Laser ablation
Laser ablation adds to and extends the technologies offered by GF AgieCharmilles. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser ablation at GFAC enables individualization of products and compared to conventional surface treatment using etching processes, offers economic, ecological and design advantages.

More versatility
The four LASER machines in various models offer solutions ranging from the three-axis entry-level LASER 500 up to the high-end LASER 1200 for five-axis machining with a travel path of 1200 mm x 900 mm x 1200 mm (x, y, z) and a maximum part weight of 1700 kg. The maximum volume size of the part is 700 x 700 x 700 mm.
The new laser technology from GF AgieCharmilles where your imagination becomes the limit.
GF AgieCharmilles integrates laser ablation into technology portfolio

GF AgieCharmilles, the world’s leading supplier of machines, automation solutions and services to the tool and moldmaking industry as well as to manufacturers of precision parts and components, supplements its existing technology portfolio of diesinking EDM, wire-cutting EDM, High Speed and High Performance Milling machines with its new LASER products.

GF AgieCharmilles’ new laser ablation product line positions customers to improve their competitive edge.

Use our new laser technology for efficient and repeatable texturing, engraving, micro structuring, marking and labeling of objects in two or three dimensions.

The LASER product line offers unparalleled possibilities for the design of your parts, freeing you to discover more creativity in three dimensions for different materials and workpiece sizes. We enable your independence, individuality, know-how and innovative spirit.

Welcome to a new experience.

CEO GF AgieCharmilles
With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries.

**2D and 3D, 3 axis**
Application field is covered with a 3Ax LASER machine X, Y and Z.

**3D, 5 axis**
Application field is covered with a 5Ax LASER machine X, Y, Z, A and B.

**3D, 4 axis**
Application field is covered with a 3Ax LASER machine and an optional 4th axis [Dividing head] X, Y, Z and C.
Laser ablation at GF AgieCharmilles enables individualisation of products

**Highlights LASER**

**More progress**

Our LASER products honor the market leadership for which GF AgieCharmilles is known, again surpassing the competition and allowing you to do the same. Our LASER products are based on and bridge our existing, high-quality products to offer you greater consistency, flexibility and autonomy.

**Fully integrated machine concept**

- Two optical and three to five mechanical axes
- Generously sized cast iron construction stands out due to its excellent absorption properties with high stability and lasting quality
- High accuracy due to linear scales and rotary encoders*
- Machining of various materials (aluminium, copper, steel, graphite, carbide, brass, ceramics, etc.)
- Integrated filters, exhaust, dryer and chiller
- Four machines in various models covering a huge range of applications
- Ytterbium fiber laser range 20W, 50W and 100W**
- Flexible and programmable workpiece automation
- High performance NC-PC based control; 19” LCD monitor, Windows XP ®
- CE conform and laser class 1 conform (no individual protection necessary for operator)

* Laser 600,1000,1200
** Needs chiller
© Windows is a registered trademark of Microsoft Corporation
Laser ablation, compared to conventional surface treatment using etching processes, offers economic, ecological and design advantages.

**More functionality**

Special features are included in our patented laser head to ensure your success.
- Programmable tilting axis*
- High resolution camera with integrated illumination for fine positioning
- 3D touch probe
- Laser red pointer for laser positioning
- Different lenses capability
- Air blow and dust exhaust (immersive and adjustable)
- High-speed scanner head

**Easy maintenance**

Exchange of filters
- Integrated inside the machine
- Signal of filters filled
- Autorun with machine cycle
- Auto cleaning cartridge by compressed air
- Filter cartridge guarantees a separation efficiency ≥99%
- Adjustment of exhaust speed

**GF AgieCharmilles software features**

Offline programming (on customer PC)
- GFAC LASER CAM
- GFAC LASER Design - For texturing
- GFAC LASER Simulation - Collision protection

**Machine controlling**

- GFAC LASER LMCS - For NC machine and system control
- GFAC LASER Control

**Accuracy**

What is speed if accuracy suffers? Precision as standard:
- High static and dynamic rigidity
- Linear scales on all axes with a resolution of 0.5 μm guarantee an incomparable accuracy and repeatability
- Integrated 3D probing system

**Ergonomics and process reliability**

Safety and accessibility know no compromises
- Unaltered accessibility in any configuration
- Outstanding view of the working area
- Large size protection window
- Access from front through opening of two doors also for crane loading

**Dynamics**

Homogeneous dynamic performances on all axes. Highly dynamic axes are prerequisite for fast positioning.
- High rigidity
- Excellent positioning accuracy
- No lead error, no backlash
- No wear
- Central lubrication system

**GF AgieCharmilles LASER process training solutions**

- Pre-Sales Training
- First steps
- Skills reinforcement
- Specialization
Automation

Even more productive due to automation

More independence

Our LASER products can be integrated into an existing automated system or with an optional pallet changer. You control the whole process chain, which means more independence with the LASER product line from GF AgieCharmilles. Available as option for LASER 600, 1000 [Retrofittable].

<table>
<thead>
<tr>
<th>System 3R</th>
<th>Erowa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynafix (280x280 mm)</td>
<td>UCP 320x320 mm</td>
</tr>
<tr>
<td>GPS 240x240 mm</td>
<td>ITS 148x148 mm</td>
</tr>
<tr>
<td>Macro Magnum 156x156 mm</td>
<td>ITS 72x72 mm</td>
</tr>
<tr>
<td>Macro 54x54 mm</td>
<td>ITS 50x50 mm</td>
</tr>
</tbody>
</table>

*With Standard Pallet 280x280mm or with Mikron Pallet 350x350mm usable*
More control

GF AgieCharmilles’ LASER products digitalize the entire texturing process, closing the loop that had existed in the process. In the past, every step in the process was computerized except for the texturing itself.

Today, with our LASER line, even the texturing is digitalized, offering you an efficient and unparalleled way preview the finished product and reliably reproduce textures and images in batches both large and small.

For businesses dependent on creation of textured surfaces, GF AgieCharmilles offers you to create those textures in-house, enabling greater efficiency and more autonomy.

More innovation

Our LASER line lays the foundation for product designers to transform ideas into innovations, and surpass previous limitations in texturing. Our technology allows you to realize new design possibilities and quickly turn them into revenues while at the same time enhancing the perception of your products.

Our LASER technology revolutionizes the production of graphite and copper electrodes; only laser technology yields such high-quality electrodes. We enable you to optimize your process chain across several technologies to heighten your competitive advantage and ensure your advance in the marketplace.

Basic virtual shape without texture
- Created by any CAD
- Reverse engineering eg. with 3D scanner

2D texture generation
- By reverse engineering eg. with 3D scanner or
- Graphic software eg. AdobePhotoshop®

Merge of virtual part and virtual texture
- Use of virtual design and mapping software
- Preview of final design
What you see is what you get.
Achieve more...
Laserhead variations

Our laser head - a class of its own
Integrated features of first class quality

Multifunctional LASER head
• Head for LASER 3 Ax (no tilting and less functions)
• Head for LASER 5 Ax option (tilting head)
• Fiber laser 20 W pulsed
• Option 50 W and 100 W
• Constant laser pulse working to give better engraving quality also during acceleration/deceleration on the edges

Camera for fine positioning
• With digital cross generator
• Light illumination
• Real time display with zoom possibility
• High resolution camera

Fibre laser optical output

Two high-speed scanners

Light
• On / Off

3D touch probe
• 3 directions measurement (3D)
• 70 mm pneumatically retractable to avoid collisions
• Resolution 0.001 mm of probe
• Automatic calculation of the laser focus position
• Manual part location
• Automatic part location

Laser red pointer for laser positioning

Dry air blowing
• On/Off

Exhaust nozzle
• Adjustable down angle
• Retractable
• Dust and smoke removal

Focal lens
Fast exchange
• Focal Lens 100 mm (Spot size 24 μm)
• Focal Lens 160 mm (Spot size 39 μm)
• Focal Lens 254 mm (Spot size 69 μm)
Creativity

A technology where your imagination becomes the limit

More creativity

One of today’s trends is the individualization of products. Offer your customers a unique service by taking advantage of LASER product line’s ability to produce exceptionally repeatable textures, logos and graphics. Discover new, previously unachievable design possibilities for your products. Our LASER line enables your success by positioning you to differentiate yourself from your competition. Let us show you how our LASER line can meet your specific needs.

More process repeatability

With our technology, you are able to use a fully digitalized process for texturing and engraving that is endlessly repeatable.
Great work begins with a successful training

More support...

GF AgieCharmilles Customer Services is offering you Business Supports which enable you to activate the full potential of your operations.

Before you decide for an investment, meet us in our Training and Application Centers for a non compulsive training session and learn how our LASER product line opens a new world of design possibilities for engraving, texturing and other applications. Our LASER experts will introduce you to the technology, software and applications with an eye on your specific needs.

As your trusted partner, we invite you to experience at first-hand, how GF AgieCharmilles’ LASER products can contribute to the success of your business.

For all GF AgieCharmilles machines including the LASER line, Customer Services offers you a modular concept with 3 levels of support.

Operations Support with Consumables & Wear Parts will let you achieve highest levels of performance in your daily operations.

Machine Support with Preventive Services guarantees highest uptimes of your machine.

Business Support with specialized Trainings, Options, Automation Solutions as well as Application & Design Support for the generation of grains enables you to activate the full potential of your operations.

Choose the services, which fit best to your specific needs.
Only with a successful training you can reach the goal.

One day information training for decision makers, process engineers, application engineers, design engineers, technicians and everybody else who is interested in the laser ablation process and GF AgieCharmilles LASER machines.

Discover

First steps

**Rhinoceros® (1)** software
Customer’s file modification
Volume to engrave Design
Mesh creation
Simple mapping

**3Ax training elements**
3Ax LASER Technology
Machine-CN
GFAC LASERControl
GFAC LASERCAM 2D
GFAC LASERDesign 2D
Online simulation mask

**5Ax training elements**
Analog 3Ax training with additional elements

**5Ax LASER Technology**
Object reference
GFAC LASERCAM 3D
GFAC LASERDesign 3D
Offline machining 3D simulation

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(1) Rhinoceros is a registered trademark of Robert McNeel & Associates.
Skills enhancement

3Ax training elements
- Laser configuration
- Tools calibration
- Cross camera
- GFAC CAM
- GFAC Design
- Machining simulation

5Ax training elements
- Analog 3Ax training with additional elements
- Laser configuration
- Tools calibration
- Cross camera
- GFAC CAM
- GFAC Design
- Machining simulation

Specialization

Continuous process improvement - Enabling your success

3Ax / 5Ax training elements individually selectable modules
- Mapping software training
- Camera repositioning
- LASERControl
- Syntaxics Programs
- Automation

Want to know more?
For further information on products, applications, trainings, events and up-to-date news, please visit our website.
You have the possibility to register online for all training modules.

Hope to see you soon on http://laser.gfac.com
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 ablation
Laser ablation supplements and extends the technologies offered by GF AgieCharmilles. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser ablation, compared to conventional surface treatment using manual etching processes, offers economic, ecological and design advantages.

Customer Services
Operations, Machine and Business Support
Customer Services provides with three levels of support all kind of services for GF AgieCharmilles 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.

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.
We commit ourselves to a promise. That promise is “Achieve more.” It’s a commitment to create the right conditions for our customers to obtain competitive results. When our customers win, we win.