

## ICE BLAST TECHNOLOGY

US patent number 2,699,403 was issued in 1955 to E.J. Courts for “Means and Methods for Cleaning and Polishing Automobiles” by “bombarding the surface with soft, virtually discrete particles of ice”. The first reliable ice blast machine had to wait until 1996.

While ice making was commercially available and reliable, handling and transport of small ice particles were less understood, causing routine jams and blockages during operation. To make ice blast reliable, two misconceptions had to be overcome:

1. Like sand blasting, ice can be stored in a hopper and metered into the blast nozzle. Unlike sand, small ice particles are not free flowing. In stationary state, ice particles pack and agglomerate. This innovation produces ice particles and keeps them in constant motion to the nozzle. The lifetime of an ice particle from creation to destruction is the transport time from source to impact.
2. Ice particles must be entrained in cold air to minimize attrition. Cold air turns metal surfaces into freezing surface. Moisture condenses and eventually causes blockages or frozen control valves. This innovation uses “warm” air for ice particle transport.

Ice blast machines take water, convert it to ice flakes, and entrain them in a high speed air stream for blast cleaning applications. An ice blast machine comprises refrigeration, an ice maker, a blast nozzle and ice handling accessories. The process is inherently reliable and cost-effective: refrigeration and ice making are used worldwide under diverse climatic and economic conditions. This innovation has global potential.

Ice is a unique blast media: it undergoes phase-transition. Therefore ice combines the benefits of solid and liquid blast media without their respective disadvantages: dust and solid waste generation (grit blasting), and massive volumes of liquid waste (water blast). In some applications the waste minimization aspect of ice blast technology is vital to EPA compliance and in others the low airborne aspect is vital to OSHA compliance. These benefits make ice blast ideal for removing hazardous materials (lead-based paint, asbestos, radioactivity, chemical and petrochemicals), cleaning in public places (schools, inner cities, parks), cleaning in industrial locations (manufacturing plants, power plants, sewage treatment plants, food processing plants), and cleaning in environmentally fragile places (marinas, near and over waterways).

Ice blast technology does not necessarily displace existing technologies such as sand blasting and high pressure water blast which represent discrete media blast and continuous media blast, respectively. Ice blast bridges the two and as such can be applied to a whole range of applications that are in between.

Ice blast technology is regularly used today in lead-based paint abatement, asbestos abatement, building restoration, radioactive decontamination, waterway infrastructure maintenance (The Netherlands), chewing gum removal from school grounds, petrochemical plant maintenance, pulp and paper plant maintenance, manufacturing cleaning of automotive power train components, and general plant and machinery cleaning.

**Contact: Sam Visaisouk, Ph.D. • Universal Ice Blast, Inc. • 533 6<sup>th</sup> Street South  
Kirkland, WA 98033 • 425-893-8424 • Fax 425-893-9222 • [visa@iceblast.net](mailto:visa@iceblast.net) • [www.iceblast.net](http://www.iceblast.net)**

# Ice Blast Technology:

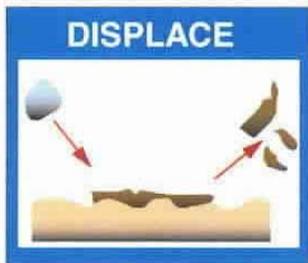


**Q: What is Ice Blast?**

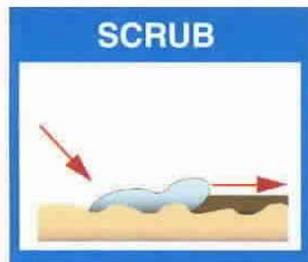
**A:** A simple, non-abrasive cleaning process that capitalizes on ordinary tap water, compressed air and electricity to create an environmentally-friendly, cost effective method for tackling industrial cleaning jobs.

**Q: Why is Ice Blast so Effective?**

**A:** Because of its unique Scrub & Flush Technology



Ice Particles **DISPLACE** surface contamination by colliding with the contaminant



Mechanical **SCRUBBING** results from the lateral deformation of the ice particle as it changes from solid ice to liquid water



The contaminant is **FLUSHED** away by the liquid water created as the ice particle melts

**Q: What are Ice Blast Benefits?**

- A:**
- Environmentally Friendly
  - Non-Abrasive
  - Superior Cleanliness
  - Cost Effective
  - Worker Safe
  - Waste Minimization



**NYS DOT**

Ice Blast removed lead based paint from two of NYS DOT steel bridges.  
For more info contact:  
Glenn Snyder  
Tel: 914-431-5892

**Project Required:**

**HOLLAND**

Cleaning "National Sump Pump" in Holland.  
For more info contact:  
Jan Heijne  
Tel: 011-31-222-319588

**Project Required:**

**NAVY**

Ice Blast removed lead based paint from Naval facilities.  
For more info contact:  
John Tippet  
Tel: 202-685-8337

**Project Required:**