



Dry Ice Blasting for Printing & Press

Cleaner presses, faster changeovers, no solvent soak

In a print works, ink, paper dust, powder spray and adhesive never stop building up. It collects on side frames, gears, chain deliveries, rollers, dryers and guards, and every layer adds friction, heat and the risk of marks on the job.

Most cleaning still relies on solvent washes, rags, scrapers and a lot of elbow grease. It works, but it is slow, it puts solvent vapour into the pressroom, it creates contaminated rags and wash-up waste, and it often means stripping guards and covers for a proper deep clean.

Dry ice blasting offers a different approach. In this guide I want to explain how it works and where it delivers real advantages over traditional cleaning in printing and press environments.

What is dry ice blasting?

Dry ice is solid carbon dioxide (CO_2) at around -78.5°C . Instead of melting, it turns straight back into gas when it warms, a process called sublimation.

In dry ice blasting, small pellets of this material are fired at a surface using compressed air. Three things happen on impact:

- **Impact energy** breaks up and dislodges the deposit.
- **Thermal shock** makes the residue brittle and weakens its bond to the surface beneath.
- **Sublimation** turns the pellet into gas, which expands rapidly and lifts the residue away from behind.

The pellets disappear into the air. The only thing left to collect is the residue that has been removed. There is no water, no detergent and no blast media to clean up afterwards.

Where dry ice blasting really outperforms traditional cleaning

1. It cuts through dried ink and powder

Dried ink, anti-set-off powder, varnish and coating residues bond hard to metal and painted surfaces. Thermal shock makes these deposits brittle, and the expanding gas lifts them away, including from gear teeth, chain links and the corners a rag cannot reach.

2. No solvents and no wash-up waste

Dry ice is made from CO_2 and leaves no residue of its own. There are no solvents to evaporate into the pressroom and no solvent-soaked rags to store and dispose of. That reduces VOC emissions, COSHH exposure and the fire load of oily waste.

3. Cleaning in place, without dismantling

Delivery units, feeders, side frames, dryers and folders can usually be cleaned where they stand, with only guards removed for access. There is less stripping down, fewer reassembly errors and less time lost getting the press back into register.



4. Safe around electrics and sensors

Dry ice is non-conductive and leaves no moisture behind, so it can be used near motors, drives, sensors and control cabinets where water or wet solvent would be a risk. Equipment should still be isolated in line with your safe systems of work.

5. Gentle on rollers and precision parts

Wire brushes and scrapers scratch and wear surfaces. Dry ice is non-abrasive, so it removes build-up without scoring painted frames, chrome, anilox surrounds or machined faces. Pressure and nozzle are adjusted for more delicate areas.

6. Shorter maintenance windows

No soaking, no drying and less dismantling mean deep cleans fit into a planned shutdown or a weekend rather than taking the press out for days. That time goes straight back into production.

Environmental credentials

Print businesses are increasingly asked by customers to show how they reduce waste and emissions. Dry ice blasting can help on several fronts.

- **Recycled CO₂.** The CO₂ used to make dry ice is typically recovered as a by-product of other industrial processes, such as fertiliser production and fermentation, rather than produced specially. Blasting returns it to the atmosphere it would otherwise have reached, so the process adds no new CO₂ of its own.
- **Fewer solvents.** Replacing solvent deep cleans reduces VOC emissions and the volume of solvent bought, stored and handled under COSHH.
- **Less hazardous waste.** There are no solvent rags or contaminated wash-up liquids from the jobs it replaces. The only waste is the ink and dust removed.
- **No water.** Nothing to collect, treat or send to drain.
- **Longer machine life.** Clean gears, chains and bearings run cooler and wear less, so parts are replaced less often.

Taken together, dry ice blasting gives printers a cleaning method that supports environmental reporting as well as print quality.

At a glance

	Solvent and manual cleaning	Dry ice blasting
Solvent use	Regular and in volume	None
Hazardous waste	Solvent rags and wash-up liquids	Only the removed ink and dust
Dismantling	Often needed for deep cleans	Usually cleaned in place
Drying time	Solvent must flash off	None
Surface wear	Scrapers and brushes can scratch	Non-abrasive
Electrical components	Must be protected from wet cleaning	Non-conductive, no moisture
Hard-to-reach areas	Rags cannot reach into gears and chains	Airstream reaches into recesses

Typical applications in print and press

- **Sheetfed offset:** side frames, delivery chains and grippers, feeders, powder spray areas and coating units.
- **Web offset:** folders, dryers, chill roll surrounds, splicers and web guides.
- **Flexo and gravure:** deck frames, doctor blade chambers, ink pans and the build-up around anilox and print cylinders.
- **Digital presses and finishing:** toner and dust build-up, guillotines, folders and binding lines with hot-melt glue residue.
- **Label and packaging print:** adhesive and liner dust on die-cutting stations, rewinders and laminators.
- **Pressroom environment:** extraction ducting, dryer exhausts and walls coated in ink mist and powder.

Our setup at Vortex Ice Labs, and why it matters for print sites

Vortex Ice Labs is a fully mobile service. We bring a complete, self-contained system to site, so there is no reliance on your own air supply. The air passes through four stages before it reaches the surface.

- 1 **Compressor.** This supplies the large, steady volume of air needed to drive the pellets. Consistent flow means consistent cleaning, with no drop in performance halfway through a job.
- 2 **Aftercooler.** Compressing air heats it, and hot air carries a lot of moisture. The aftercooler cools the air straight away so that moisture condenses and can be drained off. Without it, water would freeze inside the blaster, causing pellets to clump and block, and could be sprayed onto the surface being cleaned.
- 3 **Filtration.** Filters then remove the remaining water, any oil carried over from the compressor, and fine particles. That matters on a press. The aim is to remove build-up, not to leave a film of oil or water on rollers, plates or paper paths.
- 4 **Dry ice blasting unit.** The pellets are metered into the conditioned airstream and delivered through the hose and nozzle. Pressure, ice feed and nozzle choice are adjusted for each task, from fine work



around rollers and sensors to heavy ink build-up on delivery frames.

Every stage protects the result. Clean, dry air means a clean, dry machine that is ready to run.

Working safely, and where it fits

Dry ice blasting is a powerful tool, and it should be planned like any other maintenance activity in the pressroom.

- **Ventilation.** As the ice sublimates it releases CO₂ gas. In enclosed or poorly ventilated areas this has to be managed with suitable airflow and, where needed, gas monitoring.
- **Noise and PPE.** Blasting is loud, and operators use hearing protection, eye and face protection, and insulated gloves. People nearby need to be kept clear of the work area or protected too.
- **Containment.** Removed ink and powder can travel, so we sheet off nearby stock, plates and finished work, and clear up afterwards.
- **Rollers and blankets.** Rubber rollers and blankets are usually cleaned with your normal wash-up or removed first. Dry ice is best used on the frames, gears and housings around them unless a trial shows otherwise.

Used this way, it is most valuable for deep cleans, planned shutdowns, press refurbishment and preparing machines for sale or relocation.

Final thoughts

Print businesses need presses running and producing clean work. Traditional solvent cleaning will always have a role in daily wash-ups, but it brings solvents, waste and downtime to the deep clean.

Dry ice blasting removes those trade-offs for many of the hardest jobs. It cleans in place, uses no solvent, leaves the machine dry, and gets the press back into production sooner.

If you would like to see how it could work on your press, I would be happy to arrange a demonstration or trial clean on site. Get in touch with us at Vortex Ice Labs.

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