

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.

There are, however, many obstacles which inhibit the application of this method, especially in terms of greater challenges within automated production processes.

- Typically, the demand for pellets is subject to fluctuations. Supply-wise, 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, all blasting units currently on the market require a certain minimum amount of pellets in the hopper. As soon as the blasting operation is interrupted for a longer period of time, these pellets clump together under the influence of the unavoidable air humidity, subsequently causing condensation humidity. The latter often leads to freezing problems when pellets are reloaded.
- Every conventional blasting unit has a dosing system for the pellets. Irrespective of if this 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 longer time, as can easily be the case during a production process.

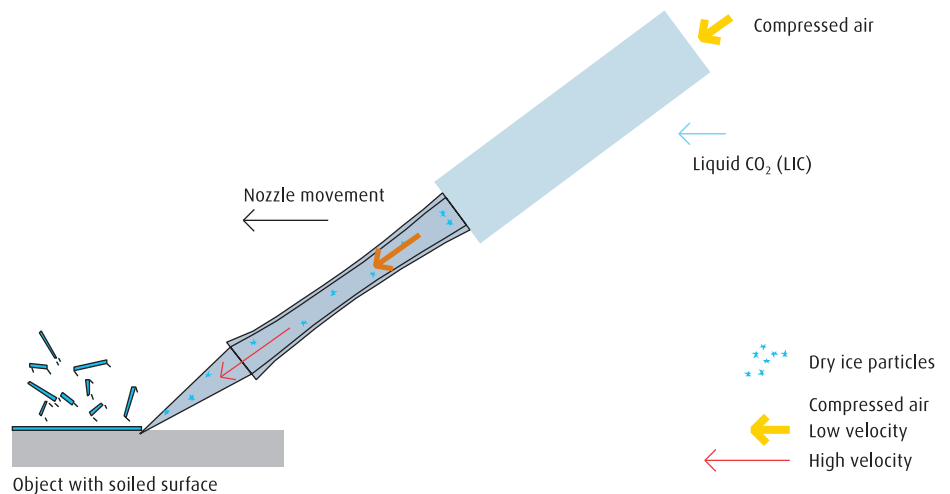
The solution

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 (LIC) into a specially designed snow chamber, particularly solid dry ice particles are created and shot immediately onto the surface to be cleaned with compressed air.

This system offers a number of extraordinary characteristics:

- No handling effort for the pellets and the corresponding 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 LIC and compressed air supply.
- The cleaning process can be initiated with only 2 m³/min compressed air at 5 bar.

The working principle of the CRYOCLEAN® SNOW system



Advantages for the user

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

- Apart from the effort of pellet production, the back and forth transports of the boxes between the place of production and the point of consumption as well as the refilling of the blasting unit can be omitted, leading to significant cost relief.
- Characteristically for the system, blasting unit clogging due to clumped pellets can be ruled out.
- Maintenance effort decreases drastically.
- Personnel is no longer tied up in peripheral tasks (refilling the pellets, handling of the boxes, ...).
- Due to LIC being easily storable over a course of several weeks and contrary to quickly deteriorating pellets, cleaning power is immediately available even when the demand profile is very erratic.

System parameters

Liquid CO₂ (LIC) supply:

- A low-pressure supply (~20 bar) 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 2 to 15 bar
- A dewpoint of -10 °C 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 2 to 5 m³/min and about 4 to 8 m³/min for the large version.

Standard application situations

There are a number of facts to be observed for the application of the CRYOCLEAN®SNOW system:

- The cleaning process takes place at certain, fixed points, as for example:
 - Cleaning of (parts on) conveyor belts
 - Cleaning at certain process steps
 - Cleaning at special cleaning stations
 - Surface pretreatment
- Due to the system's characteristics, the aggressiveness of the process is slightly lower than that of conventional pellet blasting, therefore the thickness of the contamination layer should not exceed about 1 mm.
- LIC and compressed air supply must be realizable.
- The blasting width of a blasting nozzle is between 5 and 100 mm.

[Our specialists are available for adapting the CRYOCLEAN®SNOW system to your specific task.](#)
[Other leaflets about our complete range of products are available in all sales offices.](#)



Linde AG

Linde Gas Division, Linde Gas Headquarters, Seitnerstrasse 70, 82049 Pullach, Germany
Phone +49.89.74 46-0, Fax +49.89.74 46-12 30, www.linde-gas.com