System 3R

Hybrid Automation
GF Machining Solutions: all about you
When all you need is everything, it’s good to know that there is one company that you can count on to deliver complete solutions and services. From world-class electrical discharge machines (EDM), Laser texturing and Additive Manufacturing through to first-class Milling and Spindles, Tooling, Automation and software systems — all backed by unrivalled customer service and support — we, through our AgieCharmilles, Microlution, Mikron Mill, Liechti, Step-Tec and System 3R technologies, help you raise your game and increase your competitive edge.

Tailored to serve your needs
System 3R offer automation solutions with industrial robots, both stationary and rail versions within the Die & Mold and Precision Production sector. Fanuc Solutions cover applications ...
... maximal payload weight 70-210 kg  
... radial reach, up to 2 655 mm  
... complexed transfer movements  
... parts handling

- Hybrid Automation – Concept for mix palletized automation together with parts handling.  
- For Parts Handling, fully automatic change from part A to part B in the machine. The system keeps track of NC-program, cassette, gripper, chuck adapters, quantity etc.  
- The concept for parts handling is optimal for part families. Meaning grippers and fixtures could possibly be used for more than one unique part.  
- In theory, batch size 1 is possible for both palletized automation as well as parts handling.  
- The software is based on the WorkShopManager/CellManager from System 3R. Always Easy-to-use and reliable.  
- Traceability functions can be built into the application.
Hybrid Automation
Mix to your needs – Palletized or parts handling automation

Palletized automation
Parts too large or too heavy for parts handling can be palletized

Automatic vice for parts
The table chuck has integrated (patented) pneumatics for secondary system activation/deactivation

Parts grippers
Grippers are designed according to dimensions and shape of the material
Easy Step-by-step

Prepare
Prepare cassettes and jobs. Load cassettes into magazine. Execute the jobs via CellManager.

Choose
Choose specific chuck adapter/vice needed for the material.

Bring
Bring the cassette with materials onto the Intermediate station.

Load
Load each material into the chuck adapter/vice and start first job in the queue.
WSM WorkCenter

User friendly preparation

Cassette registration in WSM WorkCenter
- Enter cassette Name ”CST3x6” and Cassette Type ”4”
- Enter number of positions for example ”18” pos. 3x6
- Enter start positions and offsets
- Material gripper ”1” (Lift in/out)
- Angle 0-90
- Chuck adapter ”1”
- Cell/machines

WSM WorkCenter – Enter order data
- Create order name ”Hybrid4”
- Choose article number
- Enter order quantity ”1”
- Choose operation – Milling
- Select NC program – NC01
Cassette Station
- Check the orders and which cassette type is required
- Unload cassette from magazine to Cassette Station
- Assign jobs to the materials
- Load cassette to the magazine – start milling machine

WSM CellManager
- Start the job according to the priority list
- View the status of each job
WSM – WorkShopManager

User-friendly Cell Management Software

- Necessary data is entered quickly and in a structured manner.
- Quick and precise overview of the entire process chain
- Increased flexibility: The order of priority can be changed at any time.
- Simpler and safer preparation of automated cells
- The risk of errors due to the human factor is reduced
- Increased process security
Preparation – WSM WorkCenter

- Create an order
- Assign operations and NC programs
- Retrieve offset values
- Release the order for production

Execution – WSM CellManager

- Manages the pallet ID codes and magazine positions
- Creates priority lists
- Automatically starts available jobs in the order of the priority list
- Updates the information in the database with the status and machining times of individual orders

Monitoring – WSM CellMonitor

- Display status of all cells
- Display status of individual machines and processes

Statistics – WSM Statistics

- Retrieve and analyze cell utilization data
- Retrieve and analyze order data
Customer Services

Optimize the uptime of your equipment with our Machine Support Services

Annual reconditioning minimizes production stops and optimizes function, precision and performance. GF Machining Solutions offers comprehensive services for your Automation, reference systems and masters and calibration tools.
Preventive maintenance

**Automation**
- Mechanics
- Pneumatics
- Peripheral equipment

**Reference systems**
- Rebuilding chucks
- Inspecting references
- Checking clamping force

**Masters and calibration tools**
- Cleaning and polishing
- CMM inspection
- Quality certificate

**CE Certification**
GF Machining Solutions’ Customer Services also offers CE Certification of Conformity for complete Automation cells.
Technical specifications

Fanuc 70/165/210

<table>
<thead>
<tr>
<th>Payload</th>
<th>70, 165, 210 kg, 155, 366, 466 lbs</th>
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</thead>
<tbody>
<tr>
<td>Max. X-reach</td>
<td>70 kg = 2050 mm, 165-210 kg = 2655 mm</td>
</tr>
<tr>
<td>Max. Z-reach</td>
<td>70 kg = 80.7 in, 165-210 kg = 104.5 in</td>
</tr>
<tr>
<td>Max. C-rotation</td>
<td>360-370°</td>
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<tr>
<td>Stationary cell, max. # of machines</td>
<td>Up to 3</td>
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<tr>
<td>Linear cell, max. # of machines</td>
<td>Up to 12</td>
</tr>
<tr>
<td>Rail type</td>
<td>Standard</td>
</tr>
<tr>
<td>Max. rail length</td>
<td>Standard 20 m, 787 in</td>
</tr>
<tr>
<td>Max. transfer weight</td>
<td>70 kg, 155 lbs [Fanuc 70]</td>
</tr>
<tr>
<td>(pallet and workpiece)</td>
<td>165 kg, 366 lbs [Fanuc 165]</td>
</tr>
<tr>
<td></td>
<td>210 kg, 466 lbs [Fanuc 210]</td>
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Accessories & options

Two basic designs: rack and rotary. Each magazine unit consists of a number of shelves (determined by the height of the workpieces in question). For detailed information, see separate Robot brochure.
Accessories & options

**Cassette Station**
Prepare and load cassettes
Mandatory: Touch screen.

**Cassette Station Software**
- Check the orders and which cassette type is required
- Unload cassette from magazine to Cassette Station
- Assign jobs to the materials
- Load cassette to the magazine – start milling machine

**Storage for grippers and adapters**
Rack magazine with gripper storage and pallet positions.

**Part Grippers**
Manufactured according to the part dimensions.

**Cassette Grippers**
Manufactured according to the Cassette dimensions.

**Intermediate Station**
Manufactured according to the Cassette dimensions.

**Cassette Layout**
Manufactured according to the Cassette dimensions.

**Automatic Vices**
Manufactured according to the part dimensions.
GF Machining Solutions

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

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 and design advantages.

Customer Services

Operations, Machine and Business Support. Customer Services provides with three levels of support all kind of services for GF Machining Solutions 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.
At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser and Automation solutions. A comprehensive package of Customer Services completes our proposition.

www.gfms.com