares no effort to implement state-of-the-art components to create the best package for your Milling applications.

- within castings
- High-precision direct drives and guides for high dynamics and rigidity
- Direct path measuring system in the linear and rotational axis
- Intelligent software compensation

Thermal Accuracy

The Mikron MILL S series leads precision machining into a new era. Sophisticated temperature management system comprises separate and independent cooling circuits of all heat sources and machine body as follows:

- X, Y, Z, B, C drives
- Machine body
- Spindle with Opticool or CoolCore technology
- Electronics cabinet

Highest part precision is the ultimate result of this solution's active stabilization enabling highest stability and process reliability.

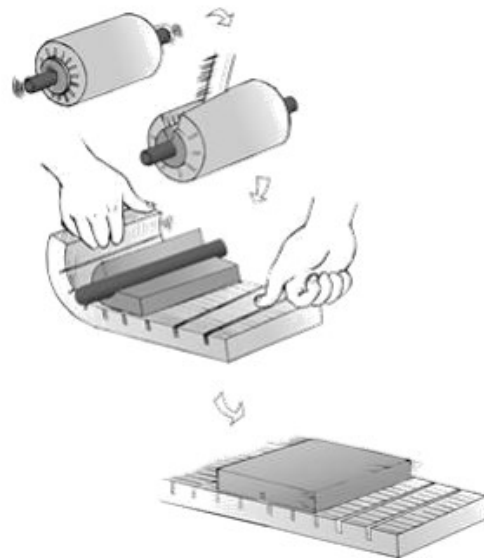
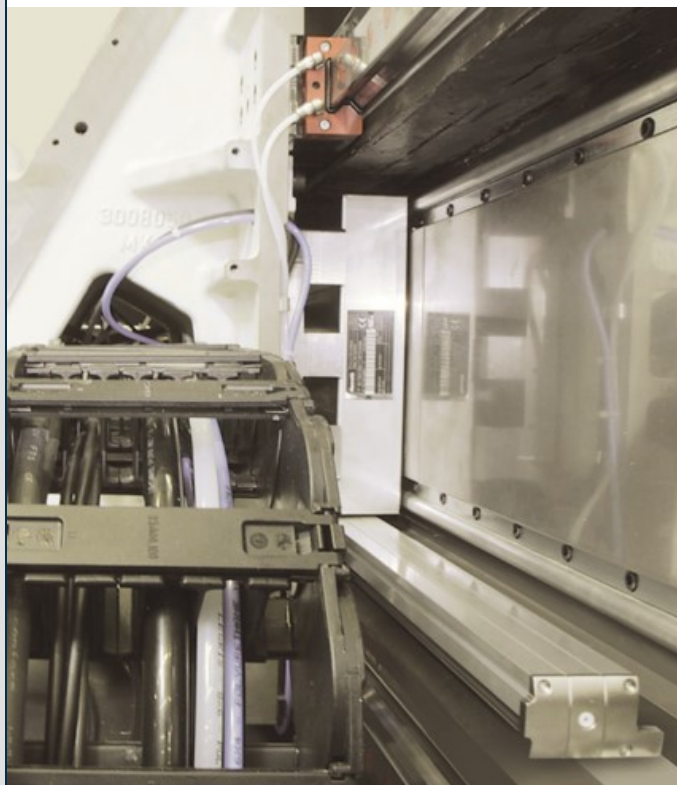
Mikron DNA

<u>DNA (Swiss Design)</u>	<u>Customer Impact</u>	<u>What's the Big Deal?!?!</u>
Integrated Chuck	Less stack error, Reach your tolerances easier	Uncommon in market, Travel what you bought
Direct Torque Rotary Table	Dynamic=▼Time, No gear=▲Precision and ▼Less Wear	Since 2001! Made in Factory not bought
Step-tec Spindle	High RPM=Surface, Power/Torque=Tough Materials, 24/7Run@100%RPM=\$\$\$	1 st 42k RPM in '92! 1000 in market by 2005!
Pallet Changer System	Unattended, 2 nd - 3 rd shift, Flexibility	Price it! Skilled labor isn't cheap!
Heidenhain CNC	Powerful, Great for 5-axis, Fully loaded cycles, User friendly	All Series, Play\$Game w/Other CNC, Everything you need-You have
Polymer-granite	Thermal stability, Vibration dampening, Heavy/Rigid base	Handle Acceleration, Better surface, Uncommon in market
Higher Acceleration	Key to Fast cycle times, tool life	\$\$\$, Manage Your customers' demands, Race is won in corners
Symmetrical Design	Accuracy	Stability through the day & night, Go the long haul
Automation in Mind	Designed, not an after thought	Ergonomic, Allow for surprise job

Benefits of Linear Drives

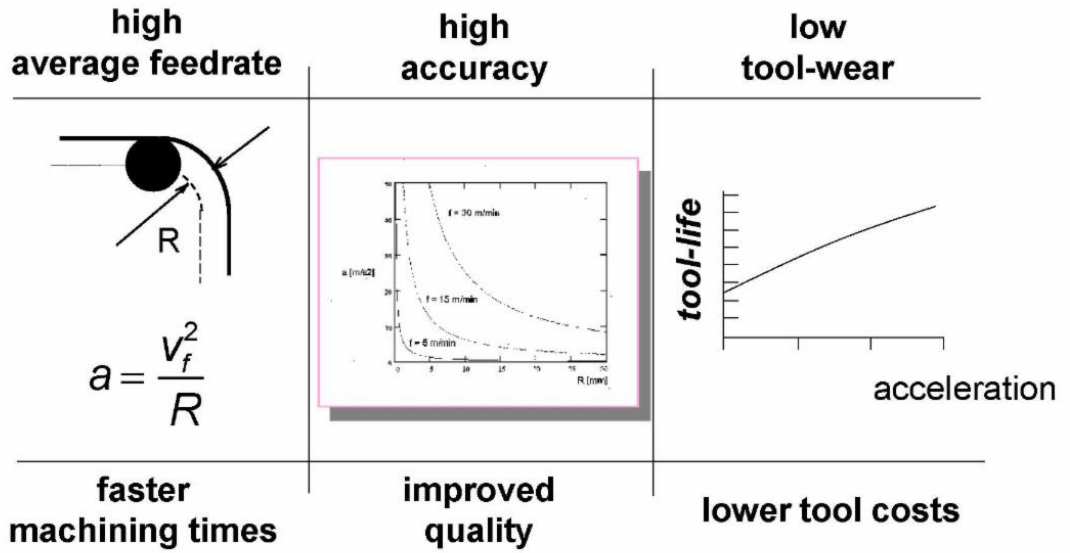
Implementation of a well known technology

Featuring linear drives on both axis of each rotary tilting table of the Mikron MILL S / MILL X / HSM/XSM-range since 2001 and on all linear axis (X/Y/Z) since 2009!



- Highest dynamic
- Highest stiffness
- Excellent precision
- No pitch error, no reverse error
- No wear
- Water cooled primary and secondary part => no thermal deformation

Advantages of High Acceleration



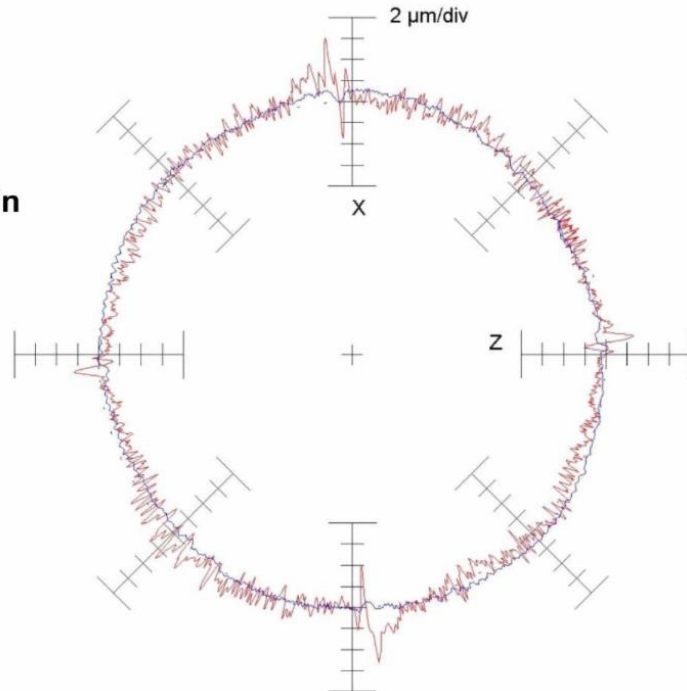
Circularity test on ball-screw and linear drive



Feed F = 5000 mm/min

Blue plot: LP

Red plot: ball-screw



HSM 400 Video

The real proof is in the test cut!

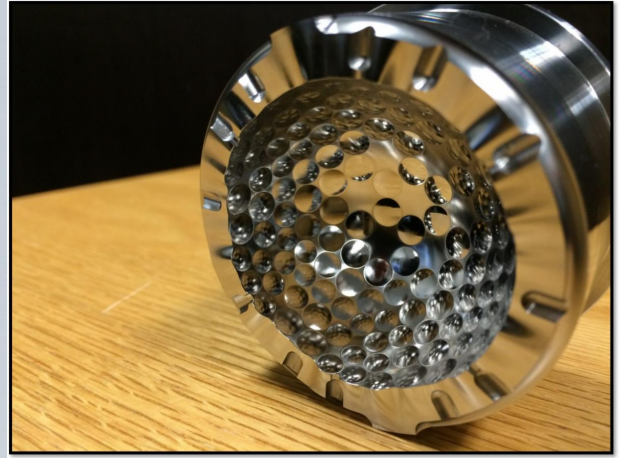


Request a test cut or time study
TODAY to see first hand what it would
mean for your business to invest in
High Speed Machining Technology
from GF Machining Solutions: Mikron
Milling

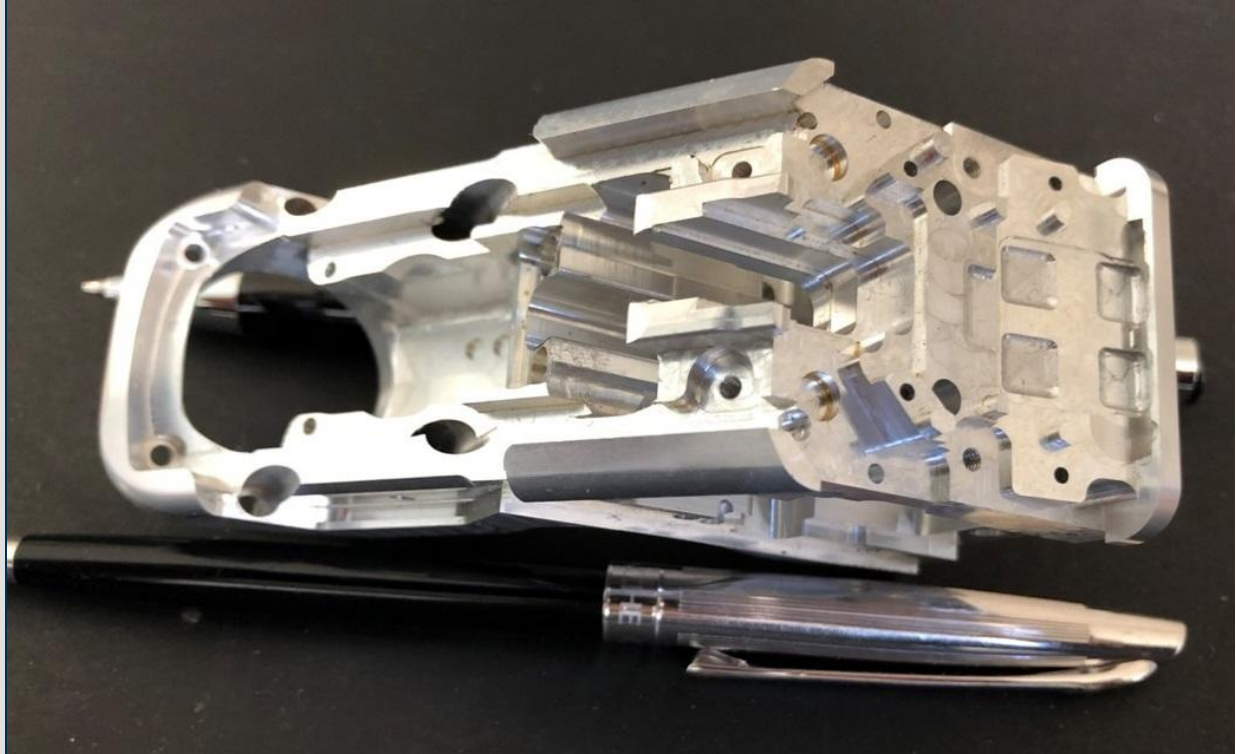
Test Cut Request

MILL S Applications





Bottle Mold, Headlight Mold, Golf Ball Mold machined without any secondary post processes



Surgical Housing machined in under 30 minutes

Graphite Machining Solutions

Graphite machining has never been so attractive—and challenging. While graphite electrodes boost die-sinking electrical discharge machining (EDM's) productivity and reduces costs, the graphite-based glass mold market is quickly growing, with new requirements in terms of surface finish, precision and machining speed.



[Graphite Machining Video](#)

Ra 0.4 μm surface finish, no milling marks

$\pm 5 \mu\text{m}$ accuracy

25% higher productivity vs. well-known competitors

24/7 reliable process with $\pm 1 \mu\text{m}$ repeatability thanks to S3R reference systems

[Learn More](#)

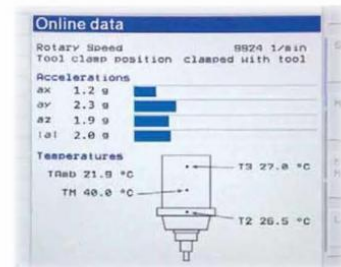
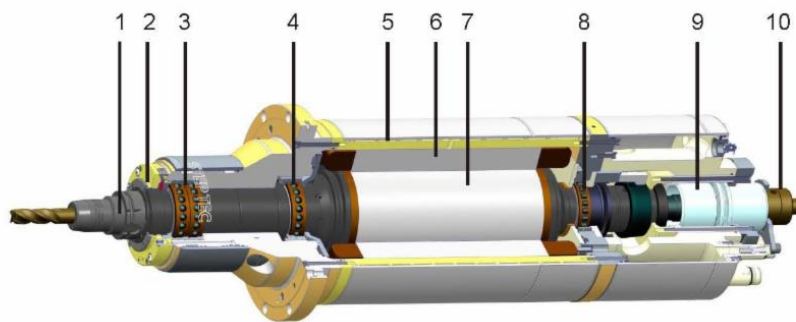
**The Heart of the Machine:
Step-Tec Spindles**



The heart of each mikron machine is undoubtedly the Step-Tec Spindle, which offers the *industry's best, performance, accuracy, AND longevity*. Step-Tec is the world's leader in high speed machine spindles, having offered their first 42,000 rpm spindle in the early 90's and having only perfected the recipe since.

Step-Tec Spindles feature air/oil lubrication, thermostabilization, vibration and load monitoring, and are designed to be run at full power around the clock. *After all, you're not making money if your spindle isn't making chips.*

Sectional view – Motor spindle

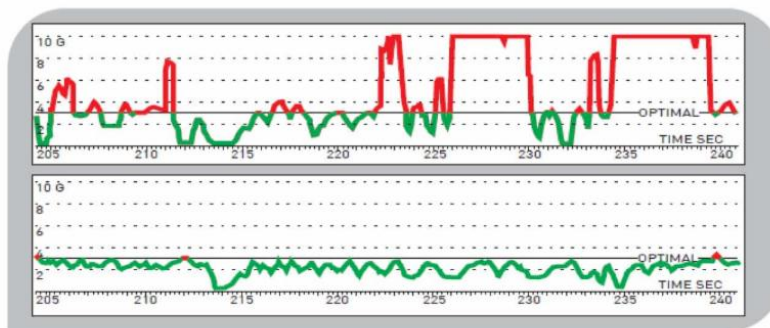
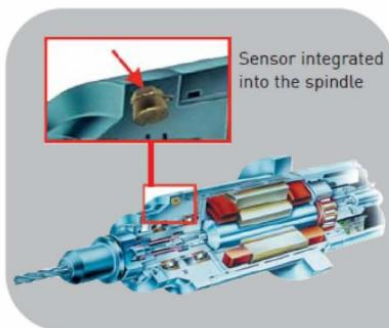


- | | | |
|---|---|----------------|
| 1 Tool interface HSK, ISO od. Capto C6 | 6 High power motor system | IMS/PMM |
| 2 Labyrinth with Protecting Air Flow | 7 Rotor (induction or synchronous) | |
| 3 Hybrid Ceramic ball Bearing | 8 Hybrid Cylindrical Roller Bearing | HCRB |
| 4 Hybrid Ceramic ball Bearing | 9 Hydraulic cylinder for tool clamping system | |
| 5 Motor- and bearing cooling | 10 Coolant Through Unit | CTU |

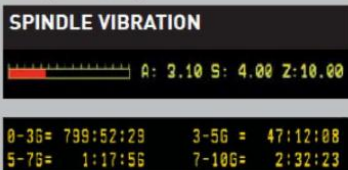
Advanced Process System - APS



(Intelligent Spindle Monitoring – ISM) / APS Extended



Display window of the measured vibrations during machining.



This overview can be used to monitor the accumulated duration per G-load category.

The functional principle

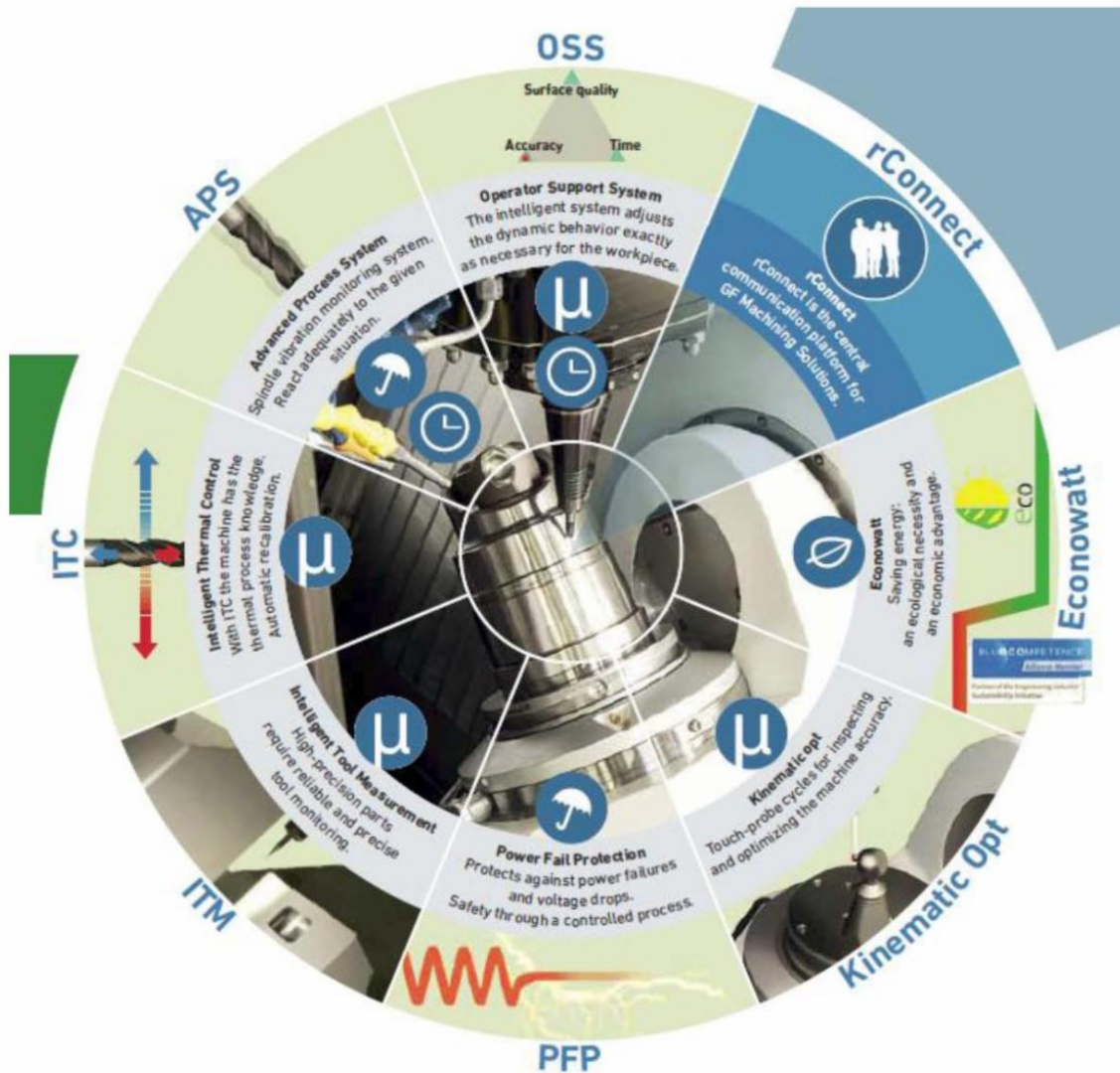
Vibrations can occur during the milling process as a result of an interrupted cut and various chip cross-sections, or simply as a result of poorly balanced tools. During the milling process, vibrations are displayed and recorded from the limit value onwards by means of an acceleration sensor integrated into the spindle.

Technical data

Measuring range of G-loads: 0 to 10 G
Sensitivity: 0.1 G
Time interval of recording: 1 to 60 s

Mikron Smart Modules

Unlike the competition, Mikron's priority toward speed and accuracy starts with a ROCK SOLID mechanical concept. It is then further refined via integrated smart modules to optimize and ensure the industry's best surface finish, speed, and accuracy.



Request Quote or Test Cut



Act Now and Don't Pay Until 2020

U.S. Bank has teamed up with GF Machining Solutions to offer you financing solutions for your manufacturing needs

- 100% Financing
- Competitive Rates
- Flexible Payments
- Quick and Easy Process
- Convenient one-page application up to \$500,000

[GF Machining Solutions Special Financing](#)

Don't miss out on potential tax benefits

Businesses have ongoing incentives to acquire and install capital equipment. The Tax Cuts and Jobs Act of 2017 made significant changes to both Section 179 and bonus depreciation. These changes continue to be in effect for 2019 and when used together may allow businesses to deduct up to 100% of capital purchases.

[Section 179 Calculator](#)

LIMITED AVAILABILITY! Year End New/Used/Demo Machines

GF Machining Solutions has a number of new, used, and demo machines available including **Mikron Milling, AgieCharmilles EDM, Laser Texturing, and Additive!**

Milling



Mikron MILL P 900



Mikron Mill S 600 U



Mikron MILL P 800 U

EDM



AgieCharmilles CUT E
350



AgieCharmilles CUT P
350



AgieCharmilles FORM P
350



Industry News

[Letter: Michigan is ready to retool Manufacturing Day to build out a year-round workforce pipeline](#)

[GF Machining Solutions Opens New Innovation and Production Center in Biel, Switzerland](#)

[Advances in EDM spark monitoring and support for additive manufacturing technology](#)

[GF Machining Solutions Unveils a Fresh New Look for its Products](#)

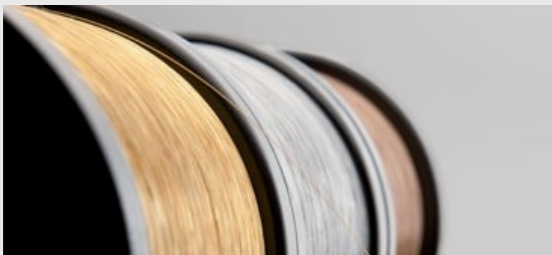
[Three new machines launched for machining graphite](#)

[GF Machining Solutions Unveils New Laser Series](#)

[Industry 4.0: Making Connections In Michigan](#)

[5 Impressions of EMO 2019, from Automated to Autonomous Manufacturing](#)

[New SMART Wire from GF Machining Solutions Improve Process Continuity and Traceability](#)



EDM Consumables

Peak Machine Sales proudly stocks Thermocompact .010" Hard Brass Wire in both 17.6 lb and 35.2 lb and .010" DeltaCut 900+ in 17.6 lb spools at our facility in Wixom, MI. We also offer the full range of GF Machining Solutions' EDM wire selection with one day delivery to most areas



bedra
intelligent wires

**FREE
SHIPPING**

on orders of 12+ boxes
of EDM wire

[Click Here for
Consumables Quote](#)

Advanced Manufacturing Solutions



Additive Manufacturing

High throughput, high repeatability metal 3D printers that generates high quality parts from the most challenging alloys. Integrated software, material and printer solution with expert application support and high quality powder and process management.

- Maintain highly repeatable quality
- Benefit from high throughput
- Lower Total Cost of Ownership

DMP Flex/Factory



Laser Texturing

Perfectly apply designs to challenging surfaces and enabling manufacturers to execute innovative graining into complex 3D shapes while controlling quality and cost per part, reducing lead time and machining time.

Innovative Texturing
Accelerated Productivity

Laser S

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