LASER MARKING AND TRACEABILITY SOLUTION

INTEGRABLE RANGE
LASERS ARE OUR EXPERTISE

MANIPULATING LIGHT

Working with laser technology for over 20 years, Gravotech makes use of all the properties of the light beam and its different wavelengths to offer the best solution for marking your parts.

From a component to the finished product, Technifor lasers from Gravotech quietly perform lasting high-quality marking at the speed of light.

DIRECT PART MARKING (DPM)

The laser generates high-quality permanent coding on each part without affecting the functionality (1D and 2D codes, text, logos, optical characters, etc).

Gravotech offers a complete solution integrating marking and automatic camera verification to track each part throughout its production process up to its maintenance.

VISIBLE INFRARED Wavelength (nm)

**532 nm**

**1064 nm**

**10 600 nm**

DISCOVER OUR VIDEO

Able to engrave the most difficult materials such as iron or titanium, our systems are also very effective on plastics and other soft materials while maintaining precision and care.
OUR PRODUCTS

3D MODULE
The best amplitude on the market

AUTO-FOCUS
Perfect marking in all conditions

This module automatically adjusts the focal length required without calibration or waiting time:
- Guarantee optimal marking regardless of the flatness of the parts or their shape.
- With an exceptional range up to 4.72” (120mm), it absorbs level differences over a series of parts.

MULTI-LEVEL AND INCLINED SURFACES
Marking suitable for all shapes

Equipped with a unique system: the adaptation to the marking surface is instantaneous:
- No deformation of the marked characters
- Uniform contrast over the entire engraving area
- Multiple markings on a single part at different levels

VISION MANAGER
Instantaneous marking control

FULL TRACEABILITY
-Automatic verification of the content on one or more 2D codes
-Graduation of the code and trigger of operations: file selection, dialogue with the PLC, activation of alarms, actuators for rejecting faulty parts, etc.

INTEGRATED VISION SYSTEM
Managed using Lasertrace™ software, this module includes a Cognex Insight camera with lighting, auto-focus system and protective lens.
It offers perfect reading of all 1D and 2D codes as well as all fonts.
LASER SOLUTION: FIBER SERIES

COMPACT
The ideal solution for small spaces so you can easily integrate marking into your production. On a line or a robotic arm, it is simple to install in all positions, considerably reducing installation time and costs.

INDUSTRIAL
Very robust construction and high-quality components offer great stability with low maintenance requirements. Sealed from dust, water and other projection, the class IP54 head is effective in even the harshest industrial environments.

POWERFUL
This high-energy laser provides precise marking at fast speeds. High contrast on all types of surfaces (rough, smooth or coated). All effects are possible including deep 3D engraving.
FIBER LASER: CLASS 4 WAVELENGTH: 1064 nm

<table>
<thead>
<tr>
<th></th>
<th>F10</th>
<th>F20</th>
<th>F30</th>
<th>F50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (W)</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Frequency (kHz)</td>
<td>20 - 100</td>
<td>20 - 100</td>
<td>30 - 100</td>
<td>50 - 200</td>
</tr>
<tr>
<td>Max. speed (in/s)</td>
<td></td>
<td></td>
<td>393.7</td>
<td></td>
</tr>
<tr>
<td>Min. beam Ø (µm)</td>
<td></td>
<td></td>
<td>From 40</td>
<td></td>
</tr>
<tr>
<td>Marking mode</td>
<td>Static/Dynamic (“on-the-fly”)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marking area * (in)</td>
<td>2.56 x 2.56 / 4.33 x 4.33 / 6.89 x 6.89 / 8.07 x 8.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP level</td>
<td>IP54 head – Protection against dust and water projections</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Interfaces</td>
<td>Ethernet TCP/IP; Profinet; Ethernet IP; dedicated I/O (SUB D37); 8I / 8O; RS232; USB (x3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber optic length (ft)</td>
<td>9.84</td>
<td>8.6</td>
<td>7.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Ambient temperature (*°F)</td>
<td>32 - 104 **</td>
<td>35 - 107 **</td>
<td>35 - 107 **</td>
<td>35 - 107 **</td>
</tr>
</tbody>
</table>

* Other focal lengths available on request
** 95°F for the F50, if the operating rate > 50%

SPOTLIGHT ON... MULTI-LEVEL MARKING

Identification of clutch housings on a high-speed line under extreme vibration and temperature conditions:
- Marking on 2 planes with a level difference of 3.93 in
- Cleaning of the rough surface
- Marking of a Datamatrix™ code and references on the lower section
- Marking of 6 characters and Datamatrix™ code on the upper level

The Fiber Series offers marking repeatability and optimal reading on the most irregular surfaces. The 3D module can be used for marking on different levels without adjustment.

PRODUCT FOCUS

Small in size offering maximum safety, the beam’s protection funnel reduces the costs and constraints of a class 1 station.

Completely independent, its double-wall system with suction is used for the removal of fumes and dust. Safety systems prevent laser emission if the funnel is not sealed on the part.
LASER SOLUTION: HYBRID SERIES

PLUG N’MARK
Compact and independent turnkey system, it's all-in-one design is secure, easy-to-install and free from wiring constraints. Installation is very simple; using a single cable.

MULTI-PURPOSE
Contrasted, discreet, deep or surface marking, the effects are numerous. The extensive frequency range means marking can be adapted to each application and material type.

HIGH CONTRAST
With the highest peak power in the range, it provides contrasted marking on a range of materials. The high-quality beam is particularly effective on plastics.
### HYBRID LASER: CLASS 4 WAVELENGTH: 1064 nm

<table>
<thead>
<tr>
<th></th>
<th>H6</th>
<th>H10</th>
<th>H20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (W)</td>
<td>6</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Frequency (kHz)</td>
<td></td>
<td>10 - 100</td>
<td></td>
</tr>
<tr>
<td>Speed (in/s)</td>
<td></td>
<td>393.7</td>
<td></td>
</tr>
<tr>
<td>Min. beam Ø (µm)</td>
<td></td>
<td>From 25</td>
<td></td>
</tr>
<tr>
<td>Peak power (kW)</td>
<td>20</td>
<td>60</td>
<td>150</td>
</tr>
<tr>
<td>Marking mode</td>
<td></td>
<td>Static/Dynamic («on-the-fly»)</td>
<td></td>
</tr>
<tr>
<td>Marking area* (in)</td>
<td>2.56 x 2.56 / 4.33 x 4.33 / 6.89 x 6.89 / 8.07 x 8.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfaces</td>
<td>Ethernet TCP/IP ; Profinet ; Ethernet IP ; I/O dédié (SUB D37) ; 8I / 8O ; RS232 ; USB (x3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber optic length</td>
<td></td>
<td>All-in-one system</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature (°F)</td>
<td></td>
<td>50 - 104</td>
<td></td>
</tr>
</tbody>
</table>

* Other focal lengths available on request

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**SPOTLIGHT ON... MARKING PLASTICS**

Integration into production lines with a direct connection to the factory’s network using Profinet:
- Identification of thousands of parts each day
- Series of plastic caps in different colors
- 3 reference lines, logos and Data Matrix™

The Hybrid Series offers very contrasted marking on plastics allowing professional and durable identification.

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**PRODUCT FOCUS**

This range combines the unique properties of the DPSS source (Diode Pumped Solid State) with the proven monobloc design of the fiber range.

The MTTF of the pumping diodes of our DPSS sources is greater than 120,000 hours, which guarantees reliability and returns equivalent to fiber technology.
LASER SOLUTION: GREEN SERIES

“COLD” MARKING

The laser beam’s concentration allows marking without the use of heat on your parts, avoiding any burning or deformation. This marking does not alter the material and is an ideal solution for marking soft materials and sensitive components.

MICRO-MARKING

Its ultra-thin beam generates marking with an exceptional resolution. Small 2D Datamatrix™, very-detailed logo, precise removal of thin layers of coating, the Green Series can overcome all challenges.

UNIQUE INTERACTION

This range uses a 532 nm wavelength to mark materials not or barely reacting to infrared wavelengths: from rough to the most transparent plastics, reflective metals (copper, silver, gold), ceramic, and more.
### GREEN LASER, CLASS 4 WAVELENGTH: 532 nm

<table>
<thead>
<tr>
<th></th>
<th>G5</th>
<th>G10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power (W)</strong></td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Frequency (kHz)</strong></td>
<td>10 - 100</td>
<td></td>
</tr>
<tr>
<td><strong>Speed (in/s)</strong></td>
<td>393.7</td>
<td></td>
</tr>
<tr>
<td><strong>Min. beam Ø (µm)</strong></td>
<td>From 15</td>
<td></td>
</tr>
<tr>
<td><strong>Peak power (kW)</strong></td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td><strong>Marking mode</strong></td>
<td>Static/Dynamic («on-the-fly»)</td>
<td></td>
</tr>
<tr>
<td><em><em>Marking area</em> (in)</em>*</td>
<td>2.56 x 2.56 / 4.33 x 4.33 / 6.89 x 6.89 / 8.07 x 8.07</td>
<td></td>
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<td>All-in-one system</td>
</tr>
<tr>
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<td></td>
<td>All-in-one system</td>
</tr>
<tr>
<td><strong>Ambient temperature (°F)</strong></td>
<td></td>
<td>50 - 104</td>
</tr>
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</table>

* Other focal lengths available on request

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**SPOTLIGHT ON...MICRO-MARKING**

Integration of marking on printed circuits after component control:
- Marking of characters up to 0.003 in high
- Marking of very small Data Matrix™ codes which can be read by camera

With exceptionally fast performance, the Green Series offers surface marking without damaging the components combined with the repeatability required for mass identification.

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**PRODUCT FOCUS**

Integrated HMI displays current machine status, permits access to self-diagnostic functions and simplifies implementation and visualisation tasks for the operator.

The data is displayed in real time directly on the laser machine regardless of whether it operates independently or is connected to your environment.
LASER SOLUTION: 
CO$_2$ SERIES

“ON THE FLY” MARKING
This range identifies stationary or moving parts while maintaining constant coding quality. This traceability solution offers high-speed readable and permanent marking: Serial n°, batches, DLC, DLUO, date and time, logos, OCR characters, barcodes, 2D Data Matrix™, QR codes, etc.

ECO-FRIENDLY
Respectful of the environment, its operation is clean without ink deposits or solvent emissions. Its operating costs are minimal due to the lack of consumables or maintenance. This solution helps to reduce your carbon footprint.

FROM THE NATURAL TO THE TRANSPARENT
Effective, it is great on all organic materials (wood, rubber, leather, etc), mineral (glass, ceramic, etc) and transparent plastics and coated metals.
### CO₂ LASER: CLASS 4 WAVELENGTH: 10,600 nm

**CO₂ Laser: Class 4 Wavelength: 10,600 nm**

<table>
<thead>
<tr>
<th></th>
<th>C20</th>
<th>C30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power (W)</strong></td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td><strong>Frequency (kHz)</strong></td>
<td>CW (Continuous)</td>
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</tr>
<tr>
<td><strong>Speed (in/s)</strong></td>
<td>393.7</td>
<td></td>
</tr>
<tr>
<td><strong>Marking mode</strong></td>
<td>Static/Dynamic («on-the-fly»)</td>
<td></td>
</tr>
<tr>
<td><strong>Marking area * (in)</strong></td>
<td>3.54 x 3.54 / 5.51 x 5.51</td>
<td></td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td>Ethernet TCP/IP ; Profinet ; Ethernet IP ; I/O dédié (SUB D37) ; 8I / 8O ; RS232 ; USB (x3)</td>
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**SPOTLIGHT ON...DYNAMIC CODING**

High-speed continuous numbering of PET bottles:
- Marking of the batch number and expiration date
- Coding speed: 30,000 bottles/hour

Completely independent, the CO₂ Series offers high-resolution marking. With its small size, it can be installed on existing lines and can mark different materials, follows your production rates and requires no consumables.

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**PRODUCT FOCUS**

With an extremely-high coding speed (up to 393.7 in/s), the CO₂ Series matches your speeds and adapts to the stopping and re-starting of your lines. Able to mark linear and 2D codes, optical characters and alphanumeric text, it offers a high level of flexibility and readability.
COMMUNICATING

Natively equipped with communication tools, our systems continuously and instantaneously exchange with any industrial environment. Easy to configure by factory, line and even by product, they communicate with your PLCs, operate independently and allow remote control.

TIME SAVING

Simple installation worldwide, plug and play modules (no PC or communication adaptor required) and pre-programmed commands for most PLCs: installation time is reduced considerably.

REduced costs

«Ready-to-integrate» solutions require no additional connection equipment. Industrial and protected from electromagnetic disturbances, they require no filtration or additional housing.
Our intuitive software simplifies the creation of your markings.

Production Mode is used to easily automate several tasks:
- Control of duplications, log files, operator/supervisor access, data acquisition from your existing systems (ERP, database, measuring equipment, etc), connection to code readers, etc.

Developed specially for identification and traceability purposes, Lasertrace™ is able to meet all your standard and regulatory requirements.
- Fonts: catalog of fonts optimized to reduce cycle times, OCR fonts, etc.
- Barcodes: CODE 39: CODE128 / 2of5 / CODE 93 / UPC EAN13, etc.
- 2D codes: DataMatrix™ ECC200, GS1, QR code, UID, GS1- etc.

FUNCTIONS DEDICATED TO AUTOMATION

FUNCTIONS DEDICATED TO TRACEABILITY

Multilingual interface

Data Matrix™, bar codes, QR codes, UID, GS1...

Texts, serial numbers, variables, shift codes, dates, logos...

Direct access to marking parameters

Library of marking presets, Color Scale Marking, Link to databases (ODBC, Excel, ASCII...)

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INTEGRATION IS OUR SPECIALITY

Easy to integrate and highly communicative, our laser equipment meets worldwide industrial standards.

Compact, fast and safe, Technifor lasers by Gravotech are suitable for your environment and can be installed on new or existing lines.

An expert in the aeronautics, automobile and medical industries and industrial applications in general, Gravotech designs easy-to-automate solutions resulting in significant time, costs and energy savings.

“ 

Our goal: To help you automate the marking of your parts by communicating with your existing tools and benefiting from the exceptional properties of laser technology.

”

BETTER PRODUCTION AT A LOWER COST

With practical experience at the biggest manufacturers, our Innovation and Technology Center designs systems adapted to industrial constraints:

- Good reliability and useful life
- Improved productivity
- No consumables or restrictive maintenance
- Flexibility

ACCESS FOR MEMBERS

A dedicated web portal available 24 hours a day/7 days a week provides all practical information online, including integration guides, control instructions, PLC programming examples and manuals, etc.
A GLOBAL PARTNER

OUR SERVICES

Feasibility studies, advice and free tests, Gravotech offers direct support for your projects and can manage major integration projects worldwide thanks to a network of unique subsidiaries.

Within its application laboratory, its experts validate the most suitable technology and create industrial-quality samples.

CUSTOMIZED

A team of qualified engineers assists those in the industry with the integration of marking heads and develops customized mechanical and IT solutions based on the requirements of production cycles.

LOCAL SUPPORT IN THE OPERATOR’S LANGUAGE

Experienced teams on five continents provide on-site training and assistance and offer adapted maintenance contracts.

Technical documentation and software available in over 20 languages.

QUALITY

Gravotech’s success is based on the permanent focus on quality (ISO 9001 - v2008) and an organization based on customer service.
Gravotech’s ability to mark quickly and for a long period of time has been recognized and appreciated by the largest industrial groups since 1981.

A specialist in the identification and automatic traceability of industrial parts, Gravotech offers a full range of technologies and a strong international organization to meet all your needs.

The Gravotech group has a global network present in over 100 countries.

A leader in engraving and permanent marking, Gravotech covers the complexity of your needs in easy-to-use solutions.

“Part numbers, batch traceability, time-stamping and internal coding are essential to guarantee “zero defect” operation in any modern production.

Gérard Guyard - President

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