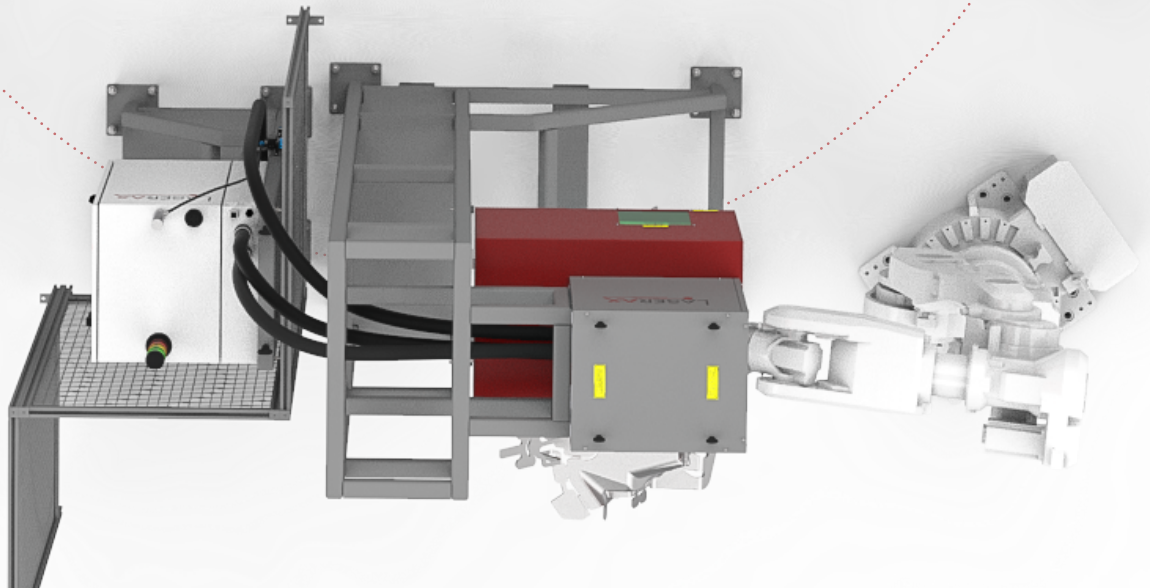


A circular diagram with a dashed red line connecting four different types of laser marking machines. The machines are arranged in a circle, with a red triangle pointing downwards from the center text towards the machine at the bottom. The machines include a portable unit, a large industrial unit, a desktop unit, and a robotic unit.

HOW TO CHOOSE A LASER MARKING MACHINE IN 4 STEPS



THE PROCESS FOR CHOOSING A MACHINE



Choosing a laser marking machine can seem complicated if you've never done it before. After all, even those who already own a laser can feel overwhelmed by all the options.

We have created this guide to help you identify which laser machine and options fit your needs. You will also find useful tips to get the most out of your investment.

- 1 Define your marking needs with a laser expert
- 2 Validate feasibility with sample markings
- 3 Choose the solution that maximizes your investment
- 4 Add laser options for additional requirements

STEP 1. DEFINE YOUR NEEDS

You should discuss your project with a laser expert as soon as possible. They will help you define your needs so that you can save time and money. Don't wait for budget approvals before reaching out.

At Laserax, we start by reviewing your application to make sure laser is a good fit for you. There are cases laser isn't a good fit. If so, we will tell you.

5 WAYS EXPERTS REDUCE COSTS & OPTIMIZE LASER PERFORMANCE

1 Choose the Right Marking Position

Where you position the marking affects which type of laser head you need. Flat surfaces are typically marked with a 2D head, whereas curved surfaces with a 3D head. Since 3D heads are more high-tech and expensive, you should position the marking on a flat surface when possible.

Where you position the marking also affects which machines will be available to you. You can save thousands of dollars on automation costs just by switching the marking's position.

2 Choose the Right Type & Size of Identifier

Data matrix codes (DMCs) can be etched faster than QR codes and alphanumeric characters because they are more compact. As a result, the marking time is shorter. Laser experts can further reduce the marking time by finding the most efficient size for your codes.

Since they remain readable after up to 30% of damage, 2D codes such as DMCs have a better readability rate than 1D barcodes. This really helps reduce the number of non-conform parts that must be scrapped.

3 Take Advantage of the Part's Temperature

Laser marking is faster if you mark parts when they are still hot. For example, if you implement laser marking right after die casting or heat treating, you can increase the marking speed and gain in efficiency. Alternatively, you can use a lower-power laser to cut costs.



4 Consider Post Process Treatments

Laser marking may be longer when followed by post treatments like e-coating and shotblasting. This is because we adjust laser marking to make codes sturdier and maintain traceability through post treatments. Fortunately, there are ways to compensate for longer marking times. For example, you can equip your machine with a rotary table to create cycle time.

5 Optimize the Total Marking Time

Laser marking only makes up part of the total marking time. Every second spent moving parts and positioning them reduces the time available for marking.

When you contact a laser expert, an important point of discussion is how parts will be presented to the laser. This information helps determine what you need in term of laser power, but also how to optimize the marking operation as a whole.



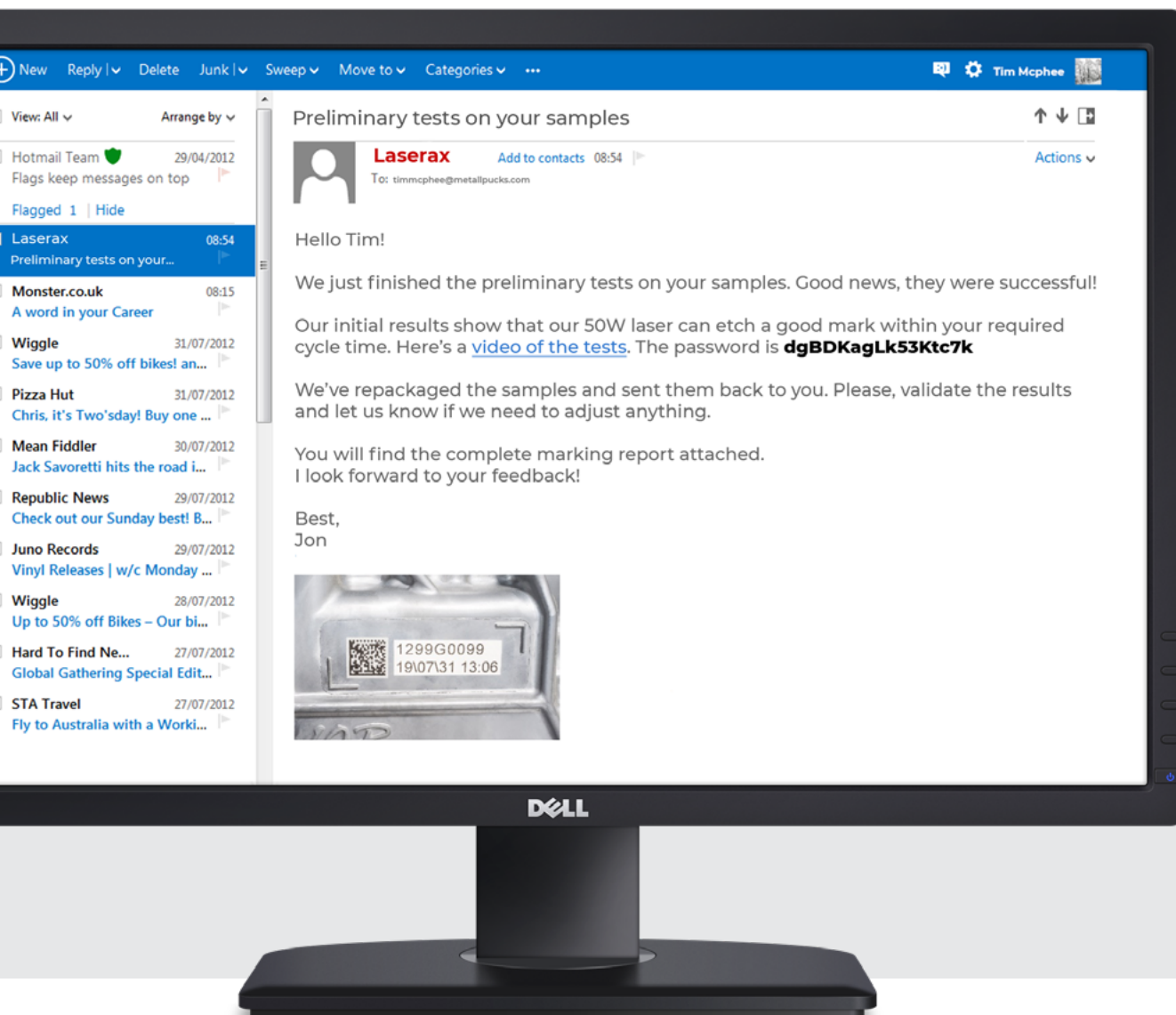
STEP 2. VALIDATE FEASIBILITY

Once your needs are defined, you must validate if the laser you intend on buying is up to the task. The best way to confirm this is to send samples to be marked.

With Laserax, you will receive a report that includes:

- ▶ The test's objective and description
- ▶ Test results, including marking times at different power levels
- ▶ Videos and photos of the marking operation
- ▶ The minimal configuration to meet your requirements
- ▶ Suggested actions

EXAMPLE OF CONFIRMATION EMAIL AFTER SAMPLE MARKING



STEP 3. CHOOSE A SOLUTION

After the tests are to your satisfaction, you are ready to choose a solution. To do so, you need to ask yourself these important questions:

- ▶ **What's your estimated budget?**
- ▶ **What is the cycle time?**
- ▶ **Can you precisely position parts for marking?**
- ▶ **How flexible is your plant layout**

Then, technical experts like the ones at Laserax will help you determine which machine meets those needs and maximizes your investment.

The goal should be to minimize cost, eliminate the laser's impact on part-to-part cycle time, manage complex shapes & part positioning variations, and optimize your plant layout.

MANUALLY OPERATED WORKSTATIONS

Manually operated workstations are the most affordable industrial solutions. Operators only need to load parts and trigger the laser process.

You can typically choose between a workstation with no automation, or a workstation equipped with a rotary table to increase your throughput by marking and loading parts at the same time.



BASIC WORKSTATION



ROTARY TABLE WORKSTATION

ROBOTIZED SOLUTIONS

Robotized solutions are flexible and can be adapted to various automated production lines. They can meet fast-paced cycle times, reuse an existing robot's idle time, handle complex shapes, manage multiple parts and cavities, and facilitate plant layout optimization.



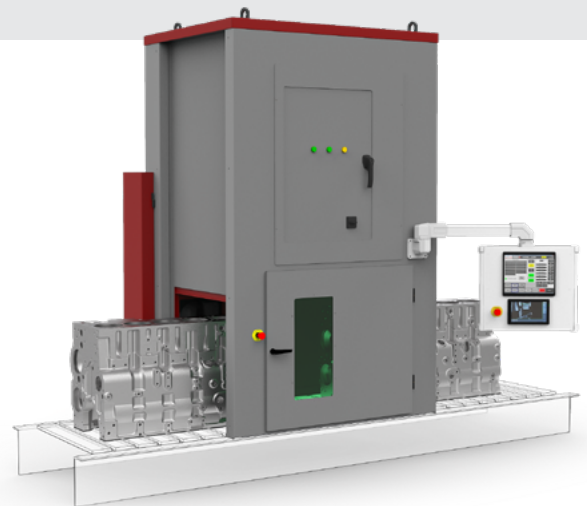
DOOR MACHINE

ROTARY TABLE MACHINE

OPEN AIR MACHINE

CONVEYOR SOLUTIONS

Machines installed on conveyors are ideal to prevent part loading from becoming a bottleneck. Parts on conveyors can either be marked while they are stopped for other operations, or on the fly as they are moving.



CONVEYOR MACHINE

STEP 4. ADD LASER OPTIONS

With the machine chosen, the last step is to add options based on other requirements you may have, such as:

- ▶ Improved traceability
- ▶ Advanced safety
- ▶ Part positioning adjustments
- ▶ Lower maintenance

LASER SAFETY

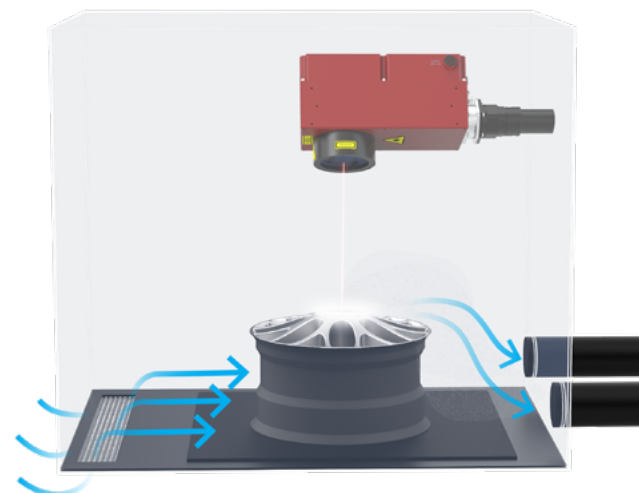
When it comes to laser safety, you have two options. The first one is to opt for a Class-1 safety enclosure, which is a turnkey solution that follows international standards to ensure your workplace is 100% laser safe. Without one, you need to put safety measures in place such as PPE and room access restrictions.



DUST AND FUME MANAGEMENT

The amount of dust and fumes generated by laser marking varies from one application to another. These 3 guidelines will help you determine if you need fume management.

- ▶ If you mark a large volume of parts, you probably want to install an extraction and filtration system in the machine to maintain a safe air and prevent dust accumulation.
- ▶ If you mark a low volume of parts, you may not need an extraction system. You could simply perform regular maintenance to blow dust off your equipment.
- ▶ In some cases, the laser process doesn't generate dust and fumes. This is the case with laser annealing, which is often used for stainless steel and chrome-plated parts.



BARCODE VALIDATION

If you have traceability needs, barcode validation can be installed directly in the laser machine to validate the quality of the codes right after they are marked.

If your manufacturing process includes post treatments, the Laserax validation software can even predict which codes will live up to the marking benchmark.



REMOTE SUPPORT

Although remote support does not completely replace on-site support, it helps solve many issues faster and prevent unnecessary downtime.

COVID-19 has shown us that remote support is more important than ever, making sure manufacturers get the support they need when travel bans and restrictions are in place.

The remote support service offered by Laserax includes:

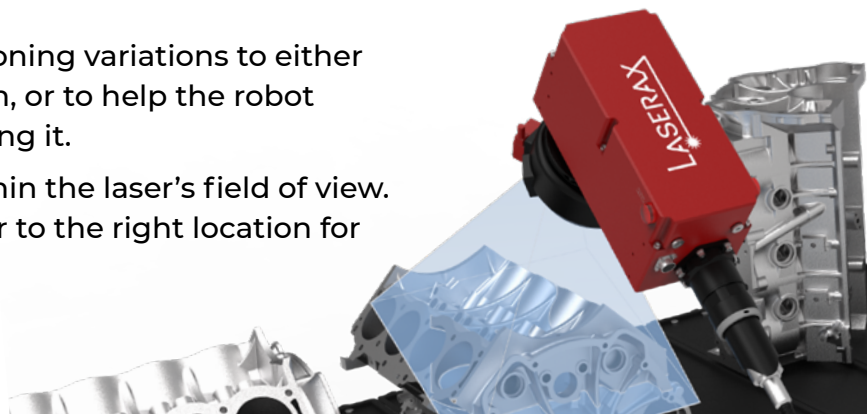
- ▶ Helping with the installation before laser technicians arrive on site
- ▶ Providing training to your operators
- ▶ Optimizing your laser process for new requirements
- ▶ Troubleshooting issues with the machine, the laser, and the peripherals
- ▶ Taking control of the laser to help with troubleshooting



PART POSITIONING ADJUSTMENTS

If you cannot precisely position parts for the marking operation, advanced compensation features can help.

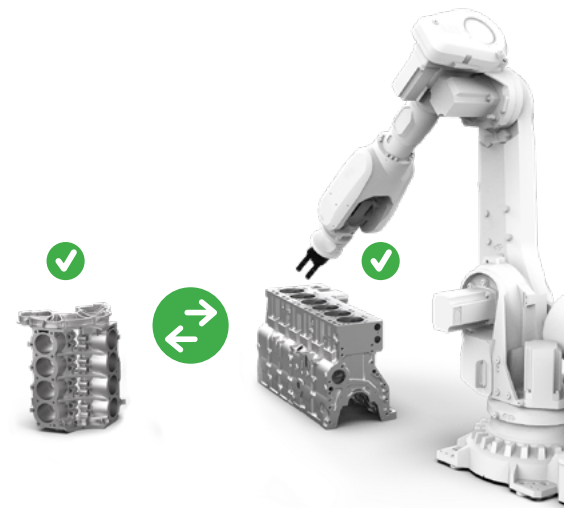
- ▶ Autofocus systems can detect part positioning variations to either adjust the laser for the marking operation, or to help the robot position the part accurately before marking it.
- ▶ Vision systems can detect if parts are within the laser's field of view. This information is used to move the laser to the right location for the marking operation.



MULTIPLE PART MARKING

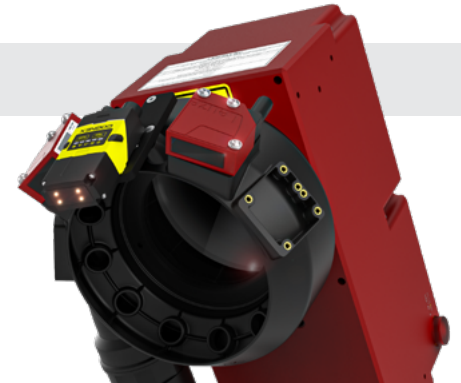
Marking multiple parts at the same time is a common solution to keep up with challenging cycle times or several parts coming in at once.

- ▶ **Gantry systems** are used to operate within a larger marking area and mark multiple parts during the same sequence.
- ▶ **Multiple lasers** can be installed in the same machine to mark multiple parts or areas simultaneously.
- ▶ Also, the laser configuration needs to be adjusted every time you mark a different type of part. If you do not have external entities (PLCs, ERPs, SCADA systems) that can communicate this information to the laser, there are other possibilities:
- ▶ **HMI control panels** allow operators to manually switch from one configuration to another using an intuitive touch screen.
- ▶ **Sensors** can detect which part is placed before the laser and automatically choose the corresponding marking configuration.



LENS PROTECTION

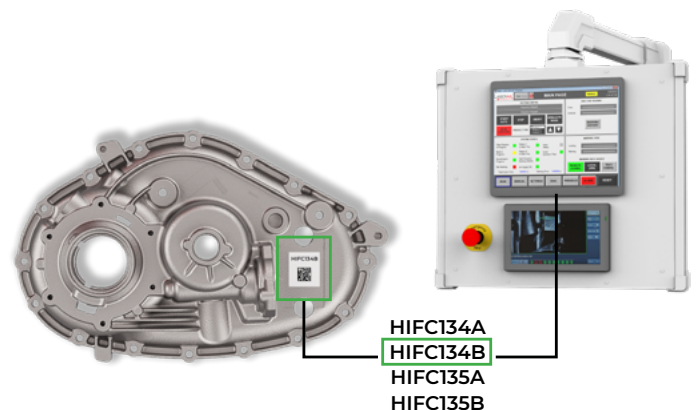
Air knives can be installed on the lens to prevent dust accumulation. This ensures that the marking quality remains consistent without having to regularly clean the lens.



HMI CONTROL PANEL

HMI control panels provide direct access to laser marking parameters. With this option, you can:

- ▶ Choose the laser marking process required for different workpieces
- ▶ Control the laser head's position to avoid manual adjustments
- ▶ Manually adjust the laser marking zone, scale the identifiers, edit them, and more
- ▶ Enter the manual operation mode to run tests or calibrate the laser
- ▶ Display information such as the system status, the operation mode, and the alarm history



INDUSTRIAL LASER EXPERTISE THAT MAKES THE DIFFERENCE

When you contact us, we go over your production process with you to understand how you manufacture your parts. After careful analysis, we propose a complete solution that considers all factors for a successful laser integration. From your first inquiry to the commissioning and after sales support, our commitment is to make ourselves available to assist you at any moment.



CONTACT US

If you have a project and need a laser, we are here to help you.



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