



# PROFESSIONAL SOLUTIONS

DRY ICE CLEANING TECHNOLOGIES

# We offer a solution to every surface!

## How Does Dry Ice Blasting Clean?

Dry Ice Pellets are propelled at a supersonic speed by compressed air. Upon impact, the dry ice creates a micro-thermal shock (caused by the extreme cold temperature of  $-79^{\circ}\text{C}$ ) which breaks the bond between the coating and the substrate. The high pressure air stream removes the dirt from the surface, while the Dry Ice Pellets vaporize (sublimate) before your eyes.

## A Greener Clean

Dry Ice Blasting is quickly becoming favoured among all industries because of environmental and production processes, standards, and certifications along with a growing consciousness of the environmental impact of production practices. This method of natural cleaning uses pellets made through a process of taking Liquid Carbon Dioxide ( $\text{CO}_2$ ) and expanding it to produce a snowlike substance, that is compressed through a die to make hard Dry Ice Pellets. Environmental benefits include cleaning with a natural substance, replaces chemicals and minimizes the need for specialty waste disposal.

## Our technology has many benefits

1. Cleaning with a Natural Substance. Dry Ice Blasting uses Dry Ice Pellets made from the same substance used to carbonate beverages. This method does not generate secondary waste as does sand, soda, water, or grit cleaning. Dry Ice Blasting also replaces chemical and solvent based cleaning.
2. Safe on Electrical. This versatile process cleans heavy buildup without damage to sensitive areas like electrical components, switches, wiring, photo electric sensors, and more.
3. No Damage. Dry Ice Blasting is completely dry, non-abrasive, non-toxic and non-corrosive. It quickly removes most contaminants without damage to switches, panels, lines, tubes, wiring or belts, HVAC equipment and is safe to use on electrical.
4. No Down Time. The process is very fast and dry. The dry ice disappears on contact and can be performed on-line without disassembly and without need for drying time.



## MODEL

IBLmini

IBL2500

IBL3000

### Nozzles included

4 mm - 1,5 m<sup>3</sup>/min  
5 mm - 2,5 m<sup>3</sup>/min

4 mm - 1,5 m<sup>3</sup>/min

1 short nozzle with 3  
inserts of choice:  
5 - 6 - 7 - 8 - 9 - 10 mm

### Hose standard

5 meter (1/2") technical  
rubber without silicone

7 meter (3/4") technical  
rubber without silicone

7 meter (3/4") technical  
rubber without silicone

### Pressure

2-12 bar

2-12 bar

2-16 bar

### Dry ice consumption

10-30 kg/hr

25-90 kg/hr

25-90 kg/hr

### Hopper size

8 kg

23 kg

25 kg

### Width (Including wheels).

480 mm

500 mm

400 mm

### Depth

550 mm

700 mm

780 mm

### Height

610 mm / 895 mm

900 mm

1110 mm

### Weight

39 kg

81 kg

95 kg

### Vibrator

Electrical

Electrical

Electrical

### Pressure regulator

Festo 1/2"

Festo 3/4"

Festo 1"

### Pressure regulation

Direct.  
Air is only passing through  
regulator. No restrictions.

Air only passing through  
regulator and seat valve.  
No restrictions.

Air only passing through  
regulator and seat valve.  
No restrictions.

### Chassis

Stainless steel

Stainless steel

Stainless steel

### Cover

Stainless steel

Stainless steel

Stainless steel

### Air consumption:

#### Minimum

1.000 L/min

2.000 L/min

2.000 L/min

#### Ideal

2.000 L/min

5.000 L/min

5.000 L/min

#### Maximum

3.600 L/min

15.000 L/min

25.000 L/min

## IBL3000

The IBL3000 was developed in close co-operation with a customer, who had specific needs for operating a dry ice blaster in an environment with many challenges. Size and simplicity combined with strength and durability were the key facts. With an overall width of only 400 mm the machine can easily be moved in and around in narrow spaces and especially in between machines in the production. This enables the operator to get closer to the point of cleaning and thereby being able to work with shorter length of blast hoses, which again gives a better cleaning result.

Being narrower does not mean a small dry ice hopper. The IBL3000 holds more than 25 kgs of dry ice, which for most applications is more than 30 minutes operation before refilling.

### Simplicity and robustness

Operating and moving equipment around in tight spaces also means a risk of damage to the machine. That is why we have designed the operation of the equipment with components that are not sticking far out (risk of breaking of) and at the same time all components are placed protected behind the handles at the back of the machine.



## IBL2500

The IBL2500 has got 3/4" Festo air components which will be suitable for almost all types of cleaning applications. Weight and size is smaller than the IBL3000 and more powerful than the IBLmini. The perfect choice for factory air cleaning 3000 -7000 ltr air/min and at 5-7 bar.



The IBLmini is the ideal choice for those companies, who would like to have the opportunity to clean small parts and surfaces, without having the usual constraint for a high air flow compressor. Daily maintenance on processing equipment and electronics or the occasional cleaning of parts is easily carried out with the IBLmini.

## Air requirements

One of the most important benefits of the IBLmini (besides price) is that it is designed to function using plant air supply. Most factories only have compressors that generate 7 bar and an air volume of 500 to 3000 liter/min available which for most cleaning jobs with the IBLmini should be sufficient to achieve the desired result.

## Accessories

On top of a wide range of nozzles we also offer a great number of accessories that will make the transport and storage easier. All in the right order makes it easier to be efficient.

Nozzle holder in front of the IBL3000

Holder blast gun and electrical cable

IBLmini nozzle holder



## Nozzles inserts for IBL3000

Selecting the correct insert for the nozzle enables the user to maintain supplied pressure.

- 5 and 6 mm for low air volume
- 7 and 8 mm for medium air volume
- 9 and 10 mm for high air volume



# Nozzle selection IBL3000

It is not always necessary to have maximum cleaning power/speed. One of the most obvious benefits of dry ice is that it also can clean electronics and sensitive surfaces without damage. However, to obtain the fastest cleaning on surfaces where no damage is possible e.g. steel surfaces, then these factors need to be maximized.

## Air pressure

The blaster and the hoses are built for pressures up to 16 bar. Higher pressures enable the removal of deposits that have a greater adherence to the surface.

## Air volume

The IBL3000 has a true 1 inch flow all the way through the machine, which allows up to 15 m<sup>3</sup>/min. More air equals quicker cleaning. However, if you can work with lower air flow then you save, not only in diesel/electricity consumption, but also in the investment in larger and more expensive compressors.

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## Long nozzles

In order to generate the maximum airspeed in high performing nozzles then air and dry ice needs to accelerate at a set angle of 3-5 degrees. Calculations and tests have shown that a nozzle in length of 600-700 mm gives best results. A nozzle of this length needs to be as lightweight as possible and be easily handled by the operator whilst offering maximum blast power. The geometrics of such a nozzle widens at the orifice, which for most nozzles would be in the region of 30-40 mm wide.



All other configurations are a compromise on the ideal selection for fastest and most aggressive cleaning.

## Wide nozzles

Selection of wider nozzle offer a far gentler clean whilst also cleaning a greater area.

An orifice of 80-90 mm allows an acceptable cleaning effect.



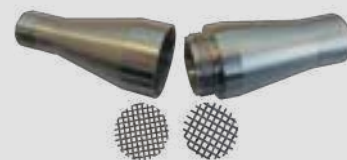
## Short nozzles

In situation where accessibility to the area which needs to be cleaned is awkward or difficult to reach then a shorter nozzle is the only solution.



## Crushing dry ice

For delicate cleaning a crusher can be used to split the dry ice into smaller particles. The principle is that the dry ice will pass through a mesh plate. Mesh plates come with different sized holes in order to alter the size of the “crushed” pellet, offering different levels of force of impact by weight and cleaning aggressiveness.



## Curved nozzles

Cleaning of machinery with small openings sometimes require a curved nozzle. The 45 degree nozzle makes it easier to access and clean in tight spaces. Curved nozzles can be found both as short or long nozzle.



## Nozzle selection IBLmini

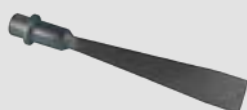
The IBLmini has the same variety of nozzles.

Standard nozzle

Wide nozzle

Curved nozzle

Crusher



## Throat diameter

If you were to work with a nozzle that had a full 1 inch opening then the “expanding” air would cause the generated pressure and acceleration to dramatically drop. To avoid this then it is important to have a restriction in the airflow. That is done in the nozzle either as a fixed part of the nozzle like for the IBLmini / IBL2500 where you can use a 3 mm, 4 mm or 5 mm nozzle or as we do it in the nozzles for the IBL3000 where you can change the inserts to maximize your cleaning pressure. Using inserts gives you great savings as you can use all the different inserts for one nozzle.



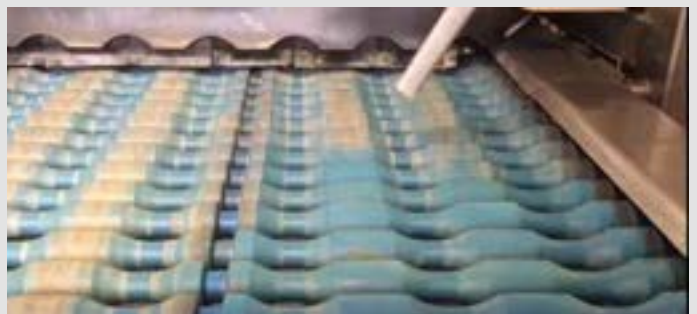
\*The throat diameter indicates what airflow is needed to maintain pressure.





Dry ice is the solid form of CO<sub>2</sub>, which is well known and often used in the food industry. It is completely waterless and eliminates the need for use of chemicals.

We offer dry ice blasting solutions both for larger industries with a daily use to smaller machines with low air consumption for scheduled cleaning.



## Food processing

Cleaning with dry ice of food processing equipment has widely been accepted as an effective and environmental friendly method to remove grease, grime, leftover food, caked-on dust, flour, oil, baked-on carbon, yeast etc. And also important.

- Reduction in labour cost = lower OpEx
- Reduces wear on tooling and give longer lifetime of machines = lower CapEx
- Reduced use of chemicals = better environment

Equipment and parts can be cleaned while in operation.

This 100% cleaning will prevent bacteria growth – even in hard-to-reach areas like.

- |             |                   |          |
|-------------|-------------------|----------|
| • Conveyors | • Packaging lines | • Motors |
| • Switches  | • Panels          | • Ovens  |
| • Slicers   | • Mixers          |          |





All automated equipment benefits from a "NO CONTACT CLEANING SYSTEM".

Lightweight materials used to manufacture Gun Heads, Grippers, and Tooling Stations are damaged by traditional methods of Slag and Debris removal. Dry Ice provides for the removal of problem causing contaminants without damage to the equipment.

Dry Ice Cleaning eliminates scraping, chiseling, hammering, and the use of toxic chemical cleaners.

Efficiency is increased due to Grippers, Welding guns, locating pins and tooling stations working as if new, also as and when break downs occur, engineers can isolate and repair defective equipment quickly without having to remove difficult weld slag.



## Welding cells and robot cleaning

Critical process cleaning to automotive manufacturing industry

Regular maintenance of automated production equipment increases the volume and quality required from manufacturing industries. To that end it is essential that a bespoke integrated cleaning and preventative maintenance program is in place and monitored, to extend the life and service of your assets.

Difficult contaminants produced during production could be, but not limited to, Grease, Carbon, Weld slag, Weld spatter, Resin, Glue and chemicals.

All of the above if not regularly removed will build up in and around automated equipment damaging wrist axis joints, clamps and grippers, locating pins and part present sensors and when the equipment fails your very expensive technician will have to remove the build up of slag/dirt before any repair work can be completed. (extended equipment down time).



Regular cleaning reduces the time needed for each cleaning operation and more important reduces the rejects to a minimum.

No dust, water or chemicals used to get superior finish and quality.



## Plastic injection industries

Cleaning with dry ice of moulds, screws, mixers ect. in plastic and styropor injection industries can benefit from dry ice cleaning, which gives advantages such as:

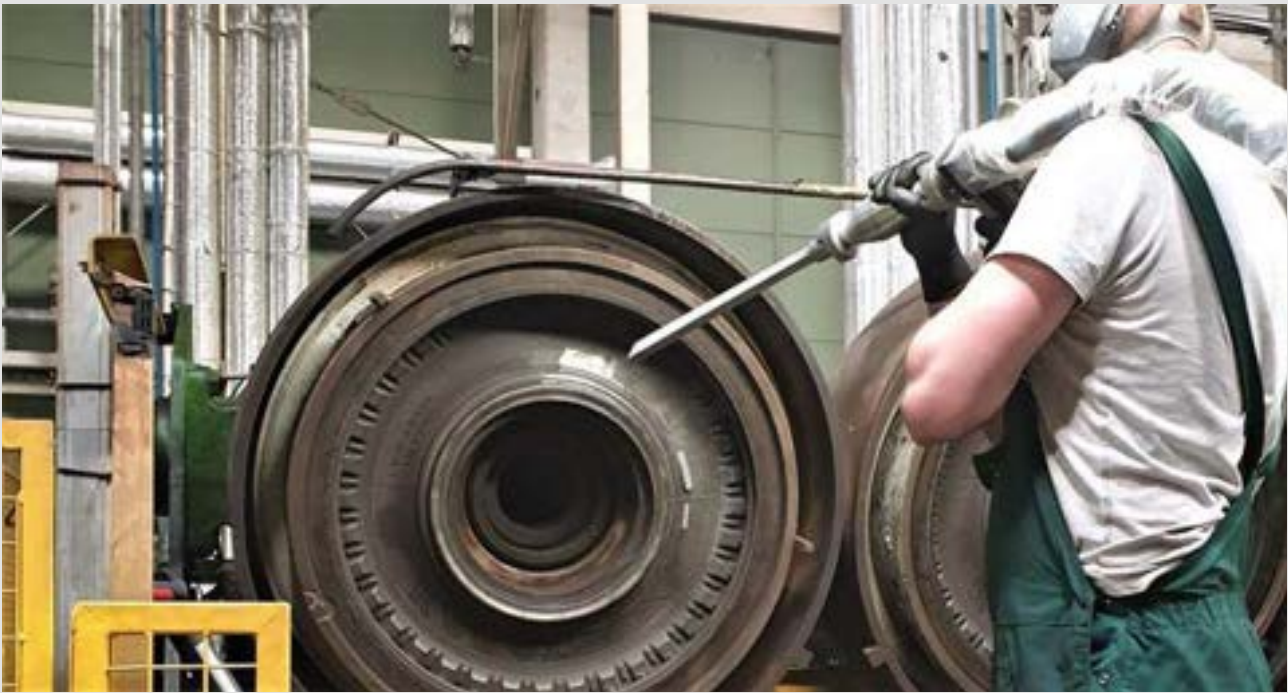
- Reduction in labour cost
- Reduces wear on tooling
- Decreases scrap rates

In situ on site cleaning without having to remove the moulds from the plastic injection moulding machine. Cleaning when hot is an advantage to the cleaning with dry ice. Quick return of equipment back into production. No need to cool down and reheat.

What normally could take hours can be done in minutes.

Removing of antislip material, grease and residues from production material without any damage to the mould or equipment.





## The mold cleaning

In situ on site cleaning without having to remove the molds. Cleaning when hot is an advantage to the cleaning with dry ice. Quick return of equipment back into production. No need to cool down and reheat.

What normally could take hours can be done in minutes.

Cleaning while hot - Less down-time

In-situ cleaning - Less down-time

100% Clean - Less rejects

Environmentally friendly - No chemicals

Reduces labor cost - safe to use - No secondary waste

With a high investment cost of each tire making mold, a long life is a must. Dry ice blasting has for the last 30 years been the preferred cleaning methods for tire molds because it is fast, efficient, dry and absolutely without any damage to the valuable mold.

The impact speed and expansion of CO2 on impact makes it possible to clean the important vent holes in molds.

Dry Ice Blasting removes the matter that can promote mould growth along with removing existing mould by using dry ice pellets - 78 °C freezing temperatures.

Restoration of contaminated materials is successful for industries like residential building, construction and processing plants and will save time and money without the need for disassembly. Reducing secondary waste clean up and restoring rather than replacing materials.



## Mould remediation

Mould and Bacteria can cause a great amount of health issues when found in everyday living and working spaces. Common causes and habitats for mould growth include floods, leaks, plumbing problems, elevated humidity, and inefficient cleaning. Allergies are on the rise, fungal infections have become common and contamination has become a risk in production facilities, restaurant kitchens and product and food storage facilities.

You are benefitting from Dry Ice Blasting, because:

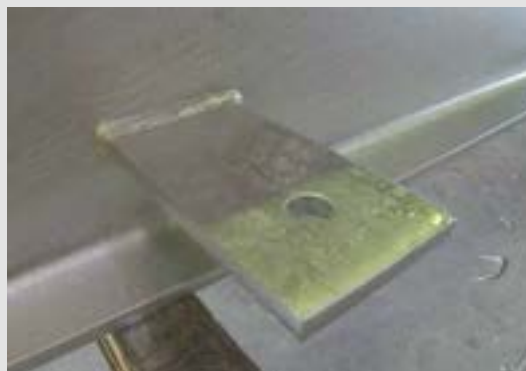
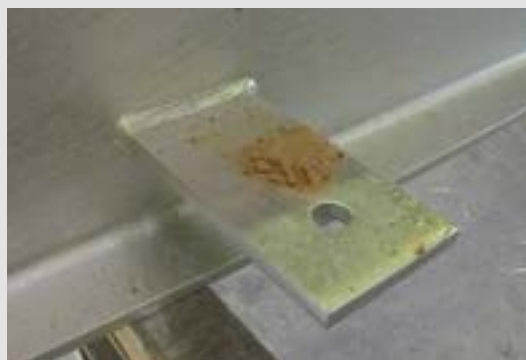
- 60% to 80% faster job completion
- Safer, cleaner, easier and faster
- Thorough mold spore removable
- Superior detail cleaning in tight spots and around obstructions
- Complete removal of mold from tight angles in trusses, joists and corners
- Enables cleaning around wiring and plumbing without damage
- Easy clean-up, with reduced waste disposal
- Surface left completely dry, contaminant free and structurally intact.





Removal of spots with zinc ashes is done in seconds without any damaged to the surface. We supply mobile units that can be used at multiple locations, where standard compressed air plugs are located.

No water or chemicals used to get superior finish and quality.



## Zink ash removal

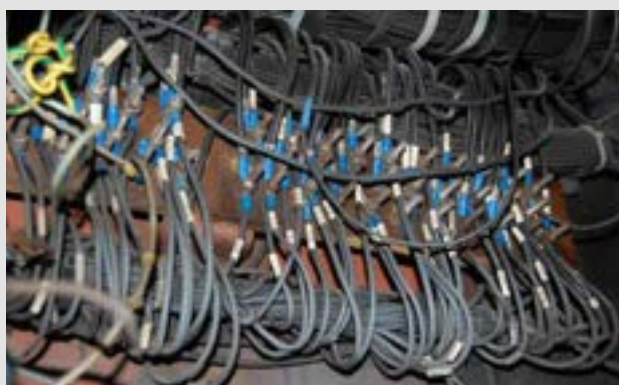
Removing of zinc ash from hot dip galvanization

- Reduction in labour cost.
- Reduces aftertreatment issues.
- Avoid scratching from tools.

Dry ice blasting offers a completely dry and non damaging cleaning process.

- Quickly removal of zinc ashes and other unwanted particles.
- Can be cleaned while surface is hot.
- No water spill in production area.
- Quick turnaround.
- Perfect result can be achieved with only little air supply.

An essential part in the trouble-free operation of a railway is a well-maintained system and technology.



## Transport

Cleaning electrical control panels, air-conditioning/heating system, seats ect. with dry ice offers many advantages such as:

- Reducing risk of short cuts and break-downs.
- Reduces risk of damage to components.
- Cleaning of electrical control systems
- Quick pre-clean before inspections.
- Cleaning of Air conditioning / heating systems.
- Cleaning of springs and shock absorbers.
- Cleaning of brakes and undercarriage
- Improve air quality in trains, buses, airplanes etc.

Cleaning of exhaust hoods and exhaust fans to reduce risk of fire.







## Shoe-mould cleaning

Protecting and securing long life of a mould is key to all manufactures. Using dry ice blasting the regular cleaning of shoe moulds provide the perfect asset management and thereby reducing cap-ex.

Moulds for any kind of shoes or boots requires a perfectly cleaned mould to secure highest quality of performance and appearance.

Dry ice blasting enables a dry and dustless cleaning without having to remove the mould from the process line.

A gentle and non-abrasive removal of deposits on the mould secures a long life of the mould and thereby reduces capital expenditures cost for new process equipment.

The reduction in use of chemicals or other harmful processes can be replaced with the environmental friendly dry ice blasting solution.

There are numerous advantages when using dry ice blasting after a fire.



#### Benefits:

- Avoids the mess of soda or sand blasting
- Avoids the use of hazardous chemicals
- Reduces the burnt smell from fire
- Eliminates secondary waste
- Causes no additional water damage
- Is safe for cleaning electrical components



## Fire restoration

Primarily dry ice is not adding any water or chemicals to the areas where sensitive parts have been affected. Using crushed dry ice pellets at low pressure even fine electronics can be cleaned without any damage. And dry ice will remove chlorides that has moved with the smoke and which otherwise would be a risk of starting a rapid corrosion on metal parts both external but also inside electronics.

Dry ice is also known to reduce or eliminate burnt smells and bad odors.

At higher pressure the dry ice can also remove charred surfaces and at any pressure between soft for sensitive parts and aggressive to remove charred surfaces the blaster can be adjusted to remove smoke and soot from wiring, electrical boxes, ductwork, plumbing, conveyors, motors etc. All without introducing secondary waste or causing damage.

Dry Ice Blasting... the printer's choice due to:

- No damages to gears or grippers.
- No damages to air lines, pneumatic hoses, sealed bearings, plastic casings, oil lines, motors, control panels, control circuits and cabinets.
- In-situ cleaning thereby reducing press downtime.
- Ideal for cleaning of powder spray and UV coating build-ups.



## Printing industry

High accuracy is required to achieve top quality print results. With increased printing speed and frequent job changes, the printing equipment must always be in top condition.

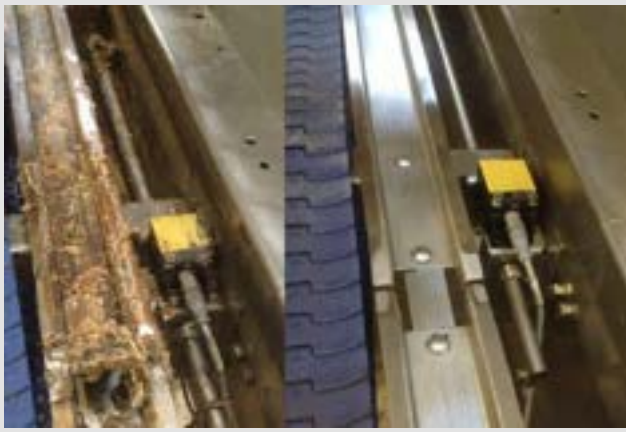
Dry ice cleaning is suitable for offset, flexo, and gravure printing equipment.

Dry ice cleaning is a proven and effective alternative to the conventional solvent / chemical cleaning.

No investments in large offline washing/cleaning equipment.

Dry Ice blasting is an environmentally correct solution using no solvents or chemicals.





Dry ice (solid form of liquid carbon dioxide) is very well known in the food industry for cooling.

It is accepted as an environmentally friendly technology that can replace use of chemicals and the excess use of water.

No moisture = no bacteria/mold

## Bakery

Reasons for Bakeries to decide on dry ice cleaning:

- Process line always dry and ready to produce (NO DOWN TIME).
- Remove labels and glue from conveyors and machines.
- Partial cleaning without shutting down.
- Roof to floor cleaning (lamps, cables etc.) without covering up (DRY).
- Cleaning of machines inside, around bearings, motors, electrical etc...



Dry ice blasting does benefit many different industries. Besides the presentations in this folder we also offer to work with you in a close co-operation to find solutions for you industry.



# Intelblast dry ice production units

With an output of 120 kg or 240 kg per hour the DIP120 and DIP240 will cover the needs of most stand alone, in-house production of dry ice for cleaning or cooling.

Smart engineering with internal tubing for the flow of the liquid carbon dioxide not only reduces production cost, which in return benefits our customers, but also increases the efficiency and make it possible to have a start up of dry ice pellet production in less than 1 minute.



The pelletizer is operated by the touch panel that also allows for individual settings to optimize production capacity. An input/output menu allows for a complete system check with a functionality check of each valve and components in the machine.

In house production of high-density dry ice pellet offers many advantages.

- Delivery/production with short notice
- Reduction in losses, by manufacturing only what is needed
- Fresh pellets for better cleaning or cooling

The important factors, when considering purchasing a dry ice pelletizer are, besides the obvious fact that you want lowest capital investment cost, that you get a machine with well-known reliable components, with the minimum of maintenance cost.

Besides a durable 100% stainless steel cabinet, we only use components from Danfoss, Siemens and a high-performance hydraulic power unit are key components for the operation of the Intelblast pelletizers.

When manufacturing dry ice the conversion of liquid CO<sub>2</sub> to dry ice is about 2,5 kg of liquid CO<sub>2</sub> to make 1 kg of dry ice.

The special design for supplying liquid CO<sub>2</sub> to our press chamber, brings the conversion closer to 2,2. That of course also requires that the installation of the LCO<sub>2</sub> tank and supply piping from the tank to the pelletizer is done according to our guidelines.

It is important to stress that NO CO<sub>2</sub> is specifically produced to manufacture dry ice. The CO<sub>2</sub> used for dry ice production comes as a bi-product from other process like ethanol, biomass, ammonia or even from natural sources such as underground volcanos. This makes dry ice the true environmentally green solution for transport, cooling and cleaning.





# DIP 120 & DIP 240

The stainless-steel cabinet is designed so that it easily can be moved around with a fork-lift, which facilitates regular, easy cleaning around and under the machine. Larger removable panels gives clear & spacious access to all components inside the pelletizer and makes routine maintenance time and cost efficient.

The small build size (110x70 cm) takes up very little floor space and with the delivery pipes extended out in the front of the unit allows for a dry ice box to be centered under the pelletizer to allow an even production without having to shuffle dry ice from one end to the other.



Who can benefit from having in house production of dry ice?

- Customers and consumers of dry ice with long transport times and distances to supplier.
- Customers who require short response time from ordering to use.
- Customers where the pay back calculation shows significant savings.

Production cost calculation can be found on our home-page [www.intelblast.com](http://www.intelblast.com) or by using our app.

Just scan this QR code to enter directly.



# Technical data and specifications



MODEL	DIP 120	DIP 240
Production capacity	120 kg/hour @ 16-18 bar	240 kg/hour @ 16-18 bar
Standard extruding plate	3 mm	3 mm
Voltage	400 V - 50 kHz (16 Amp)	400 V - 50 KHz (16 Amp`)
Power consumption	5,5 kW	5,5 kW
Dimensions L x W x H	110 x 70 x 170 cm	110 x 70 x 170 cm
Weight	450 kg empty	500 kg empty

The pelletizer can operate with LCO2 tank pressure from 13 to 25 bar. The piping from tank to pelletizer must be cryogenic insulated piping, so a minimal distance from tank to pelletizer is ideal.

## Customized solutions

Another suitable application for the use of a pelletizer is when there is a needed for automated production and filling of dry ice to one or more dry ice blasters.

By using industrial output weight control cells linked to our control system the production of dry ice can be done directly to a blaster or via a feeding container.

Blasters can be connected to a robotic solution or with fixed blast nozzle.



# Our company

We are a company founded 2012 in Denmark, with office and production also in Spain and with distribution to more than 25 countries.

The design of our dry ice blasters came as a response to the need of our customers in the automotive industries, who needs machines which can be moved around in narrow spaces around the production lines. The result is our IBL3000 which is a 24/7 workhorse with outstanding cleaning power and with the lowest dry ice consumption on the market, still giving best cleaning result.

For two equally larger industries (food and plastic injection) we have developed the IBLmini, which besides a very attractive price also stands out as using very little compressed air.

Latest development is our dry ice pelletizer, which allow users to manufacture their own dry ice.

All our machines are made in stainless steel and all components are from top international suppliers like FESTO and SIEMENS.

Our equipment and machines have made us a market leader both at the technological level and in our capacity for innovation.



Our innovative equipment and machines are developed, designed, produced and tested prior to operation in both Denmark and Spain. Our highlights are high quality, highest level of functionality and with a very important feature - easy maintenance.

We seek always to have solutions for all industries. And we constantly search for the most suitable technology and specialized cleaning solutions for every need and for each customer.

You can read more about all we offer and watch videos showing solution from our primary industries by visiting:

[www.intelblast.com](http://www.intelblast.com)

For more information please contact us or one of our distributors found in more than 25 countries.

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