

DON'T TAKE THE DUST HOME WITH YOU (or into the office or lunchroom) De-dusting solutions with JetBlack Safety's personnel cleaning systems

Introduction

As a safe alternative to using compressed air for worker clean-downs, blower-driven air provides an economical and highly effective means of removing dust and fibres from people and equipment. The low pressure, high velocity blower driven air produced by the JetBlack Safety system poses no threat to human safety and can be safely directed at virtually any part of the human body, and can even be used directly onto human skin.

Many companies around the world have successfully installed the JetBlack Safety range of personnel cleaning equipment and have found them to be critical tools for successful OSHA compliant operations.

Dynamic Engineering Australia is the Australasian distributor for JetBlack Safety.

THE PROBLEM: safe, effective, and easy methods to remove dust from workers' clothing

Many workers come into contact with dust on their coveralls for the duration of their working day. They need to remove the dust to preserve the longevity of the coveralls but also to stop the transfer of dust and harmful contaminants when ready to remove PPE, or when moving into dust-free areas like office, lunchrooms, or home.

Where alternative solutions aren't available, it is a big temptation for workers to use the often-readily-available compressed air as a blow-down method for this dust removal, which is illegal and unsafe (see dangers of using compressed air below).

Worse still is workers not removing the dust at all, who then risk contaminating offices, clean spaces, cars, and even homes and families with particulate from the workplace.

De-dusting workers is a typical challenge in dusty work environment such as:

- Quarrying/Stone/Aggregate Facilities
- Plastic and Rubber Production
- Cement and Plasterboard Manufacturing
- Paper and Tissue Production
- Carpet and General Textile Manufacturing
- Powder Coating and Castings
- Mining
- Construction / Demolition
- Wood Working & Forestry
- Grain Milling / Agriculture

Background

Accumulating dust on clothing and equipment is a common problem in many large manufacturing and industrial environments as well as small to medium workshops, requiring quick and safe de-dusting and clean-down solutions. Despite knowing the dangers, many employers and employees use compressed air guns and nozzles to clean debris on clothes.

This practice can be extremely hazardous.

Dangers of using compressed air

Most OHS legislation around the world recommends that compressed air from an air gun or nozzle SHOULD NOT be directly applied to any part of the human body. Direct contact with compressed air can lead to serious medical conditions and even death – high pressure air directly applied to skin, eyes, nose, mouth and navel can lead to serious problems within a person's bloodstream, brain, eyes, lungs, heart, stomach and intestines.

- Air pressured at just 12PSI can force an eye from its socket
- Compressed air accidentally blown into the mouth can rupture the lungs, stomach or intestines.
- Air can enter the navel, even through a layer of clothing, and inflate and rupture the intestines.
- Air can also enter the bloodstream, and death is possible if it makes its way to blood vessels in the brain
- If an air pocket reaches the heart, it causes symptoms similar to a heart attack.
- Upon reaching the brain, pockets of air may lead to a stroke.
- Direct contact with compressed air can lead to serious medical conditions and even death.
- Even safety nozzles which regulate pressure to 30 psi cannot be safely used to clean the human body.

Air blower technology

An alternative to using compressed air for worker and PPE clean-downs is to use blower driven air. JetBlack Safety personnel cleaning systems utilise air blower technology produced by fans. Blower driven air can be safely used for de-dusting because it is generated at high-velocity yet low-pressure. This is a comparison with compressed air systems, where the pressure can be as high as 30psi (or 90psi if unregulated). JetBlack Safety personnel cleaning systems use 2.52psi, which is considered low pressure. However, JetBlack Safety products generate more air power from the nozzle by using a higher flow than compressed air.

The use of low pressure means the JetBlack Safety technology is safe to use directly on unbroken skin (any cuts or damaged skin should be protected during use). High-pressure systems such as those using compressed air are not safe to apply directly to the skin.



If you're worried that blower driven air isn't as powerful as compressed air, rest assured. Blower driven air creates a steady flow of air to dislodge most dust, fibres and particles from workers', their clothing, and their equipment, and can be used to generate an air shower or air curtain. This is the experience of de-dusting in a personnel cleaning booth (taking an 'air shower').

Another benefit of blower air is that it is always ON...no more waiting until the compressed air is at the right pressure again.

Compressed air, often described as the fourth utility in many industrial and workshop facilities, is very expensive to produce (especially when compared to using a fan). Using compressed air is also very noisy. This can cause OHS concerns. Air blowers are typically less noisy than an air compressor system.

THE SOLUTION: JetBlack Safety personnel cleaning booths and stations

The intended purpose of the JetBlack Safety personnel cleaning systems is to give companies a safer and effective alternative to using compressed air for de-dusting and clean down of their workwear and PPE equipment.

Cleaning booths

The JetBlack Safety Personnel Cleaning Booth is designed to safely and effectively agitate and remove fine particles (including stone and cement dust), and fibres from work gear without the occupant having to remove any clothing or PPE. It takes less than 20 seconds and can be operated manually or hands-free, with options to walk-through the booth (from workshop to clean room). This can be done as many times during the day as required for workers to safely (and cleanly) take breaks, move to a clean room, or leave work to go home.



The system is enclosed within a cubicle and incorporates extraction, limiting airborne distribution by capturing dust. JetBlack Safety's blower-driven air creates an "air shower" effect - a down-draft - over the occupant, which blows the dirt down to be extracted through HEPA filters, ensuring no particles escape into the atmosphere. As particles are removed, they are drawn down and away through a grille floor via a vacuum effect created by the external blower. All removed materials are collected in an H14 HEPA extractor, and can then be easily disposed.

Booths are available as:

- Standard (hand-held hose) – single door
- Standard with walk-through - two-doors
- Hands-free (6 reciprocating nozzles) with walk-through – two doors
- Hybrid (hands-free plus hand-held hose) – two doors

Customers are using personnel cleaning booths to protect staff from potentially harmful dust, enabling their business to comply with strict corporate health and safety procedures. Some booths are positioned to ensure potentially harmful dust from (eg) mineral processing or quarrying does not transfer into areas where staff members remove respiratory protective equipment, including site control rooms and offices.

Walk-through hands-free booths provide a safe, low-pressure air cleaning solution, where staff are automatically de-dusted as they exit the dusty work environment, ensuring consistency of cleanliness. Any member of staff wishing to leave the site has to first pass through one of the JetBlack Safety booths, ensuring effective de-dusting before removing respiratory or other PPE protection.



Hands-free booths are very convenient and easy to use. Starting automatically, as soon as the door to the booth closes, staff simply need to walk in, set the blower height, rotate, and in under a minute they can exit, safe in the knowledge that their PPE and workwear is clean of all dust. This ensures that whenever they leave the site, workers have a very low chance of carrying home harmful dust that could affect them and members of their family.



JetBlack Safety's new hybrid booth incorporates a six nozzle reciprocating motion air delivery system (the hands-free system) which delivers a high volume of filtered air at low pressure, sufficient to remove powders and dust effectively and safely, even when directed at exposed skin. And to gain extra cleaning flexibility, a hand-held JetBlack Safety hose and nozzle is also included inside the booth to enable full head-to-toe cleaning coverage.

You can view a walk-through a JetBlack Safety personnel cleaning booth at:

- Handsfree booth - <https://youtu.be/ksqYofax00M>
- Standard booth - <https://youtu.be/bT5BBce8Z1>

Cleaning stations

JetBlack Safety Personnel Cleaning Stations are a very effective de-dusting tool, which removes debris and contaminants from workers clothing and PPE by using high volume, low-pressure air, instead of compressed air.



They are available as a wall mounted unit or a portable unit.

The compact design makes it ideal for positioning at the exit/entry point of any manufacturing or production facility.

The Personnel Cleaning Station is a great solution to the safety risks that come with the temptation of using compressed air. Operation is just via a simple timed on-off button, which makes the requirement for operator training minimal, and means usage and compliance can be high.



It is also robust in its construction with heavy-duty steel base plates used to mount the unit to the wall, as opposed to rival systems which may use plastic and are far less durable.

The personnel cleaning station also uses inlet filtration to filter incoming air.

You can view a demonstration of a JetBlack Safety wall mounted personnel cleaning station at:

<https://youtu.be/KVjz6vxA-wU>

Not vacuum cleaners

JetBlack Safety personnel cleaning systems are not vacuum cleaners. They are blower-driven systems which dislodge dust from clothes rather than sucking it up.

JetBlack Safety personnel cleaning systems are far more efficient than vacuuming. It can take ten times longer to vacuum rather than removing dust with a powerful blower. For example, it takes 30 seconds for one person to de-dust with a JetBlack Safety unit versus 5 minutes with a vacuum - you can view this on our demonstration video at: <https://youtu.be/Z8GPM85fols>

OSHA compliant (cleaning stations)

JetBlack Safety products are designed and manufactured in the United Kingdom but marketed throughout the world. JetBlack Safety has identified where their products meet OSHA (Occupational Safety and Health Administration - USA) regulations for de-dusting and clean-down operations.

- Meeting OSHA Standard for **output pressure** - JetBlack Safety Cleaning Stations meet OSHA Standards:
 - Hand and portable powered tools and equipment, general (29CFR Part 1910.242 (b))
 - Reduction of air pressure below 30psa for cleaning purposes (OSHA Instruction STD 01 - 13 - 001)
- Meeting OSHA Standard for **noise** - JetBlack Safety Cleaning Stations meet OSHA Standards:
 - Occupational noise exposure (29CFR Part 1919.95)
- Meeting OSHA Standard for **chip guarding** - when cleaning down in close quarters with compressed air, workers are frequently subject to 'chip fly - back'. This is a term that refers to the tendency of loose particles, or chips, to fly back into the operator's face, eyes or skin. JetBlack Safety Cleaning Stations meet OSHA Standards:
 - Hand and portable powered tools and equipment, general (29CFR Part 1910.242 (b))
 - OSHA program directive, reduction of air pressure below 30PSI for cleaning purposes (OSHA Instruction STD 01 - 13 - 001)

Conclusion

The JetBlack Safety products are designed for workers in dusty work environments as an easy-to-use alternative to compressed air, and which offers organisations and users peace of mind for a completely safe solution to personnel de-dusting.

JetBlack Safety personnel cleaning systems are guaranteed to meet or exceed OSHA requirements. They operate by utilising high-velocity, low-pressure air that is effective in dislodging materials from clothing and are much easier to use than alternative vacuum systems.

More importantly, personnel cleaning systems are a safer substitute to compressed air which has the potential to be very dangerous in this type of application due to the high air pressures involved.

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