

Benefits of CO₂ Blast technology

Cost Reduction

The natural sublimation of Dry Ice particles eliminates the cost of collecting the cleaning media for disposal. In addition, containment and collection costs associated with water/grit blasting procedures are also eliminated.

Because CO₂ blast systems provide on-line maintenance capabilities for production equipment (cleaning "on-line"), timely and expensive detooling procedures are kept to a minimum. Dedicated cleaning cycles are no longer required as preventative maintenance schedules can be adopted which allow for equipment cleaning during production periods. As a result, throughput is increased without adding labor or production equipment.

Extension of Equipment's Useful Life

Unlike sand, walnut shells, plastic beads and other abrasive grit media, dry ice particles are non-abrasive. Cleaning with Dry Ice will **not** wear tooling, texture surfaces, open tolerances, or damage bearings or machinery. In addition, on-line cleaning eliminates the danger of molds being damaged during handling from press to cleaning area and back.

A Dry Process

Unlike steam or water blasting, CO₂ blast systems will not damage electrical wiring, controls, or switches. Also, any possible rust formation after cleaning is far less with Dry Ice blasting when compared to steam or water blasting. When used in the Food Industry, Dry Ice blasting reduces the potential for bacteria growth inherent to conventional water blasting.

Environmental Safety

Carbon dioxide is a non-toxic element which meets EPA, FDA, and USDA industry guidelines. By replacing toxic chemical processes with CO₂ blast systems, employee exposure and corporate liability stemming from the use of dangerous chemical cleaning agents can be materially reduced or eliminated completely. Since CO₂ gas is heavier than air (CO₂ gas displaces oxygen), care must be taken if blasting in enclosed areas or down in a pit.

Current CO₂ Blast applications

Molded Products

Dry Ice blasting cleans unwanted release agents ("parting agent") and/or residual material build up from the product contact surfaces. That is, the build-up of release agents or residual product from the hot mold is easily removed. Dry Ice blasting allows the tools or molds to be cleaned while the mold is hot and still in the press. This reduces the "press down time due to cleaning" by 80% to 95%. Since the process is non-abrasive, the CO₂ blast cleaning will not wear the tools or open critical tool tolerances. Furthermore, "micro vents" are typically cleaned by Dry Ice blasting. This eliminates hand drilling of plugged vents needed for optimum gas escape.

- Rubber Molds
- Tire Molds
- Urethane Molds
- High Density Polyethylene Molds
- PET Molds
- Foam Molds
- Banbury Mixers

Dies

There are many types of dies and sometimes the word "die" is nearly synonymous to molds. And, as with molds, the application is usually quite successful. Both molds and dies usually operate at elevated temperatures which will increase the cleaning rate and increase the attractiveness of on-line cleaning.

- Aluminum Foundries
- Core Boxes
- Paper Plate

Food Industry

Residual sugars left behind from baking can be readily removed from their fixtures in most cases. Here, as in molding, heat may enhance the removal speed and characteristics. In many cases the application may be performed on-line. A key benefit in using Dry Ice blasting to replace some of the general cleaning (done with water, detergents and sanitizers) is a moisture reduction, thereby, inhibiting the growth of bacteria — particularly salmonella. Economics have directed on-line cleaning of fixtures including waffle irons and other similar batter or dough baking and product forming fixtures, oven bands and conveyor belts.

CO₂ blasting has been proven to remove and/or destroy significant biofilm build-ups of listeria and salmonella. Typical applications include:

- Baking Ovens, Shelves and Trays without shutting down or disassembly
- Cookie Oven Bands
- Wafer plates - Carbon build-up removal
- Flight & Conveyor Cleaning
- Removes Ingredient build-up from tanks and vessels
- Cleans Screws and Augers

Miscellaneous Tooling

There are many names and types of production fixtures, but virtually any item that is part of the production process and is difficult to clean on-line or during production hours by traditional means may be an excellent Dry Ice application.

Applications such as:

- Conveyor Components
- Hoppers
- Material Handling
- Car Carriers
- Weld slag Removal From Robotics, Fixtures, Carriers
- Removal of Oils and Grease from chains, machinery, etc.
- Cleaning Packaging Equipment
- Removal of Adhesives

Printing Industry

In the Flexographic Printing Industry, inks and varnish polymers are designed to adhere to most surfaces, resist scratches; and, in some instances, be solvent resistant. These characteristics which make their use attractive also make the removal of dried ink very difficult. Ink buildup on the gears and deck guides causes poor alignment and results in low print quality. To compensate for this phenomena, plate mounting generally needs adjusting several times to register critical graphics in order to produce an acceptable quality level. Generally, each "press run" to check the register of the colors results in thousands of feet of wasted material. This inherently wasteful process can now be eliminated due to the on-line precision cleaning ability of Dry Ice blasting.

THE FUTURE

We can't predict the future, but we do know that CO₂ particle blast cleaning is not a mature technology. Only eight years have passed since the process was first introduced and the technology is continuing to experience rapid growth, change and advancement.

Today's environmental issues are only the beginning. Legislation on Air and Water quality will continue to impose stricter regulations on general industry and Dry Ice blasting is continually moving forward to meet these new demands.

One thing is certain. The successful shop of the future will have fully incorporated the CO₂ blast process into its operation.