# BLAST-OFF

## Background and Benefits of Blast Cleaning Presses with Dry Ice

***by Jerry Ruschau***

Technology is constantly evolving and in doing so changing the way business is done. One area that has been favorably impacted by technological advances is panel press cleaning.

In order to produce a quality product and minimize the possibility of fire, plywood and oriented strand board presses need to be cleaned regularly. Traditionally, this means multiple workers involved in a labor-intensive manual cleaning process using angle grinders during a regularly scheduled maintenance shift.

The problem is that this scheduled time is needed to maintain and repair the machinery and cleaning is often a lower priority, which can result in bigger time robbers later. The cleaning process is also dangerous, requiring cleaners to work within the machines in very close proximity to residues and residue dust. Even after all of this hard work, the process is not fully effective because the unreachable parts of the machine simply don't get cleaned.

An alternative to this traditional manual process is dry ice blast cleaning. $CO_2$ blast cleaning uses solid dry ice particles in high velocity airflow to remove contaminates from surfaces. Dry ice pellets are accelerated through high velocity nozzles to impinge upon the surface being cleaned. The thermal shock effect separates the residue from the surface; the residue falls away from the surface and is easily swept up.

The dry ice pellets vaporize at impact, leaving no other cleaning by-product, and therefore eliminating the added cost and inconvenience of secondary waste treatment and disposal. Dry ice blast cleaning extends the useful life of equipment by facilitating regular thorough cleaning. And because it is non-abrasive, dry ice blast cleaning does not wear on parts or contribute to surface erosion.

This simple and easy process promotes a high level of operator safety and a healthy work environment. When the residue separates from the surface being cleaned it is blown away from the operator, limiting his or her exposure to potentially harmful residues. The residues are then simply swept up. Additionally, it does not require the use of harsh chemicals or dangerous manual cleaning practices that are intrinsic to more traditional cleaning methods. Those methods pose a greater risk to the worker and also have a negative impact on the environment.

Based on technology originally developed in the 1970s by Calvin Fung, the first commercially available dry ice blasting systems marketed in the 1980s were very large, cumbersome and expensive. A good analogy for the original integrated dry ice blast system would be the size and mobility of a large tractor-trailer, requiring high-pressure air. The original technology included a component that produced the dry ice media and then fed its production directly into the blasting unit.

These systems still exist, and in large plant situations where continuous blasting is required the investment is worthwhile. However, market studies have shown that the typical application for dry ice blasting does not require an integrated system with such a high level of sophistication. As a result, the technology has moved away from the large integrated system and now only rarely includes the dry ice pellet-producing component. The need for dry ice pellet production on site has also been diminished by the evolution of the CO2 industry. Dry ice media, in any form, including pellets, is now a readily available commodity, making it easy to secure delivery on demand.

Blast systems have also evolved away from the original, less aggressive, less versatile dual-hose suction based blast system to a more effective and efficient single hose, pressure

based delivery system that is smaller, portable and affordable. The original dual-hose systems not only offered limited aggression, but also because of the design can only operate with a maximum blast hose length of 25 feet. Moreover, they do not offer any vertical reach because the pressure loss renders these systems ineffective. These features confined the blast area to a limited space.

New blast systems can easily be compared in size, weight and portability to a portable dishwasher. Modern dry ice blast systems now operate using typical plant air systems at 80 PSI and 100CFM. Single-hose blast systems can accommodate up to 200 feet of blast hose and have unlimited vertical reach. These much-simplified systems are easily operated by one technician, or for even more efficiency a cleaning crew of two, where one operator continuously blasts and the other manages the hoses and keeps the blast unit filled with dry ice pellets.

The evolution of the technology has allowed blast system manufacturers to focus on the other elements of dry ice technology that impact the performance of blast systems. The latest nozzle technology focuses on achieving maximum performance from existing plant air systems, increased aggression to clean any surface, and the lowest possible noise levels for improved operator safety and comfort.

Modern nozzle designs also address issues of limited access/confined spaces and special application needs. Nozzles and accessories can be custom configured to service a large variety of special needs, even within the same plant setting, allowing one system to meet the needs of multiple areas and functions. All of these changes have cleared the way for many practical applications for dry ice blast cleaning, including plywood and OSB press cleaning.

The results of a recent case study of an installation in North Carolina revealed the dry ice blast cleaning process to be four times faster than traditional cleaning methods, ultimately far safer, and more cost effective.

In this era of “green” and “lean thinking” initiatives, dry ice blasting has become a simple solution to a traditional problem. It is an environmentally responsible and cost-effective alternative to the traditional way of doing business.

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