

CRYOCLEAN® SNOW. Dry ice blasting without pellets.

The challenge

In many areas of industrial cleaning, blast cleaning with dry ice has already become a standard process. However, there are many obstacles which inhibit the application of this method, especially within automated production processes.

- Typically, the demand for pellets is likely to fluctuate. A sudden rise in demand is often hard to satisfy. On the other hand, pellets often deteriorate if the demand is lower than estimated.
- For a reliable blasting operation, conventional blasting units usually require a minimum amount of pellets in the hopper. As soon as the blasting operation is interrupted for a period of time, these pellets clump together due to the unavoidable air humidity which subsequently causes condensation humidity. This often leads to freezing problems when pellets are reloaded.
- Every conventional blasting unit has a dosing system for the pellets. Regardless if it is a rotating air lock (e.g. metering disk) for single-hose systems or a metering screw for two-hose systems, the fact remains: rotating construction parts which come into contact with a cryogenic medium can easily freeze up if the cleaning process should be suspended for a long time.

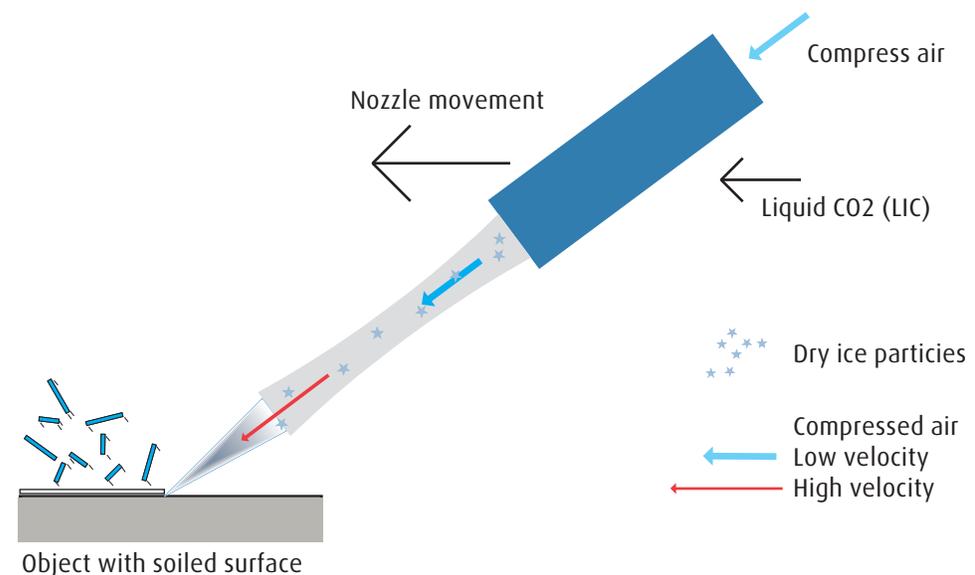
The solution

The CRYOCLEAN® SNOW system has a fundamentally new functional principle. The dry ice particles for the cleaning process are directly produced for immediate demand. By feeding liquid CO₂ into a specially designed snow chamber, solid dry ice particles are created and shot immediately onto the surface to be cleaned with compressed air.

This system offers a number of benefits:

- No handling required, as needed for pellets and their storage boxes.
- Only a small control unit is needed, replacing significantly larger blasting units.
- Blasting performance by the push of a button.
- Low operating costs.
- The CRYOCLEAN® SNOW requires only LCO₂ and compressed air supply.
- The cleaning process can be initiated with only 2 cubic meters /min compressed air at 70 psi.

The working principle of the CRYOCLEAN® SNOW system



Advantages for the user

This innovative concept offers a multitude of advantages that make the CRYOCLEAN®SNOW a perfect solution for automated application:

- Labor efficiency increases by eliminating the need to run between the pellet supply and the point of use. Also, this eliminates unnecessary exposure to potential safety hazards.
- Freeze clogging in the blasting unit due to clumped pellets can now be eliminated.
- Maintenance effort decreases drastically.
- Personnel are no longer tied up in peripheral tasks (refilling the pellets, handling of the boxes, ...).
- Liquid Carbon Dioxide can be stored for several weeks and is immediately available for use versus unused pellets that quickly deteriorate.

System parameters

Liquid Carbon Dioxide (LCO₂) supply:

- The flexibility of CRYOCLEAN®SNOW allows it be applied to various parts of the process. It can be positioned at a stationary location or it can service parts on a moving conveyor belt. Furthermore, CRYOCLEAN®SNOW can be applied to mobile and portable systems.
- CRYOCLEAN®SNOW is also less aggressive than conventional pellet blasting.
- A low-pressure supply (~300 psi) in combination with a pressure booster and a ring line guarantees perfect results.
- A high-pressure supply via cylinders or bundles is easy to install and advisable for rather small cleaning tasks.

Compressed air supply:

- Normal compressed air with a pressure of 20 to 215 psi
- A dewpoint of 14 °F is recommended for cleaning tasks with a longer duration; for shorter application times, a higher air humidity can be acceptable.
- The delivery amount for the small version should be about 1.3 to 3.2 scf/min and about 2.5 to 5 scf/min for the large version.

Additionally

- The thickness of the contamination layer should not exceed about 0.04 in (1 mm).
- The blasting width of a blasting nozzle should be between 0.2 and 3.9 inches (5 and 100 mm).

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