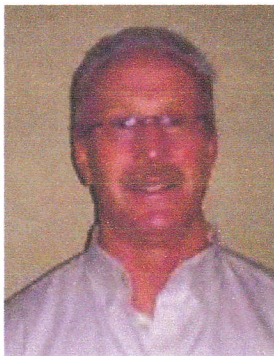


blasting process.

When the particles strike the surface that's undergoing cleaning, they expand to about 800 times their original volume as they transform from a solid to a gas in a process called sublimation. These rapidly expanding gases displace and flush contaminants from the surface before disappearing entirely. Because dry ice is relatively soft, it provides a non-abrasive cleaning action for surfaces that are harder than the dry ice itself. Based on the Mohs scale of mineral hardness, dry ice is between 2 and 3 (with diamond being a 10). The fact that dry ice is extremely cold (-109° F) creates a thermal effect that helps clean dryer drums. Plastics, for example, will become brittle when blasted with dry ice. Operators then can remove them from the surface of the drum.

Dry ice blasting—also known as cryogenic or CO2 blast cleaning—reduces or eliminates the need for toxic solvents. This translates to less employee exposure to solvents and, therefore, reduced



“Dry ice blasting produces a quicker end result with greater productivity, while avoiding any damage to the drums that can happen when using mechanical tools.”

Bill Finley

West Coast Ice Blasting LLC
Bellingham, WA
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corporate liability. Moreover, today's increasingly stringent environmental regulations may require reductions in the use of solvents. That means dry ice blasting can help ensure ongoing compliance with environmental rules.

When operators seek to remove foreign material from dryer drums with other blasting media, such as sand, glass beads, walnut shells, water, etc., both contaminant and blast material must be disposed of as potentially hazardous waste. But because dry ice (CO2) sublimates on contact, no secondary waste is generated. The process is also safer for employees.

Overall efficiencies

Plant engineers and maintenance managers are under constant pressure to reduce costs, improve efficiencies and do more with less. Traditionally, operators have viewed maintenance as a process that had to be done by any means necessary. Today, proven lean manufacturing management methodologies, such as 5S (organization and efficiency in the work place) and TPM (total productive maintenance), are encouraging organizations to embrace maintenance as a critical business function.

PHSC in Portland, for example, uses 12, 300 lb. Lavatec dryers. Lark notes that, “While our engineering staff had consistently scraped or chipped off debris from inside the dryers as a regular part of our preventative-maintenance program, we still had build-up inside the drums.” She adds that, “The ice blasting process took approximately 20 hours to complete and was done during nonproduction hours.” The right maintenance program, combined with the

Sizing Up Dryer Cleaning Methods

Abrasive blasting produces a level of cleanliness, with sand being the most common blasting media. The resulting fugitive dust not only leaves a hazardous mess, but it also dramatically shortens the life of nearby moving parts through wear. Dry ice blasting uses nonabrasive dry ice that won't wear away the surface undergoing cleaning and doesn't create additional waste for disposal.

Soda blasting creates a great deal of secondary waste that can adhere to various substrates being blasted. Dry ice blasting uses nonabrasive dry ice that often surpasses the cleaning power of soda, thus allowing a completion of the project in less time and with less secondary mess.

(Ultra-) High pressure water blasting can't create any specific surface profile, which is a key parameter in paint performance. Also, the use of water induces flash rusting, which makes paint or coating application more difficult and risky, not to mention severe electrical problems. Dry ice blasting can be used on any variety of materials as well as on or near electrical equipment. Because dry ice evaporates quickly, equipment stays clean and dry.

Solvent cleaning typically involves substances that are detrimental to the environment and compromise worker safety. Equipment often must be disassembled or extensively prepared prior to the solvent cleaning to protect sensitive areas. The dry ice blasting process can simultaneously clean numerous objects with differing, complex geometries, while also providing safe, thorough, in-place cleaning of components, subassemblies and complete machines. The dry ice evaporates on contact with the surface, thereby preventing the creation of any secondary waste stream for cleanup.

Power tool cleaning can damage or wear down surfaces. Dry ice blasting provides the benefits of power tool cleaning, at an increased cleaning rate, without added deterioration of expensive molds and other production tooling.

Hand tool cleaning often is done by employees who clean only defined areas using hand tools that may damage equipment. When trained employees perform dry ice blasting by using specific nozzles, and in accordance with other parameters, the dry ice process results in 10 to 20 times fewer hours of labor required for cleaning.

right maintenance solutions, can help to:

- Lower total product cost by cleaning faster, better and with less preparation;
- Improve product quality and reduce waste by ensuring that equipment is cleaned thoroughly every time; and
- Create a more sustainable work environment that reduces downtime and emphasizes worker safety and green solutions.



Going forward, Lark plans to continue monitoring the healthcare group's dryers and performing the dry ice blasting process once or twice annually. Doing so will provide her company with an opportunity to evaluate and improve cleaning methods and processes. **TR**

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