



Home Online Features Current Issue Buyers' Guide Contact Us Subscribe

5/10/2023



## WHAT'S HAPPENING IN THE INDUSTRY

### AkzoNobel and Philips Welcome Damen Shipyards to Pioneering Antifouling Partnership

The companies are working together to help further develop a pioneering fouling control solution that uses UV-C light technology to keep ships' underwater hulls clean.

### HMG Paints Launches AI-Powered Color Collection

AI's ability to analyze large amounts of data and provide insights into consumer behavior can help create more effective and targeted marketing campaigns.

### PPG Reports First Quarter Financial Results

The quarter posted record net sales. Tim Knavish, PPG President and Chief Executive Officer, commented that "improving results are despite macroeconomic conditions that remain challenging and reflect the strengths of our diverse business portfolio."

### Sherwin-Williams Releases New Color Forecast for Architectural Metal Coatings

The forecast presents 18 colors and a variety of special effects to inspire architecture and building products.

VISIT OUR BOOKSTORE TO STAY UP TO DATE  
WITH VALUABLE TRAINING MATERIALS



## \*Product of the Week Advertisement\*

### ALBERDINGK® U 8500



This resin is easy to work with and can be used with your typical additives and cosolvents. Even on red oak, it provides a clear finish and is compatible with crosslinkers. It has outstanding chemical and stain resistance, and quick hardness development which allows for excellent sanding on the floor. With a long open time, U 8500 allows for lower VOC finishes while offering both toughness and chemical resistance. It also offers hardness without brittleness, making it the ideal choice for a no-compromise finish. [Learn more.](#)

## THIS WEEK'S FEATURE ARTICLES

### Clean Technology Lasers

Laser systems remove corrosion, grease, residue, and existing coatings from metal surfaces quickly, with less preparation and mess than traditional techniques.

### The Sky's the Limit

A Resufloor™ topcoat system has been used to ensure a reliable and robust floor surface for the L-159E aircraft that are being used to conduct combat training.

### Everest Systems Launches Long-Lasting Roof Coating Technology

[PAINT AND COATING EQUIPMENT](#) | [ADHESIVES AND SEALANTS](#) | [INDUSTRIAL COATINGS](#)

## Clean Technology Lasers

The New Tool in Surface Pre-Treatment for Superior Coating Adhesion

By Laser Phototonics



surfleader, iStock / Getty Images Plus, via Getty Images

March 31, 2023

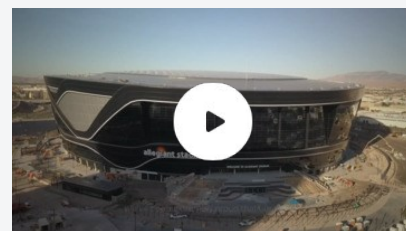


Most manufacturers understand the value of pre-treating metal surfaces of parts to remove corrosion, grease, residue, old coatings, or to roughen the surface of metals prior to coating. By ensuring the items are cleaned down to bare metal, manufacturers can avoid costly warranty issues that result when coatings peel, flake, bubble, or otherwise fail prematurely.

Unfortunately, the traditional techniques used for this purpose, such as sandblasting, dry ice blasting, and chemical stripping, are messy and require expensive consumables, as well as substantial time for preparation and cleanup. These methods are also drawing scrutiny from regulators like the EPA and OSHA since they can pose risks to the environment and applicators.

ADVERTISEMENT

 [Subscribe For Free!](#)



State-of-the-Art Allegiant Stadium  
Kicks Off with PPG Coatings

 prev

next 

[More Videos](#)

Today, a more effective alternative is utilizing industrial-grade, precision laser-based systems that can remove paint, contaminants, rust, and residues with a high-energy laser beam that leaves the substrate unaffected. Preparation and cleanup time are minimal, and the low-maintenance equipment can last decades.



Laser systems remove corrosion, grease, residue, and existing coatings from metal surfaces quickly.

Laser systems remove corrosion, grease, residue, and existing coatings from metal surfaces quickly.

According to Vincent Galiardi, owner of Galiardi Laser Clean, a surface-cleaning operator based in St. Charles County, Missouri, many people are surprised to learn that clean technology lasers are the most

Sponsored Content



SPONSORED BY TRINTERNATIONAL



SPONSORED BY SILTECH CORPORATION



SPONSORED BY DUPONT™ TEDLAR®

Popular Stories

Improved Corrosion Resistance and Flexibility for Coil Coatings with PVF Technology

Improved Corrosion Resistance and Flexibility for Coil Coatings with PVF Technology

Paint and Coatings Market Report by Resin Type

New Paint and Coatings Industry Global Forecast Released

PCI'S ONLINE BUYERS GUIDE



“Many people are unfamiliar with the use of lasers to pre-treat metal surfaces,” says Galiardi. “When I do a demonstration, at first the people in attendance are skeptical. But after I use the laser to treat a small area, everyone starts talking and getting excited. By the end, when I let them try the equipment, everyone is having a good time and saying how great the laser works.”

Given its effectiveness pre-treating metal surfaces, industrial laser systems are increasingly being used in manufacturing facilities. The systems can be integrated into automated inline processing lines, or technicians can use mobile handheld units. With significant advantages in safety and efficiency, laser cleaning is poised to disrupt the surface pre-treatment market across more sectors.

### Resolving Conventional Cleaning Limitations

There are many applications in manufacturing that require pre-treatment of metal surfaces prior to coating. To improve coating adhesion, residue, oil, or grease must be removed before coating application. In some cases, a manufacturer may seek to further enhance coating adhesion by roughening the surface.

When defective metal parts are produced, instead of discarding the product, manufacturers can strip the paint and re-coat the component.

To refurbish existing metal parts or re-coat industrial infrastructure, removing the previous coating along with any corrosion is usually required to facilitate the new coating's adhesion to the surface.

To pre-treat metal surfaces, sandblasting, dry ice blasting, or chemical stripping are traditionally used as industrial cleaning processes.

### Sand Blasting

Abrasive sandblasting involves forcefully projecting a stream of abrasive particles onto a surface, usually with compressed air or steam. The silica sand used in abrasive blasting typically fractures into fine particles and becomes airborne, which can cause serious or fatal respiratory disease.

When workers inhale crystalline silica, the lung tissue reacts by developing fibrotic nodules and scarring around the trapped silica particles, causing a fibrotic lung condition called silicosis. Estimates indicate that more than 1 million U.S. workers are at risk of developing silicosis and that more than 100,000 of these workers are employed as sandblasters.


In addition, particles are generated during abrasive blasting that further contribute to respiratory problems and other harmful health effects.

“When sand or any other media is used to knock off particles from a substrate, there is always a byproduct that has the potential to become airborne and inhaled,” says Galiardi. “Besides the sand, this could be the particles you're removing; the coatings, plating, anodizing, corrosion, and even lead paint.”

“Industry has needed a cleaner, safer surface pre-treatment solution for a very long time,” adds Galiardi. “Sandblasting is inherently unsafe for operators. The silica glass used in sandblasting is toxic. An operator must wear a full HEPA suit when sandblasting to avoid breathing in particulates.”

Sandblasting also is time-consuming to clean up since the sand essentially scatters everywhere, even though it is usually considered a “fast” cleaning method.

### Dry Ice Blasting



## REQUEST FOR PROPOSAL

Submit a Request for Proposal (RFP) to suppliers of your choice with details on what you need with a click of a button

**START YOUR RFP**

Browse our Buyers Guide for manufacturers and distributors of all types of coatings products and much more!

**FIND SUPPLIERS**

## Events

June 16, 2022

### 3 Ways to Say So Long Sagging and Hello Storage Stability

Attend this session and learn how to reliably achieve the fundamentals so you can focus on trends without compromising your formulation.

June 30, 2022

### Power Your Coatings with Graphene Nanotubes: Conductivity, Durability, Color, & Cost Efficiency

**On Demand** Explore how to improve the cost efficiency and performance of coatings with graphene nanotubes. Even

[VIEW ALL](#)

[SUBMIT AN EVENT](#)

## Poll

### Longest-running laboratory experiment

#### What is the longest-running laboratory experiment?

- ☐ The Little Albert Experiment
- ☐ Pitch Drop experiment
- ☐ The Milgram Experiment
- ☐ None of the above

**SUBMIT**

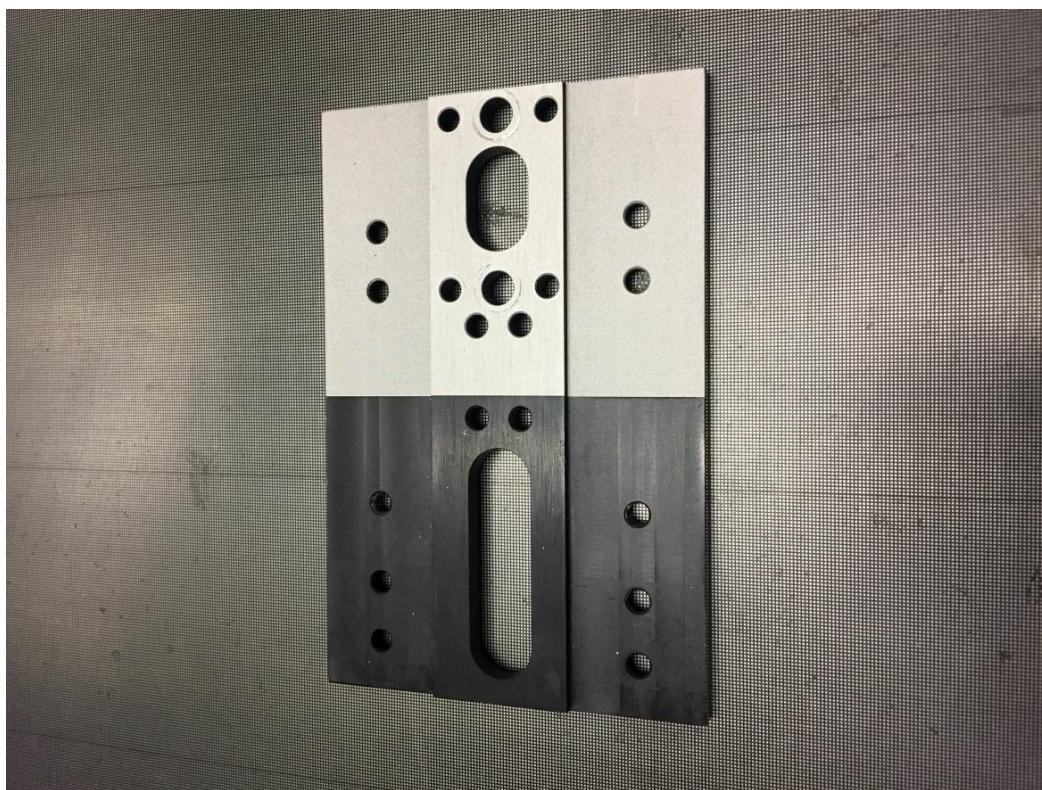
With dry ice blasting, dry ice pellets are used as the abrasive. The challenge is that dry ice blasting is often not abrasive enough to sufficiently remove paint or corrosion from the surface of metals. Since dry ice is an expensive consumable, the costs can escalate when cleaning metal surfaces in higher volumes.

### Chemical Stripping

With chemical stripping, harsh, even toxic chemicals are used to strip metal-based objects of paint, rust, and other contaminants to bare metal. However, for operators, exposure to corrosive acids and noxious chemical fumes is inherently dangerous. The process can also be time-consuming to prepare the proper chemical bath, achieve the required level of cleaning, and dispose of the waste. In addition, disposing of toxic chemicals is costly and closely regulated by agencies like OSHA and the EPA.

### Safe, Effective Laser Cleaning

Laser-based systems have significant advantages over these traditional methods, including ease of use in which an operator simply points and clicks a high-energy laser beam at the surface. The substrate is not affected by the laser, and the systems do not create any mess or byproducts. The approach is eco-friendly, energy-efficient, and completes the job in half the time of traditional methods when preparation and cleanup are considered.



Laser systems remove corrosion with less preparation and mess than traditional techniques.

“In our experience, laser cleaning is as fast at removing rust or old coatings as other methods, but without the same amount of cleanup,” said Galiardi. “When we treat a surface with lasers, any fumes or dislodged particulate is extracted into a HEPA filter and the job is done. There is no media (sand, dry ice, chemicals) to replenish or clean up.”

Galiardi Laser Clean uses laser systems made by Orlando, Florida-based Laser Photonics, a leading provider of patented industrial-grade CleanTech® laser systems for cleaning and surface conditioning. The American-made systems function either as mobile standalone units or can be integrated into production lines.

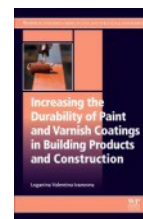
The laser systems are available in portable and stationary models ranging from 50 to 3,000 watts (a 4,000-watt version is in development) with chamber sizes from 3' x 3' in size to 6' x 12'. The systems can also be installed in manufacturing lines in cabinets or operated by a robotic arm.

Galiardi says that laser pre-treatment of metal surfaces can be used to streamline various manufacturing processes. Corrosion, for example, can begin to accumulate within a very short time on new parts, depending on the material and environmental conditions, and should be removed prior to coating.

For one major auto manufacturer, Galiardi Laser Clean was asked to remove rust from conveying system components used to transport cars through the manufacturing process. The components were

[VIEW RESULTS](#)[POLL ARCHIVE](#)

## Products



**Increasing the Durability of Paint and Varnish Coatings in Building Products and Construction 1st Edition**

[SEE MORE PRODUCTS](#)

Download product literature  
FROM LEADING INDUSTRY SUPPLIERS.

FREE WEBINAR

EXPLORE CLARICOAT: CLARIANT'S  
VIRTUAL TOOL FOR SELECTING THE  
BEST ADDITIVE FOR YOUR PAINT &  
COATINGS FORMULATIONS

APRIL 13 | 11 AM EDT

REGISTER NOW

corroded due to being left outside during a 6-month delay in the project. When it was time to install the items, the provider wanted to first treat the surfaces and return the components to a “like new” appearance.

In another example, Galiardi was asked to remove rust from over 400 transmissions in a couple of days. The laser systems are particularly effective when reaching into tight spaces that are hard to reach by hand. By masking the area to protect vulnerable parts, the laser can be applied without affecting the rest of the assembled product. “No other parts [of the transmission] had to be removed and nothing had to be cleaned afterwards,” he says.

Galiardi’s company also utilized the laser system to remove cleaning oils from truck chassis. “We used the laser to remove the oil right before painting so it was a bare metal object going with nothing on it that would affect the coating,” he says.

Industrial plants that need to re-coat existing metal structures also need to remove rust before painting. According to Galiardi, he removed corrosion from a very large storage tank using the CleanTech laser system in about half the time of the alternative being considered, an abrasive disc grinder.

“Disc grinders basically just chip off [the rust] and it becomes airborne and makes a mess. Grinders can also be dangerous because sparks or debris can shoot off the wheel or catch an article of clothing,” he says.

With clean laser technology, there is now an environmentally friendly alternative to abrasive blasting and chemical stripping for surface pre-treatment. The approach is safer for operators and highly adaptable to a wide range of manufacturing and industrial applications.

“As people become more aware of laser-based systems and compare them to traditional methods, they need to factor in prep and cleanup time, which can significantly impact project cost. When the improved operator safety, equipment longevity, and lower maintenance of laser systems are also considered, the clean laser technology has a much higher ROI,” says Galiardi.

The longevity of low-maintenance laser systems further adds to their value, increasing ROI, and making replacement unnecessary for decades.

“CleanTech laser systems can last for 50,000 to 100,000 hours. That’s many decades working eight-hour days. After purchase, there’s virtually no maintenance necessary,” concludes Galiardi.

For more information on laser cleaning solutions for surface preparation, contact Laser Photonics at (407) 804-1000, or visit [www.laserphotonics.com](http://www.laserphotonics.com).

KEYWORDS: [cleaning equipment](#) / [Metal Coatings](#) / [Pretreatment](#) / [surface preparation](#)

## Share This Story



**Did you enjoy this article?**  
Subscribe for free to *PCI Magazine*.

**SUBSCRIBE**



By **Laser Photonics**

You must [login](#) or [register](#) in order to post a comment.