AgieCharmilles

LASER P 400
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.

Passion for Precision
Understanding your expectations is our commitment.

Impeccable performance in a single compact solution

Outstanding quality and efficiency concentrated in the smallest possible footprint and femtosecond Laser technology’s integration are the hallmarks of the LASER P 400, an unique texturing, engraving and marking solution. Specially designed for aesthetic and functional texturing of precision parts, including parts for watches and jewelry, small inserts, cutting tools, and micro machined workpieces, the LASER P 400 delivers the highly accurate and repeatable results your discerning customers demand.
Make the difference

Driving your productivity in precision parts production

Ramp up your productivity and part quality with this leading-edge five-axis Laser solution. Use fewer electrodes and cutting tools and eliminate the need for costly raw materials. Machine your part in just one setup, limit human error and significantly simplify your manufacturing process.

Extreme texturing and engraving quality
Get clean, sharp results and absolutely burr-free texturing and engraving with no post-treatment steps required. Using an ytterbium pulsed fiber Laser in combination with a ultrashort pulsed Laser (femtosecond) you achieve exceptionally high quality.

Innovative texturing
Femtosecond Laser technology opens new possibilities for aesthetic nano textures, including ripple effects and spikes, as well as functional textures.
Your versatile solution

Deliver highly accurate and repeatable results your valued customers expect. This one-of-a-kind Laser engraving, texturing and marking solution combines outstanding quality, efficiency, and femtosecond Laser technology in the smallest possible footprint. It is specifically designed for aesthetic and functional texturing of precision parts for watches and jewelry, small inserts, cutting tools and micro machined work pieces.

Scalable solution

Customize your LASER P 400 series machine to your specific needs, thanks to its scalability. Start with a standard configuration and, as your business evolves, add an axis, a nano or ultra-short pulsed Laser, Automation, and System 3R Tooling.

Dual Laser

Combine in live advantages of two lasers (Nano\Femto) into one solution.
In a single setup, GF Machining Solutions’ leading-edge Laser technology makes it easy for you to machine all of the elements of a bottle cap cavity.

**Groove machining**
Eliminate the steps required by conventional technologies with five-axis Laser texturing. You do it all in one step.

**Laser blasting**
Achieve outstanding textural homogeneity with fully automated and ready-to-use three- or five-axis Laser blasting.

**Logos and special textures**
Make your own distinctive mark on your work piece, thanks to the unlimited possibilities offered by our Laser texturing technology.

**Greater productivity and design possibilities**
- Fewer human errors
- Fewer setups
- Lower running costs

**3 in 1***
* Laser technology
  3 operations in 1 setup
Simplify your process and achieve infinite repeatability

Limit human error, open new design possibilities and easily texture and engrave your parts, molds and dies—regardless of surface constraints—with our fully digital five-axis process. Fast, accurate and easy surface calculation is built into our Laser solutions to save you time and increase your productivity.

Groove machining process

Milled cavity
Surface of engraving
Volume to be engraved
Transformation to mesh
GFMS LaserCam 5 axis simulation
Dedicated to your specific needs

One-of-a-kind, all-in-one dual Laser solution

Choose between a fiber or direct Laser and execute your three- or five-axis applications with full confidence that you have a flexible solution dedicated to your specific needs. Only GF Machining Solutions positions you to realize the full potential of Laser texturing technology with an all-in-one dual Laser head.

Versatile Laser solution

Standard, all-in-one dual Laser head

Start
Standard solution

Evolve
Add your integrable solution

Become unique
Get a unique five-axis solution

Second fiber
Ultra-short pulsed Laser (femto)

Laser fiber

Vision system for automatic laser positioning

Renishaw TP1 touch probe

Blowing nozzle

Fast mounting lens holder and exhaust collector
Higher degree of autonomy

Optimize your production

Unproductive time is the enemy of productivity, and System 3R Automation, Tooling and software has the solutions to optimize production by using your machine to its full capacity.

Choice of chucks and Tooling

Three-axis System 3R
Dynafix 280/GPS 240

Five-axis manual rotary 3R system
Macro 54

Five-axis automatic rotary 3R system
Macro 54
New product design dimension

Unlimited possibilities

Texture new materials with confidence

As the market reference in surface texturing, we make it easy for you to engrave a wide variety of materials in three or five axes, with or without a femto Laser source: steel, aluminum, carbide, brass, graphite, copper, ceramic and gemstones. With the femto Laser, you can also engrave glass, sapphire and polymers.
New product design dimension

The femto laser possibilities

Ripples
New design possibilities with femto laser, colors by light diffraction.

Efficient
Femto second laser allows burr free engravings, limiting Laser post treatment operations

Spikes
New capability with femto laser, deep blacks texture (light trapping)

Standard and cost effective fiber laser solution (Nano second)
Ease of use

Best ergonomic solution for your ease of use

Comfortable utilization
Doors open for easy loading and optimal workpiece access.
Doors closed: the large window provides an excellent view inside the machine for process monitoring.
## Technical data

<table>
<thead>
<tr>
<th><strong>Dimension of complete equipment</strong></th>
<th>mm</th>
<th>1230 x 2330 x 2490</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Machine weight (machine only)</strong></td>
<td>kg</td>
<td>2400</td>
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<tr>
<td><strong>Floor space (machine only)</strong></td>
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<tr>
<td><strong>Maximum workpiece dimensions 3Ax/5Ax</strong></td>
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<td>600 x 400 x 250 / Ø 120 x h 120</td>
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<tr>
<td><strong>Maximum workpiece weight 3Ax/5Ax</strong></td>
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<td><strong>Travel X/Y/Z</strong></td>
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<tr>
<td><strong>Rotary 4/5 axis</strong></td>
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<td>A 115°~105°/B 360°</td>
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<tr>
<td><strong>Laser sources</strong></td>
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<td>Multi-Laser sources: nanosecond and/or ultrashort pulsed laser **</td>
</tr>
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<td><strong>Power consumption</strong></td>
<td></td>
<td>Electrical: 3 x 400 Vac + ground; 6 kVA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pneumatic: 6 bars 500 l/h</td>
</tr>
</tbody>
</table>

* Width x depth x height  
** Option

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**LASER P 400**

![LASER P 400 diagram]

- Electrical connection
- Pneumatic connection

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GF Machining Solutions

EDM (electrical discharge machining)
AgieCharmilles wire-cutting, die-sinking and hole-drilling machines

For over 60 years we have been at the forefront of every EDM development: designing and refining the EDM process and building machine tools that deliver peerless part accuracies, surface finishes, cutting speeds and process reliability. Today, our AgieCharmilles wire-cutting, die-sinking and hole-drilling machines are recognized throughout the world as the best in the business. Our continuous research and development in digital generator technology, control systems and integrated Automation systems are evidence of our commitment to keeping your EDM operations on the leading edge of technology.

Milling
Mikron high-speed (HSM), high-performance (HPM) and high-efficiency (HEM) Milling centers

Customers operating in the mold, tool and die and precision component manufacturing sectors stake their reputations on being able to quickly and cost-competitively meet their customers’ demands. That’s why they invest in GF Mikron machines. Incorporating the latest and most advanced technologies and premium-performance components, Mikron HSM, HPM and HEM machines help you increase your production capabilities and improve your productivity. Designed and built for speed, accuracy and reliability, the machines, like you, are proven performers.

Laser dedicated aerospace and energy machining centers

Aerospace and power generation turbine manufacturers increasingly turn to Liechti dedicated five- and six-axis machining centers to machine complex, high-precision airfoils on blades, disks, blings, blisks/IBRs and impellers. It’s easy to see why because these machines, with their specific profile machining technology, specialized CAD/CAM software and engineering competence for ultra-dynamic machining in titanium, Inconel, nimonic, titanium-aluminide and high-alloy steels, yield productivity gains as much as 30 percent, thanks to reduced machining times. In the globally competitive aerospace and power generation manufacturing sector, that’s definitely worth shouting about.

Step-Tec Spindles

At the heart of every GF Mikron machining center is high-performance Step-Tec Spindle. Step-Tec Spindles are essential core components of our machining centers. Highly accurate and thermally stable Step-Tec Spindles ensure that our machines can handle everything from heavy-duty roughing to fine-finishing operations.

Customer Services
Operations Support, Machine Support and Business Support

To help you get the most and the best from your machine tools and equipment, we offer three levels of support. Operations Support covers our range of original wear parts and certified consumables (EDM wires, filters, resins, electrodes etc.) to ensure that your machines are performing at the highest levels. Machine Support maximizes, through our best-in-class technical support, preventive services and quality spare parts, your machine tool uptime. Business Support is designed to help you make a real step-change in your productivity and performance with solutions tailored to your specific needs.

Laser Additive Manufacturing (AM)

GF Machining Solutions has partnered with EOS, the global leader for high-end AM solutions, to integrate this innovative technology and further develop it into its current solutions to fully benefit the mold industry, by focusing on injection efficiency: optimized cooling design to reduce cycle time, lower energy consumption, higher quality of plastic parts.
At a glance

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

www.gfms.com