



For consistently high quality and cost efficiency.

Automated Deburring RFC – Robotic Finishing Cell

RFC – Robotic Finishing Cell.

So that everything runs smoothly at all times.

Do you still deburr manually or by machine?

► Finishing or deburring is an important process step within machining production, e.g. after milling, drilling or turning, because it either prepares a semi-finished part for subsequent machining, or determines the quality of final product.

Disadvantages of manual and machine deburring:

- Manual deburring is time-consuming and ties up additional personnel
- Employees are exposed to health hazards
- Machine deburring ties up valuable production resources
- Investment in costly tools for deburring with the machine tool

Further effected by market demands:

- Consistently high product quality and simultaneously decreasing unit cost requirements
- Shorter product cycles
- Sustained high pace of innovation
- Greater flexibility is required, with significant time and cost savings at the same time

But how can these multi-layered challenges be mastered and the workload of employees be reduced?

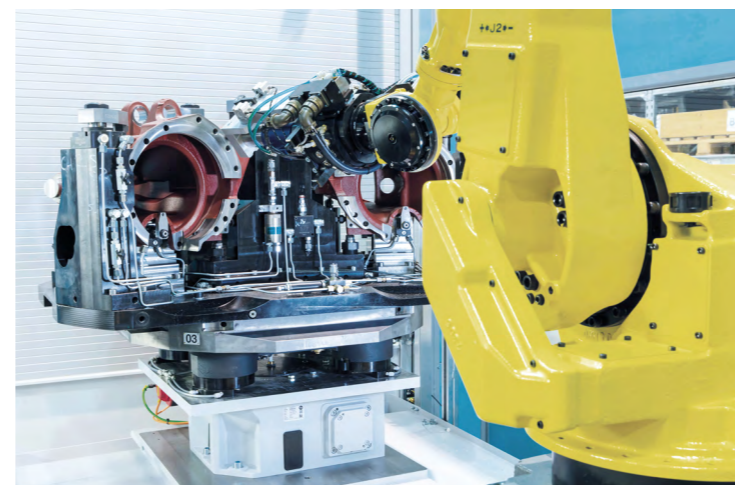
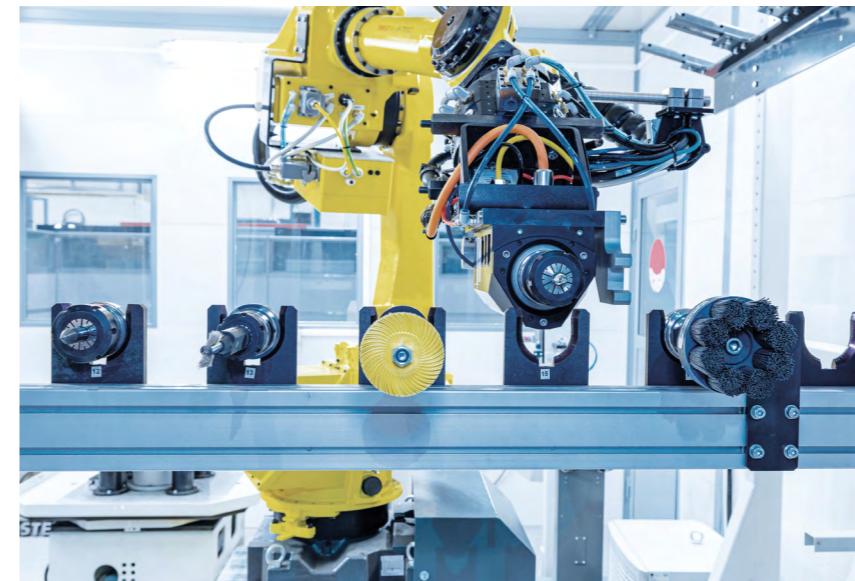
By implementing an RFC as a robot-assisted solution for automated finishing and deburring.

What can the RFC do?

- Deburring
- Brushing
- Grinding
- Honing

For which industries is RFC suitable?

For all industries in which series parts or repeat orders are processed.



Advantages

- More attractive workplaces and higher occupational safety
- Consistently high part quality and high process reliability due to the robot's repeatability
- Leaner processes due to fewer semi-finished parts in the production cycle
- More production capacity and greater flexibility thanks to high degree of automation
- Shorter throughput times and lower costs per workpiece thanks to fully automated processes
- Greater planning reliability thanks to predictable production
- Additional personnel capacities due to elimination of time-consuming, manual activities
- Additional production capacity by separating the deburring process from the machine tool

Burrs and surfaces meet automation.

Flexible high-performance finishing

With the RFC, Fastems offers a high-performance automation solution for finishing/deburring of different workpieces that can be adapted flexibly to your requirements.

You have the choice...

The RFC is intended both as part of a Fastems flexible manufacturing system (FMS) and for standalone operation.

... and can start immediately

The RFC is based on standard modules, which means that the robotic cell is prepared for its future works. This means short delivery times and fast commissioning time on site, so that the RFC is ready for process programming.

RFC: Integration into an FMS

▶ With integration into a Fastems FMS, RFC achieves the highest level of productivity, as finishing/deburring is seamlessly integrated into the overall automation as another value-added process.

Advantages

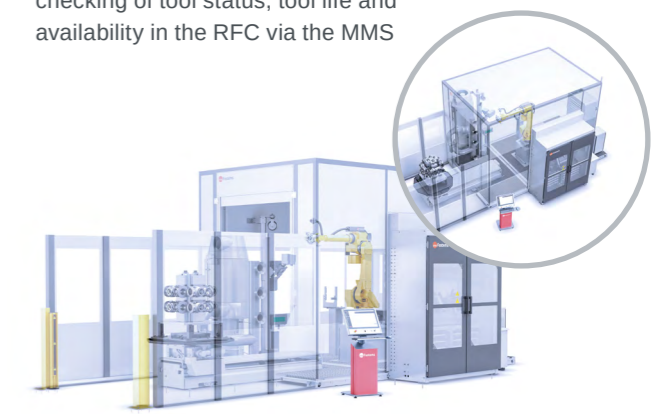
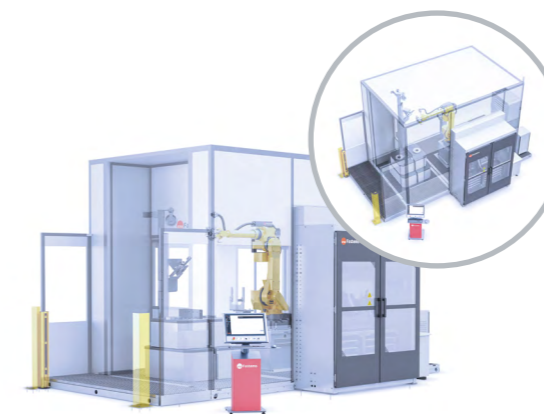
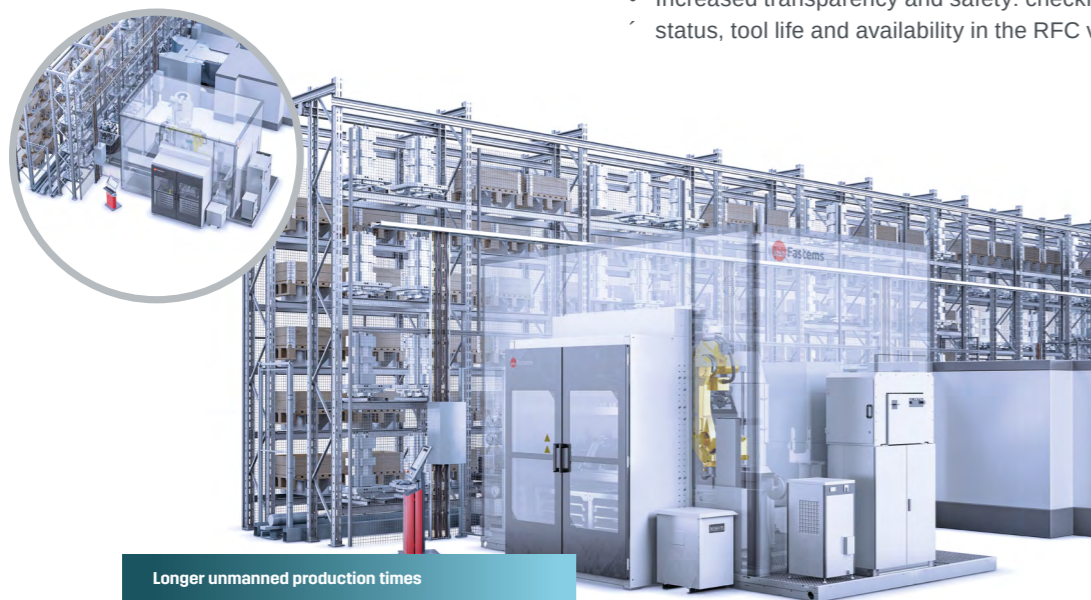
- Easy integration into a Fastems FMS
- Deburring is an integral part of overall automation
- Long unmanned production hours despite different part types
- Consistently high part quality thanks to reliable deburring processes
- Wide range of pneumatic and electric tools
- More personnel resources through sustainable employee relief
- More manufacturing capacities through an automated deburring process
- Predictive planning, forecasting and seamless monitoring through the MMS as a unified control for machine tools and the RFC
- Increased transparency and safety: checking tool status, tool life and availability in the RFC via the MMS

RFC: Stand-Alone-solution

▶ With the RFC as a stand-alone solution, you take a decisive step forward, because the robotic cell offers a whole range of options, both in the choice of loading and unloading stations and in terms of flexible configuration.

Advantages

- Consistently high part quality through reliable deburring processes
- Shorter non-productive times due to loading and unloading of the cell in parallel with main time (with certain configurations)
- Significant time savings through unmanned, automated deburring
- High flexibility and productivity due to individually loadable tool magazine
- Wide range of pneumatic and electric tools
- More personnel resources through sustainable employee relief
- More manufacturing capacities through an automated deburring process
- Simple planning and seamless monitoring through intuitive cell control with the MMS
- Greater transparency and safety: checking of tool status, tool life and availability in the RFC via the MMS



More flexibility – in every respect!

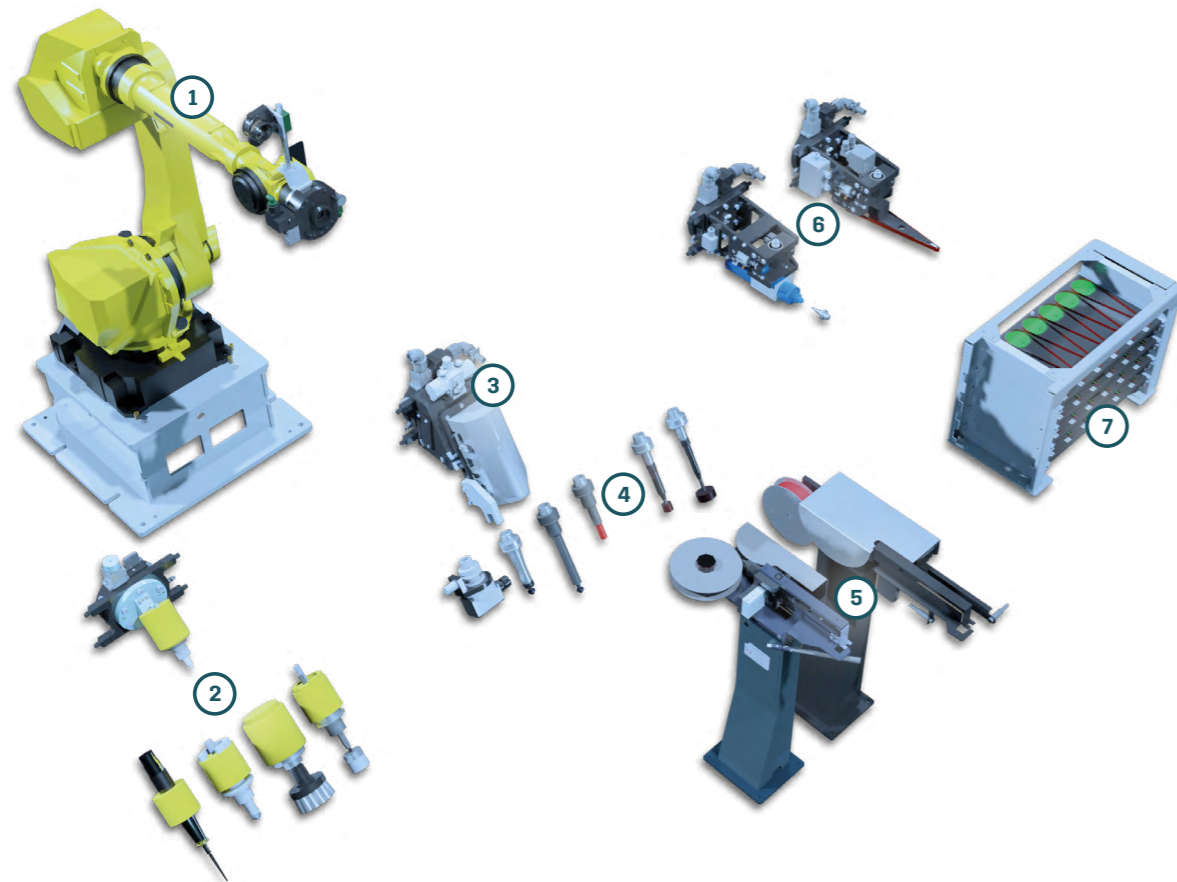
► In contrast to workpiece-bound finishing and deburring processes, where the part is manipulated against the tools with a fixed number of tool spindles and thus a limited selection of tools, the RFC works according to the “tool-to-part” principle, where tools are manipulated against the part. This gives you complete freedom and significantly more flexibility - in every respect: both in terms of the part mix (material, workpiece geometry, size, weight) and the number of different tools provided for this purpose.

The complete package from Fastems

For RFC as a highly flexible system platform, you receive all the tools required for finishing and deburring as well as other accessories from a single source. With a tool magazine equipped according to your individual needs, you save an enormous amount of time and can start programming parts immediately.

At a glance

- ① FANUC M-710iC/70 Roboter
- ② A wide range of Pneumatic spindles
- ③ Spindles with high torque
- ④ HSK63F tool holder with wide range of tool attachments
- ⑤ FlapGrinder System
- ⑥ High speed electric spindle with interchangeable WK-16 tool holders
- ⑦ Servo belt grinder



MMS: Plan, run and monitor your production



► Fastems Manufacturing Management Software (MMS) is one of the most powerful solutions for targeted planning, execution and monitoring of automated production. The intuitive MMS also offers all functions for flexible finishing and deburring of a large number of different part types.

AS A PART OF AN FMS

Thanks to the MMS, an RFC can be seamlessly integrated into the automated overall production planning as part of an FMS.

ADVANTAGES

- Clear management of different orders
- A unified control for the machine tools and the RFC in a FMS
- Overall management of RFC tool master data
- Transparent monitoring of mold status, operating time and tool life
- Automatic as well as continuous checking of tool availability

AS A STAND-ALONE SOLUTION

Thanks to the MMS for an RFC as a stand-alone solution, the planning and monitoring of finishing or deburring processes becomes much easier.

ADVANTAGES

- Clear management of different orders
- Simple processing of different parts with corresponding tools through work sequences
- Overall management of RFC tool master data
- Transparent monitoring of mold status, operating time and tool life
- Automatic as well as continuous checking of tool availability

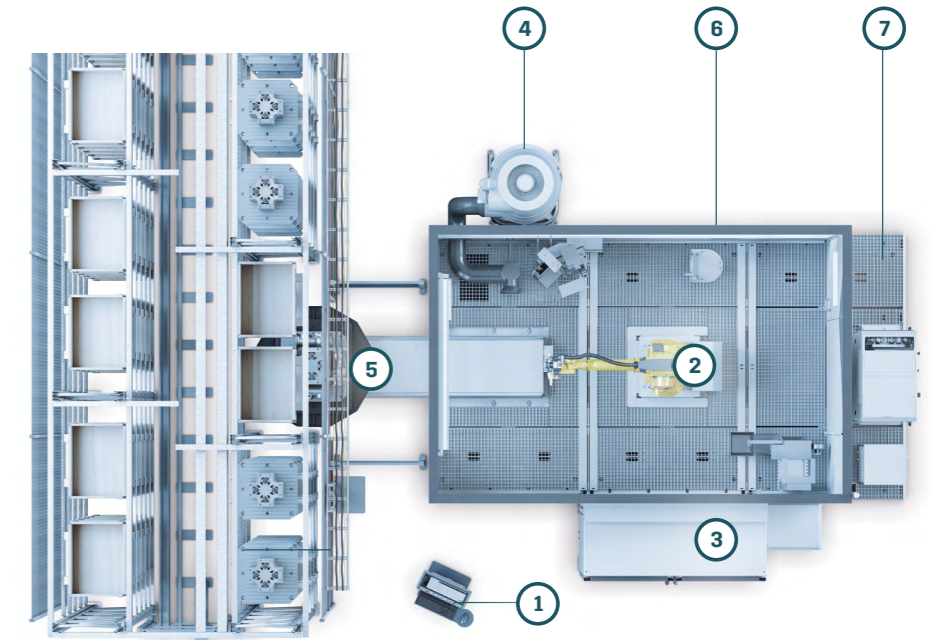
OTHER POWERFUL SOFTWARE FEATURES

- **MMS Dashboard:** Clear visualization of all relevant system information, individually configurable.
- **MMS Insights:** Valuable information about the current system performance, if necessary with suggestions for its optimization.
- **myFastems:** Comprehensive system overview and thus transparency over the entire service history and spare parts requirements as well as easy access to technical support.



At a glance

- ① Touch Operation Panel
- ② Robot
- ③ Spindle and tool magazine
- ④ Suction station (optional)
- ⑤ Processing station
- ⑥ Cell enclosure
- ⑦ Access door



Scope of delivery of the basic cell

Robotic system:

- Robot FANUC M-710iC/70
- R-30iB Plus Control

Control:

- MMS Control software
- Touch Operation Panel
- Incl. remote connection
- Integrated control cabinet

Process Station Alternatives:

- RSS-25
- RSS-60
- RSM-25
- RSM-60
- RSR-10
- RSRT-10

Cell Enclosure:

- Access door
- Roller door
- Steel base plate with grating
- Soundproof design

Options

- Tool magazine
- High speed spindle
- Spindle with high torque
- Pneumatic spindles
- Flap grinder system
- Marking system
- Various tools
- Suction station
- Fastsimu Offline-Programming software
- IR calibration-option for the robots

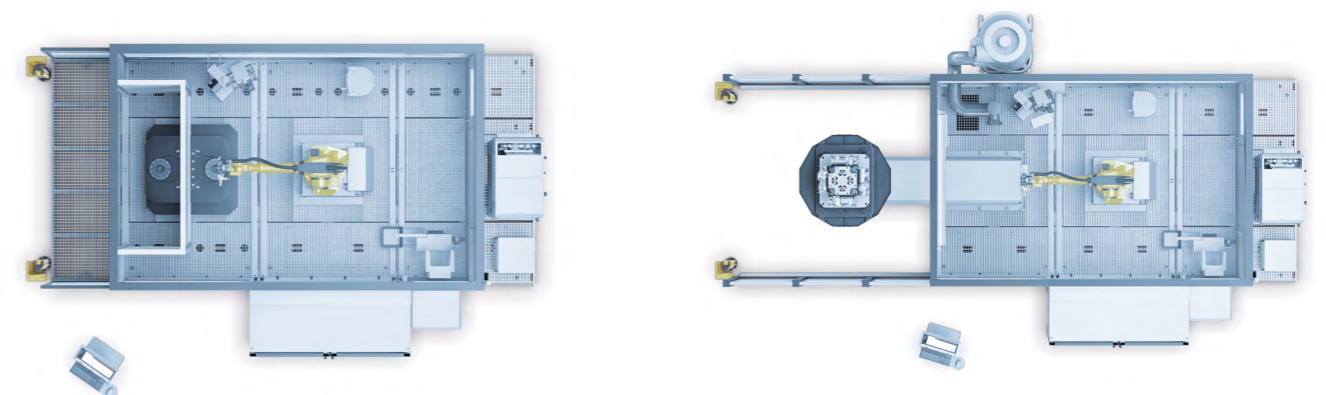


RFC – integrated with FMS

RFC – Stand-Alone

	RSS / RSM Stations		RSM Stations		RSR / RSRT Stations
Max. Diameter	1,650 mm		1,650 mm		500 mm
Max. Height	1,800 mm		1,800 mm		1,000 mm
Maximum weight (incl. Pallet)	RSS-25 RSM-25: 2,500 kg	RSS-60 RSM-60: 6,000 kg	RSM-25: 2,500 kg	RSM-60: 6,000 kg	500 kg
Tool magazine	Max. 2 magazines				
Capacity tool magazine	3 x 10 per tool magazine				
Belt / Sandpaper magazine	Max. 2 per tool magazine				
Capacity spindle magazine	Max. 4 per tool magazine				

RSS - Robot Station Stationary | RSM - Robot Station Moving | RSR - Robot Station Rotating | RSRT - Robot Station Rotating Tilting



Your added security.

Our deburring services

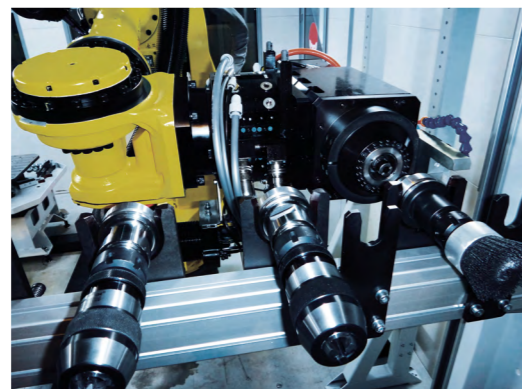
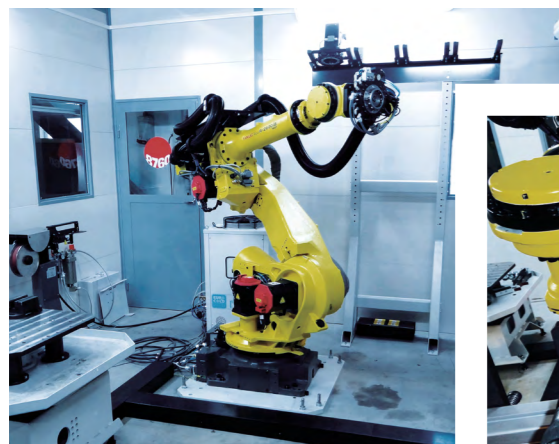
Fastems offers comprehensive RFC- related services for its customers, including feasibility analyses. With the offline programming software Fastemu, the robot can be programmed with the help of virtual workpieces.



Customer-specific feasibility analyses

► If very specific parts need to be deburred, we offer feasibility analyses in which we use customer-specific sample parts to check in advance which tools, programs, robot travel paths, etc. are most effective.

For such analyses and also process and tool developments, a fully equipped RFC is available in our development center.



Advantages

- Identification of the correct spindle types and definition of suitable tools and process media, e.g. brushes, abrasive belts, etc
- Simulation planning for new tools before their introduction
- Checking the quality of deburring processes
- Performance evaluation of deburring processes, tools and estimated cycle times
- Optimal configuration and equipment of the RFC with regard to specific processes
- Process description for the processing of specific workpiece features, e.g. holes, edges, surfaces etc.

Fastems' feasibility analyses provide customers with an RFC ideally designed for the individual workpieces.

Cost-efficient introduction of new workpieces - offline programming of robotic cell

► When new parts are introduced into production, on-line programming for deburring can become costly, as the robot is being used for programming, so no workpieces are being processed.

With Fastemu, you program and test the deburring processes offline, even if the workpieces do not yet exist. This allows you to integrate specific deburring processes more quickly without affecting the robot's workflow.

Advantages

- Virtual software tools ensure the range and thus collision-free movements of the robot even before real use
- Easy import of CAD models for offline programming
- Virtual tests of suitable tools already in advance
- Timely provision of the optimum deburring tools even before production starts
- Checking of cycle times and simulation of tool changes
- Monitoring of robot joint limits as well as velocities and accelerations
- Programming of the robotic cell in parallel to the main time without interfering with ongoing production processes
- Faster product development cycles thanks to time-saving offline programming, even if workpieces do not yet exist physically
- Faster introduction of new deburring processes, as much of the programming is prepared offline



We are Fastems. We are here for you.

- ▶ **“At Fastems, we believe that building and maintaining a strong manufacturing base is essential for the development of our society and the well-being of the people.”**

That is why we do everything in our power to increase the competitive advantage of our customers and to make their production facilities as efficient, profitable and forward-thinking as possible – through intelligent digitization and process automation.

- Decades of industry experience and more than 5,000 successfully installed systems worldwide
- Systems that optimize your time cycles, reduce costs and improve the usability of your existing machinery
- Systems that have been developed with the health and safety of your personnel in mind
- 24/7 support to ensure maximum productivity during all 8,760 hours of the year

We look forward to helping you determine the potential of your manufacturing processes and to finding a solution that is right for you!

www.fastems.com

