Mikron Machining
Efficient production solutions
Mikron Machining

Offers a wide range of machining solutions from flexible to high-volume production

Mikron Machining is the worldwide leading supplier of customized, highly productive machining solutions for the manufacturing of complex high-precision components made of metal. Throughout the entire product life cycle customers benefit from Mikron’s unique expertise in developing manufacturing solutions with matching high-performance cutting tools. A wide range of services geared to long-term needs underscores our professionalism, flexibility and partnership-based attitude to our customers.

Machining Systems

Cutting Solutions

Service Solutions

- Production sites
  Switzerland, Agno; Germany, Rottweil

- Strategic partnership or presence (Sales & Service)
Machining Systems
“Turnkey” solutions from Mikron

Our customers benefit with production concepts from A to Z:

- Blank
  - Cast
  - Bar
  - Wire
  - etc.

- Pre-machining
  - RP-32
  - TR-42
  - TF-120

- Loading Systems
  - Pick & Place
  - Robot
  - Belt conveyor
  - Vibrator
  - Pallet

- Machining
  - Precise complete machining on Mikron systems
  - Dedicated Mikron cutting tools

- Unloading Systems
  - Automatic
  - Manual
  - Deburring
  - Washing

Customized high-performance machining solutions with:
- Loading and unloading system
- Pre-processing system
- Dedicated Mikron cutting tools

With over 100 years of experience, rooted in Swiss innovation and quality culture, we are a long term process and technology partner to industry leaders. We show passion for precision and reliability in all we do.

Product overview

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<table>
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<tr>
<th>Workpiece size</th>
<th>20 mm</th>
<th>50 mm</th>
<th>80 mm</th>
<th>100 mm</th>
<th>200 mm</th>
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<td>Flexibility</td>
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Traditional machining centers

Mikron
- Multistar
- Multifactor
- VX-10
- NRG
- Multistep XT-200
- XT-one
Major market segments
Application samples

**AUTOMOTIVE**
- MIKRON MULTIFACTOR 7.5 s/pc
- MIKRON NRG 13-30 s/pc
- MIKRON VX-10 8 s/pc
- MIKRON MULTISTEP XT-200 31 s/pc
- MIKRON MULTISTEP XT-200 420 s/pc
- MIKRON MULTIFACTOR 5 s/pc
- MIKRON MULTIFACTOR 7.5 s/pc
- MIKRON MULTISTEP XT-200 55 s/pc
- MIKRON NRG 64 s/pc

**CONSUMER GOODS**
- MIKRON VX-10 1.5 s/pc
- MIKRON VX-10 1.2 s/pc
- MIKRON MULTIFACTOR 7.5 s/pc
- MIKRON NRG 25-90 s/pc
- MIKRON NRG 64 s/pc

**HYDRAULIC / PNEUMATIC**
- MIKRON NRG 13-30 s/pc
- MIKRON VX-10 8 s/pc
- MIKRON MULTISTEP XT-200 280 s/pc

**WRITING**
- MIKRON MULTISTEP XT-200 420 s/pc
- MIKRON NDRC 25-90 s/pc
- MIKRON MULTISTEP XT-200 55 s/pc
- MIKRON NDRC 64 s/pc

**PHARMA / MEDICAL**
- MIKRON MULTIFACTOR 132 s/pc
- MIKRON MULTISTAR CX-24 7 s/pc

**ELECTRIC / ELECTRONICS**
- MIKRON MULTIFACTOR 132 s/pc
- MIKRON MULTISTAR CX-24 7 s/pc
- MIKRON MULTISTEP XT-200 280 s/pc

**INDUSTRIAL / BUILDING**
- MIKRON VX-10 7 s/pc
- MIKRON VX-10 7.5 s/pc

**OTHERS**
- MIKRON MULTIFACTOR 5 s/pc
- MIKRON MULTISTAR CX-24 1.2 s/pc
The completely modular Mikron NRG transfer machine impresses with its high precision, flexibility with up to 30 simultaneously working units, and highly productive 6-sided machining for the manufacturing of a broad spectrum of applications.
Mikron NRG
The new generation of transfer machines

CASE HISTORY ADAPTER
on Mikron NRG

The challenge
• 5 different “Adapter Plate” models. Length
  from 15 to 35mm
• Material: AlMgSi starting from bar Ø 57mm
• Operations: from 30 to 40 according to the type
• Target tolerance: ± 6μm with Cpk 1.33
• Yearly volume: 750‘000 pcs on 3 shifts

The traditional solution
• Required machines:
  - 5 double-spindle machining centers
  - with motorized tools
  - 2 measuring systems (100% control)
• Production area: 193 m²
• Productivity: 750‘000 pcs/year
• Setup time: 60 Min.
• 18 employees

The innovative solution
• Required machines: 1 Mikron NRG
  system integrated with: bar saw Mikron TB-600,
  robotized measuring station, palletized system,
  bar loader, filtration
• Production area: 127m²
• Productivity: 1.5 Mio pcs/year
• Efficiency: 92%, Precision: ± 4.5 μm
• Setup time: 60 min.
• 3 employees

Production area: 193 m²

Production area: 127 m²

• Full CNC high-precision rotary transfer machine
• Workpiece dimension: up to 80 x 80 x 80 mm
  and Ø 65 x 100 mm
• Compact and modular construction with 12 stations,
  anytime adaptable to individual production needs
• ATS (Advanced Thermal Stabilization): the temperature
  of all elements remains stable
• Up to 3 machining units per station
• Up to 30 machining units work simultaneously
• Up to 22 automatic tool changers (ATC) on board
• Up to 96 cutting tools on board
• Machining on 6 faces in one clamping
• Milling or drilling on one station with three units
  simultaneously
• Per spindle interpolation with up to 5 CNC-axis
Mikron Multifactor
The classic performer

HOLDER
for the automotive industry

Produced from Al-alloy blank on a Mikron Multifactor machining system.
Production rate: 4.8 - 9.5 pcs/min depending on part geometry

Other possible segments:
pneumatic & hydraulic, gas, medical, watch, refrigerator and lock applications.

• High-precision rotary transfer system with horizontal table
• Workpiece size up to 100 x 100 x 100 mm
• Machine with 12 or 15 working stations
• Standard clamping system for every need
• Cost-effective production starting from 300’000 workpieces and more per year
• Machining from wire, rod or casted blank
• Very versatile and robust machine with high degree of modularity
Mikron Multistar
The fastest transfer machine in the world

CASE HISTORY BICYCLE NIPPLE on Mikron Multistar LX-24

The challenge
- Produce bicycle nipples ø 4mm, length 12mm, thread length 8mm
- Annual production volume approx. 100 mio nipples
- Material: Brass

The traditional solution
- Employees: 1 every 4 machines
- Production area: 25 m²
- Required machines: 4 traditional transfer machines
- Raw material: starting from pressed blanks
- Necessary statistic control: 4 (1 for each machine)
- Necessary tools: 24 (6 for each machine)

The innovative solution
- Employees: 0.25/machine
- Production area: 16 m²
- Required machines: 1 Mikron Multistar LX-24 high speed transfer solution
- Raw material: starting from pressed blanks
- Necessary statistic control: 1 --> guaranteed constant quality
- Necessary tools: 20

Production area: 25 m²
Production area: 16 m²

Models available
- Mikron Multistar NX-24 (100% programmable)
- Mikron Multistar CX-24
- Mikron Multistar LX-24

- Workpiece size: diameter from 0.4 up to 35 mm and max. length of 60 mm
- Machine with 12 or 24 stations
- Compact construction
- Full CNC or mechanically driven versions
- Available with one, up to 4 simultaneous cycles, depending on the part complexity and the required volumes
- In single cycle output up to 150 parts/minute
- Quick and simple tool change
Mikron VX-10
Machining on 6-sides, from bar, wire or blank

INDIVIDUAL LINKS
for luxury watch bracelets

Produced from stainless steel on a Mikron VX-10 machining system, working directly from bar.

- Production rate: 8 pcs/min
- Production of different lengths from the same wire, automatically sorted

Other possible segments:
eyewear components, automobile applications, lock industry, electrical contacts, mobile phone and laptop computer components, medical applications.
Mikron Multistep XT-200
Advantage through modularity

CASE HISTORY COMPRESSOR HOUSING on Mikron Multistep XT-200

The challenge
- 5 different bodies made of casted AlMgSiCu-alloy
- Turning, milling, drilling on 6 faces of the workpiece. Depending on the component, 30-40 operations. Variable lot sizes from 500-10'000 pieces
- Tolerance: ±0.25 μm Cpk 1.67 (systematic sampling 10%)
- Annual requirement approx. 500'000 pieces (three-shift-operation)

The traditional solution
- Production area: 300 m²
- Required machines: 4
- Operations in 2 clappings:
  - Milling on Multispindle-Machining Centers
  - Turning on Automatic Lathes
- Loading/Unloading manually
- Setup time: 80 min.
- 12 employees

The innovative solution
- Production area: 165 m²
- Required machines: 2 Mikron Multistep XT-200
- Complete machining on one production system
- Intelligent automatic built-in loading/unloading system (incl. palletization and measuring of blank parts parallel to main processing time)
- Setup time: 20 min
- 6 employees

- Production area: 300 m²
- Production area: 165 m²

• High-precision modular machining center for workpiece dimensions of up to 200 x 200 x 200 mm
• Full CNC simultaneous 5 axis capability, machining on 5 1/2 faces in one clamping
• Chip to chip time less than 1 second at max. spindle speed
• Modular expandable, 1 loading module serves 1 to 4 machining modules. Each extension with an additional machining module serves exclusively to increase productivity, thus enabling investment in line with the actual output requirements.
• 10-minute changeover time, ideal for changing lot sizes
• Automatic intelligent part loading, with pallet exchanger or robot. Manual loading available.
• The Loading module performs additional tasks parallel to the main processing time e.g. fully automatic flip over of work piece – for 6 side machining, measuring of blank parts, deburring, cleaning and much more...
• Transfer of clamping chuck devices in approx. 5.5 seconds from module to module.
The Multistep Machining System is a true productivity centre! Thanks to its unique, unbeatable modularity and flexibility, ongoing production requirements can be accommodated at any time, and with incomparable precision at that!
Mikron Multistar NX-24: Up to 44 machining units operating simultaneously at 24 stations, assuring a very high output rate.
Mikron XT-one
Dual spindle, 5 axis, flexible production center

The two independent working spindles of the Mikron XT-one enable it to work alternatively. While one spindle is machining, the other is changing the cutting tool - even at maximum spindle speed. This allows shortest non productive times with chip to chip of 0.9 s.

Spindle 2 Changing of the cutting tool, even at maximum spindle speed

Spindle 1 is machining

CUSTOMER CASE
SAVINGS OF UP TO 500-2000 hours of non productive time per year equal 120'000 $US/YEAR

EXAMPLE 1
With 4 tool changes per minute saving 470 hours per year equal US$ 30'000
Calculation: 16h/day, 220 days/year, 15’000 rpm (0.9 versus 3.4 seconds chip to chip time - a 2.5 second difference factor), 80% = 469.3 hours per year with 60 US$ per hour = 28’800 $US.

EXAMPLE 2
With 8 tool changes per minute saving 2’000 hours per year equal US$ 120’000
Calculation: 22h/day, 300 days/year, 15’000 rpm (0.9 versus 3.4 seconds chip to chip time - a 2.5 second difference factor), 90% = 1’980 hours per year at 60 US$ per hour = 118’800 $US.

- Workpiece size up to ~8 inches cube (200x200x200mm)
- Full 5 axis CNC (5-axis simultaneous)
- 6 face machining capability
- 2 independent spindles (configured as needed 15K & 40K rpm)
- Chip to chip in 0.9sec (even at maximum spindle speed)
- 36 tools (18+18 type HSK)
- 2 fixtures for parallel operations (machining and loading)
- System expandable, up to 4 working modules
- Auto gauging with feedback and offset capability
- Simultaneous production of different components
Mikron Service Solutions
flexible and modular

We ensure quick, competent and uncomplicated service and support for our customers. We work together with you to design a service solution profile tailored to your individual needs.

Mikron’s service palette:

For a dependable supply of spare parts
Genuine Mikron spare parts are manufactured to the latest materials specifications and by the latest methods, resulting in reduced machine down time and a longer life expectancy for your equipment.

Minimizing downtime
Original Mikron Xchange Modules are ready for immediate installation. 100% reliability and 100% quality but at up to 50% lower investment and without losing any time waiting for an overhaul. All you need to do is call us when you need to replace a defective module, and we’ll immediately send a replacement module in perfect condition.

Maintain your equipment
Service options from Product Support keep your Mikron system in top condition. Our highly skilled experts offer you a complete portfolio of comprehensive service options to keep your equipment up and running.

Guarantee continuous use of your investment
Mikron offers professional services based on our experience and resources to help you successfully manage today’s complex manufacturing processes...

Global Support
Ready for you

24h Global Serviceline
+41 91 610 63 26
Outside office hours.
Problem notification 24h, 7 days a week.
An extensive stock of Mikron original spare parts, as well as optimized logistics enables the fast delivery of your parts.

With training services from Mikron your productivity will gain momentum.

The Mikron system maintenance guarantees maximum machine availability, and therefore, a competitive advantage.
Mikron Respeed Systems
As good as new

It doesn’t always have to be a new one!

Are you on search for a manufacturing solution with proven Mikron qualities? But the purchase of a new machine is not feasible? Mikron Respeed Systems offers you an alternative which doesn’t force you to give up either our traditional performance features or our comprehensive service. Our used Mikron Respeed systems are ready to start a new machining life with you!

Depending on the customer’s requirements, the production systems undergo the following processes:

- Disassembling of the machine and inspection of all parts
- Repair or replacement of worn parts with original Mikron spare parts
- Repainting
- Updating of electrical equipment
- Engineering for reconfiguration, clamping systems, loading/unloading devices and cutting tools
- Complete assembly and test runs with final acceptance by the customer

Mikron Respeed Systems: All advantages at a glance

- Overhauled machines as good as new
- Mikron guarantee
- Service terms same as for new machinery
- Original Mikron spare parts
- Quick delivery
- Advantageous price

1. Used Mikron machines in old condition
2. Through reconditioning
3. Partial renovation and adaptation to new production requirements
4. Test phase
Precision tools from Mikron Tool – a success factor
Tools are important performers in the chip removal process. Among experts, Mikron Tool SA Agno has an excellent reputation as a manufacturer of small and medium size cutting tools. The offer includes: Multifunctional special tools, the CrazyDrill line, the MiquDrill line and profile milling cutters.

Special tools are more than ever in the focus of customer specific applications. The advantage of higher process reliability as well as the reduced testing effort by far negates higher costs for special tools.

CrazyDrill is synonymous for maximum drill performance. They have been developed especially for the high volume production of precision parts on transfer systems. Different executions in the diameter range 0.4 to 6 mm are available from stock, as well as special sizes on request.

MiquDrill offers the proven Mikron quality when machining small and medium size batch quantities and a rich variety of work pieces. The offer in the diameter range from 0.1 to 3 mm includes: MiquDrill Centro for chamfering and centering; the short MiquDrill 200 for pilot holes of up to 2-3 x d; as well as MiquDrill 210 which guarantees precise follow-up drilling.

The CrazyMill range meets highest standards of chamfering. Whether it concerns front or backside chamfering or even the deburring of complex shapes, the three differently designed milling tools comply with highest requirements.

Profile milling cutters are all designed and produced for customer’s special applications. Their strength is their high precision with tolerances of 0.01 mm. Tools with a constant profile guarantee an optimum cost-efficiency even for high volume production.

Two competences – one partner
The customer has with Mikron Machining all the experience of high production systems and cutting tool engineering out of one hand. This makes Mikron Machining an extremely competent partner supporting customers from the product development stage with metal removal tests to continuing process optimization for his high volume production.
Mikron Machining

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