LASERAX

HOW TO CHOOSE A LASER CLEANING MACHINE IN 4 STEPS

THE 4-STEP PROCESS FOR CHOOSING A MACHINE

Choosing a laser cleaning machine can be complicated if you've never done it. Even if you already own a laser, it's easy to feel overwhelmed by all the new options.

We have created this guide to help you identify which laser machine and options fit your needs in 2022. You will also find tips to get the most out of your investment.

1. **Define your cleaning needs with a laser expert**
2. **Validate feasibility by sending samples to be cleaned**
3. **Choose the solution that maximizes your investment**
4. **Add laser options for additional requirements**

STEP 1. DEFINE YOUR NEEDS

We recommend you 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. No need to wait for budget approvals before reaching out.

At Laserax, we review your application to make sure laser technology is a good fit for you. If laser isn't a good fit, we will tell you.

5 WAYS TO OPTIMIZE QUALITY, REPEATABILITY & PERFORMANCE

1 Surface Roughness Requirements

Do you need to leave the surface intact after cleaning, or do you need to roughen it? If so, what is the required Ra? For example, you may need to improve adhesion before an adhesive or coating process, or you may simply need a well-exposed metal surface for welding. Laser cleaning can cover both requirements, but the process is different. Surface roughness requirements affect things like cleaning times and the optical configuration.

2 Surface Contaminant Characteristics

Details on your contaminants help define the laser process required for your application. What are the contaminants? How thick are they? Does their thickness vary? If it is a paint, is there more than one color? Are there differences from one part to another? All these factors can affect the cleaning speed.

3 Surface Geometry and Complexity

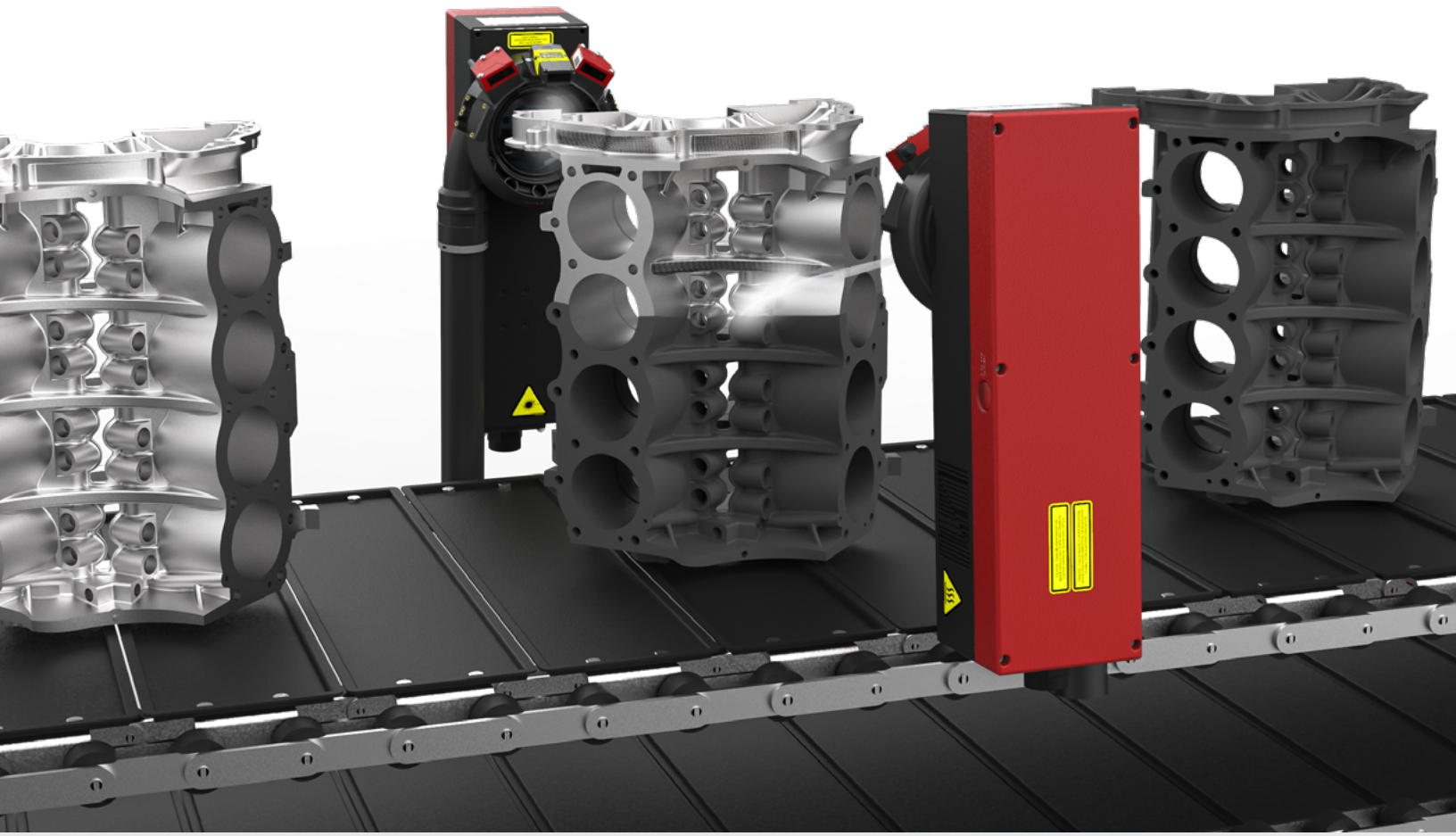
Because a laser's line of sight and its field if view are limited, laser options such as robots or gantry systems can be used to manage complex surfaces. To help determine which options you need, document your part's geometry. Do you need to clean a curved surface? Can the laser access the cleaning zone? What is the size of the part and of the surface area that needs to be cleaned?

4 Cleaning Validation Process

Validating whether cleaning was performed properly is an important step. How you choose to do it affects the options you need. Do you want an operator to perform a visual inspection, or do you want vision cameras? Do you prefer to do sampling or offline tests? What are your cleaning criteria? Do you need inline validation?

5 Cycle Time Optimization

Laser cleaning only makes up part of the total processing time. Every second spent moving parts and positioning them reduces the time available for cleaning. An important consideration is how parts will be presented to the laser. This information helps determine the laser power required and how to optimize the cleaning operation as a whole.



STEP 2. VALIDATE FEASIBILITY

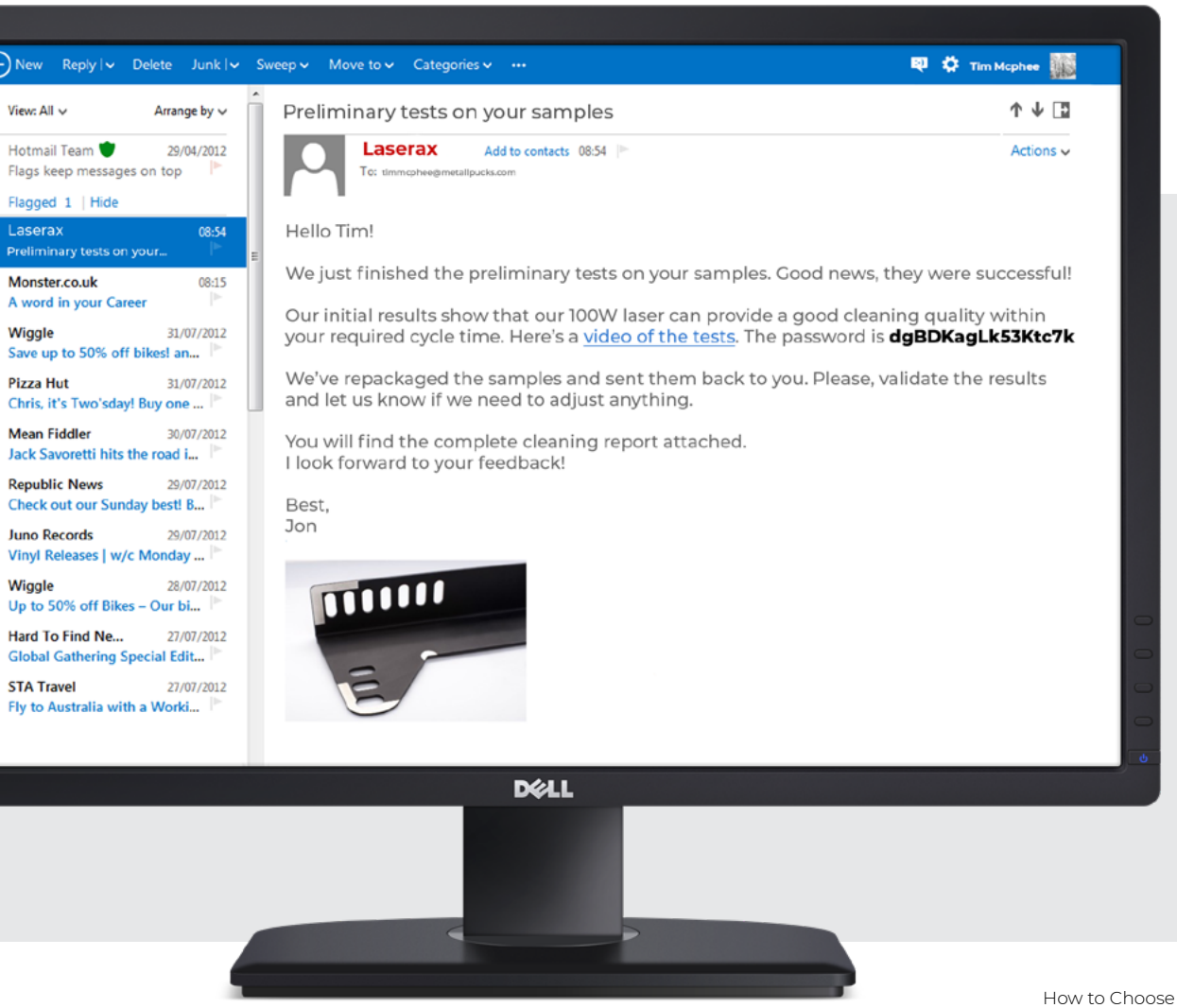
Once your needs are defined, you must validate if the laser you intend on buying is up to the task.

The best way to validate feasibility is to send samples to be cleaned.

With Laserax, you will receive a report that includes:

- **Videos and photos of the cleaning operation**
- **Cleaning times at different power levels**
- **Cleaning quality analysis (water contact angle, view of the surface microstructure, surface roughness if applicable, and more)**
- **The optimal configuration to meet your requirements**
- **The next steps**

EXAMPLE OF CONFIRMATION EMAIL AFTER SAMPLE MARKING



STEP 3. CHOOSE A SOLUTION

After the tests are to your satisfaction, you are almost ready to choose a solution. You just need to address these questions:

- **What's your estimated budget?**
- **What is the cycle time?**
- **What is the size and geometry of the cleaning area?**
- **Can you precisely position parts for cleaning?**
- **How flexible is your plant layout**

Then, our technical experts can confirm which machine meets those needs and maximizes your investment. In addition to minimizing cost, the solution proposed may eliminate the laser's impact on part-to-part cycle time, manage complex shapes & part positioning variations, and optimize your plant layout.

ROBOTIZED SOLUTIONS

Robotized solutions can be adapted to various automated production lines. They are used to meet fast-paced cycle times, take advantage of an existing robot's idle time, handle complex shapes, clean large areas, and manage multiple parts and cavities.

ROBOT MACHINE

See Product Page

DOOR MACHINE

See Product Page

ROTARY TABLE MACHINE

See Product Page

CONVEYOR SOLUTIONS

Machines installed on conveyors prevent part loading from becoming a bottleneck. Parts can either be cleaned while the conveyor is stopped, or on the fly as they are moving.

CONVEYOR MACHINE

See Product Page

BATTERY MACHINE

See Product Page

MANUALLY OPERATED WORKSTATIONS

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

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

BASIC WORKSTATION

See Product Page

ROTARY TABLE WORKSTATION

See Product Page

STEP 4. ADD LASER OPTIONS

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

- **Cleaning validation**
- **Advanced safety**
- **Part positioning adjustments**
- **Lower maintenance**

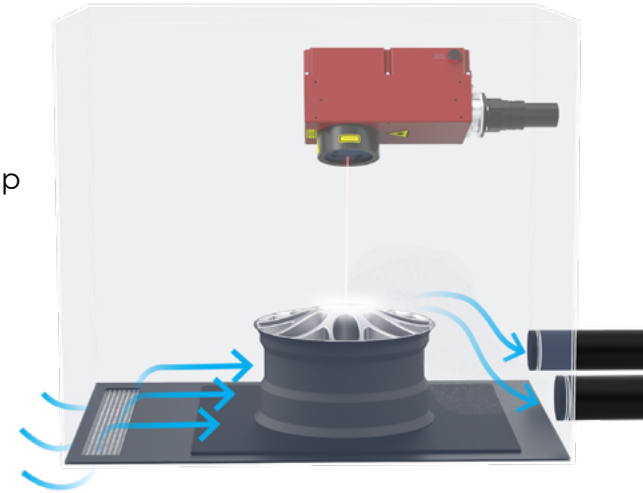
LASER SAFETY

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

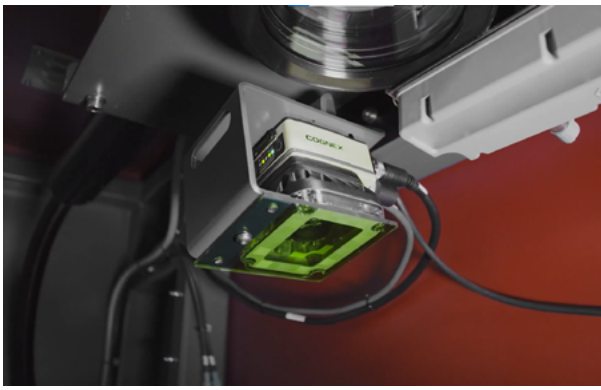
The amount of dust and fumes generated by laser cleaning varies from one application to another. These 3 criteria will help determine the extraction power needed for your application.

- The size of the cleaning area
- The thickness of the contaminants
- The surface roughness level required (if you need texturing)



CLEANING VALIDATION

Vision cameras can be installed directly in the laser machine to validate cleaning quality after the cleaning operation.



REMOTE SUPPORT

Although remote support does not completely replace on-site support, it can be a lifesaver as it helps solve many issues immediately and prevent unnecessary downtime.

COVID-19 has also shown us that remote support is more important than ever, making sure manufacturers get the support they need when travel is restricted.

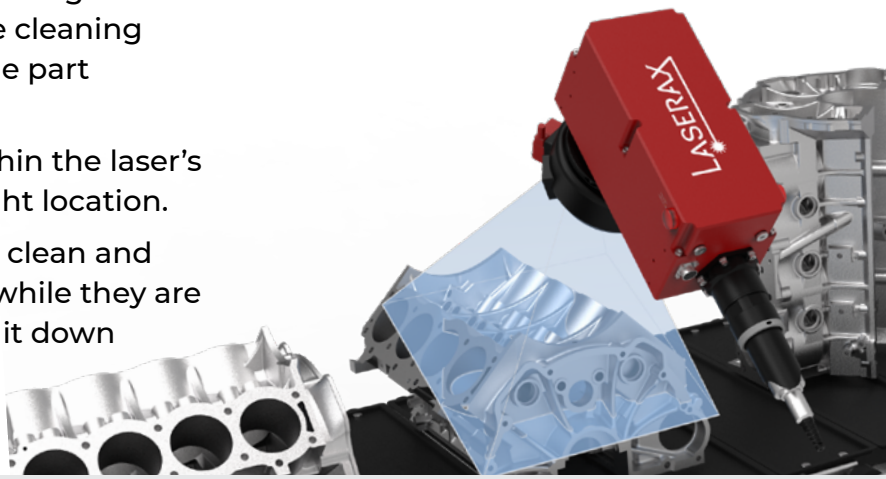
The remote support service offered by Laserax includes:

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

PART POSITIONING ADJUSTMENTS

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

- **Autofocus systems** can detect part positioning variations to either adjust the laser for the cleaning operation, or to help the robot position the part accurately.
- **Vision systems** can detect if parts are within the laser's field of view and move the laser to the right location.
- **Dynamic autofocus systems** allow you to clean and texture parts of various shapes and sizes while they are moving on the conveyor without slowing it down



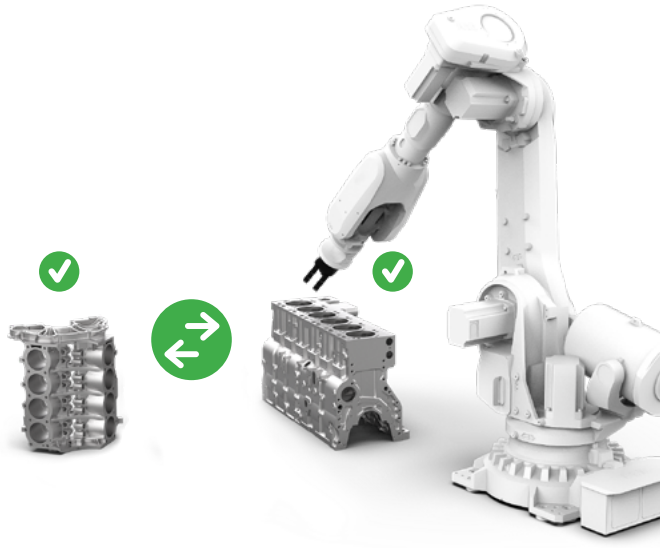
MULTI PART CLEANING AND LARGE CLEANING AREAS

These options are there to help you keep up with challenging cycle times, process several parts coming in at once, or clean large surface areas.

- **Gantry systems** are used to operate within a larger cleaning area and clean multiple parts during the same sequence.
- **Multiple lasers** can be installed in the same machine to clean multiple parts or areas simultaneously.

The laser configuration needs to be adjusted every time you clean 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 cleaning configuration.



LENS PROTECTION

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

HMI CONTROL PANEL

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

- Choose the laser process required to clean or texture different parts and materials
- Control the laser head's position to avoid manual adjustments
- Control other automation features

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.

Tell Us About Your Application

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