SPI Lasers

CLEANING WITH

FIBER LASERS

SPI Lasers has produced an extensive selection of laser cleaning articles over time. This infographic brings the content of these articles into one visual infographic, which we hope you enjoy. By the time you have read this infographic, you should understand the way in which fiber lasers can clean across a range of applications in industry.

WHAT IS LASER CLEANING?

Laser cleaning is the process by which contaminants, debris or impurities (e.g. carbon, silicon and rubber) are removed from the surface of a material by using laser irradiation. Laser cleaning has similarities to laser ablation, both ablate the surface, laser cleaning though has a specific intent to clean rather than remove material.

Laser cleaning is a low-cost and environmentally-friendly laser application technique, which is in widespread use throughout global industry. Laser cleaning continues to replace traditional methods such as dry-ice blasting and media blasting.

There are two types of laser cleaning process, which are typically used:
One which is the removal of a layer on the surface of a material.
While the second is the removal of the entire upper layer of a material.

HOW DOES LASER CLEANING WORK?

Broadly speaking the laser cleaning process works in 4 basic steps:

LASER BEAM
A laser beam is pulsed at the surface of a material

PRECISION
The pulse's output power and wavelength are controlled for maximum precision

IRRADIATION
The beam irradiates and vaporises the material layer to the desired depth

CLEAN UP
A few dust particles will be left over, these can quickly be cleaned up

For more information on this topic visit:
https://www.spilasers.com/application-cleaning/fiber-laser-cleaning-works/

LASER CLEANING APPLICATIONS

There are numerous applications for laser cleaning, these are summarised below:

ART RESTORATION
fine layers of dust/grease etc, can be cleaned off paintings/artwork

DE-COATING
the removing a layer of material from a surface, e.g. on solar panels

LABELLING AND MARKING
cleaning techniques can be used prior to the application of labelling and marking processes

PAINT CLEANING
the removal of paint from a surface

PREPARATION TREATMENT
surface preparation, removal of lubricants, contaminants, grease, oils, etc.

RAILWAY TRACKS
cleaning for smooth operations, removing dirt, grime, wet leaves, etc.

RUST REMOVAL
the removal of rust layers from materials such as metals and concrete

STEEL MOULDS
the cleaning of moulds after use, e.g. baking trays, fyre moulds, etc.

STONE RESTORATION
cleaning stone such as buildings, sculptures and ornaments

TOOL CLEANING
the cleaning of tools is made easy with fiber laser cleaning

TRAFFIC FILM
the removal of traffic film from buildings, cars, planes, etc.

For more information on this topic visit:
https://www.spilasers.com/application-cleaning/fiber-laser-cleaning-applications/

BENEFITS OF LASER CLEANING

There are many benefits of laser cleaning, we have listed a number of these below:

CHEMICAL FREE
laser cleaning involves the use of no chemicals or solvents

DELICATE MATERIALS
lasers can clean even the most delicate materials (e.g. silicon)

ENVIRONMENTALLY FRIENDLY
laser cleaning is better for the environment than other cleaning methods

HIGHLY AUTOMATED
minimal operator involvement is needed, tasks are largely automated

LOW COST
laser cleaning is a lower cost technique compared to other techniques

MICRO CLEANING
even the smallest parts and surface areas can be precisely cleaned, a particularly useful process prior to welding

MINIMAL WASTE
most waste is evaporated, eliminating waste produced via other methods

NON-CONTACT
there is no contact, the cleaning of the surface doesn't disturb surrounding materials

PRECISION
100% accurate, the user has precise control over the areas to be cleaned

REDUCED POWER
laser cleaning uses reduced power compared to traditional methods

SAFER
in general, laser cleaning is considered safer for workers, e.g. no corrosive chemicals are used, etc

SPEED
laser cleaning can be delivered much faster than traditional cleaning methods

SUPERIOR BONDING
Provides a keyed surface for additional treatment such as painting or adhesive application

For more information on this topic visit the following guides:
https://www.spilasers.com/application-cleaning/advantages-laser-cleaning/

CONTACTING SPI LASERS TO DISCUSS LASER CLEANING

As we have discussed there are many laser cleaning options open to users. So, why not consider buying a fiber laser from SPI Lasers? Contact us today to discuss your options, our contact details are available at - http://www.spilasers.com/our-locations/

We manufacture and distribute a large selection of continuous wave (CW) and pulsed fiber lasers which are suitable for many laser cleaning applications, as well as a vast number of other fiber laser applications too. To view our laser cleaning page visit https://www.spilasers.com/laser-processing-applications/laser-cleaning/

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