



PILANI ENVIROTECH PVT LTD

- Dust collector
- BIBO safe chagne dust collector
- Cyclone
- Cyclone with dust collector
- Scrubber
- Filter cleaning system with dust collector/ scrubber
- Deduster/ dry scrubber for coating, FBD, etc.
- Deduster combined with scrubber
- SS hoods and pendant
- Filter dryer system



DUST COLLECTORS

Pulse Jet Dust Collectors

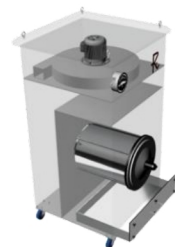
Pulse jet dust collectors are another kind of baghouse system that comes in a variety of designs to meet the application needs of the industry. The bag cleaning system operates via a rapid, high-pressure air jet cleaning which sends a blast or shock of air through the bag that shatters and discharges the dust cake for disposal. The rapid pulse of air allows for continuous operation with the fan running, and because of it the system is not generally compartmentalized. Pulse jet models are the most common type of industrial dust collectors, due to their ability to be easily customized, capability to handle a wide range of temperatures and pressures, and their high collection efficiency. They can be found in most manufacturing environments wherein bulk solids are processed, including chemical and mineral production, food processing plants and metal fabrication. We fabricate Pulse Jet Dust collectors from a wide range of materials such as carbon steel, stainless steel and carbon steel FRP lined.



GMP Portable dust collector



In the pharmaceutical industry, maintaining cleanliness and controlling airborne particulate matter is crucial to ensure compliance with Good Manufacturing Practices (GMP) regulations. Mobile dust collectors designed specifically for pharmaceutical applications are available to meet these requirements. These dust collectors incorporate features that ensure efficient dust capture, containment, and compliance with pharmaceutical industry standards. Our GMP mobile dust collectors are custom designed to collect dust laden air from sifters/ multi-mills/tablet compression/capsule/packing etc. The dust collector may include accessories such as flexible hoses, capture hoods, pendants and adjustable arms to capture dust at the source, ensuring efficient containment.



BIBO (Bag-In-Bag-Out) dust collectors



These are used for potent products viz: anti-cancer/hormones etc.

Our BIBO dust collectors are specially designed for potent drugs which mandate a safe change method. BIBO dust collectors are designed to restrict contact between operators and potent dust with the help of polybags.



BIBO Dust Collector incorporates a collection bag where the captured dust particles are collected. The bag is designed to be easily removable and replaceable, allowing for convenient disposal of the collected dust in a contained manner.

Cyclones



These are a type of inertial separator that separates dust from a gas stream through centrifugal force. Air is purified by creating a cyclonic action within the cyclone collection chamber. An intense circular airflow resembling a vortex pushes the dust particles against the cyclone's wall, which slide down to the base of the hopper for collection. Cyclone systems can remove heavier and oversized particles mixed in with fine dust. They are often used as pre-cleaners before baghouses. Cyclones are often used in woodworking, pulp and paper, shot blasting, mills, grain and agriculture, recycling plants, and many other industries, especially when particles are over 20 micrometres in size.

The cyclone collector is commonly used for the removal of coarse dust from an air stream, as a pre-cleaner to more efficient dust collectors and/or as a product separator in air conveying systems. Principal advantages are low cost, low maintenance, and relatively low pressure drops. The dust laden air enters at high velocity through the inlet, the heavy particles fall down because of the centrifugal force from the air flow

Cyclone with dust collectors



These are a type of inertial separator that separates dust from a gas stream through centrifugal force. Air is purified by creating a cyclonic action within the cyclone collection chamber. An intense circular airflow resembling a vortex pushes the dust particles against the cyclone's wall, which slide down to the base of the hopper for collection. Cyclone systems can remove heavier and oversized particles mixed in with fine dust. They are often used as pre-cleaners before baghouses. Cyclones are often used in woodworking, pulp and paper, shot blasting, mills, grain and agriculture, recycling plants, and many other industries, especially when particles are over 20 micrometres in size.

The cyclone collector is commonly used for the removal of coarse dust from an air stream, as a pre-cleaner to more efficient dust collectors and/or as a product separator in air conveying systems. Principal advantages are low cost, low maintenance, and relatively low pressure drops. The dust laden air enters at high velocity through the inlet, the heavy particles fall down because of the centrifugal force from the air flow.

A dust collector is connected to the cyclone for further filtration of particles that have passed through the cyclone.

SCRUBBERS

Venturi scrubber

Device used to remove particulate matter and other pollutants from industrial exhaust gasses. The scrubber operates based on the principle of creating a pressure drop by forcing the gas stream through a constricted section known as a Venturi throat.

Here's how a Venturi scrubber typically works:



- Gas and particulate-laden exhaust enters the scrubber through an inlet.
- Inside the scrubber, the gas stream is directed through a Venturi throat, which is a narrow section of the scrubber where the gas velocity increases.
- As the gas velocity increases, a pressure drop occurs, causing the particulate matter to be dispersed and collide with liquid droplets present in the scrubber.
- The scrubber uses a liquid, usually water or a water-based solution, to create a spray of fine droplets that are introduced into the Venturi throat.
- The liquid droplets capture and absorb the particulate matter through impaction, interception, and diffusion mechanisms. The pollutants become entrained or absorbed by the liquid.
- The cleaned gas stream exits the scrubber through an outlet, while the captured particulate matter and liquid form a slurry at the bottom of the scrubber.



- The slurry is then separated, and the liquid can be recycled or treated, while the captured particulate matter is disposed of or further processed if necessary.



Venturi scrubbers are commonly used in various industries, including power plants, metal refining, chemical production, and incineration facilities, where emissions need to be controlled. They are effective in removing both larger and smaller particles from the gas stream. However, they are primarily designed for particulate matter removal and may not be as effective for removing gases or chemicals that

require absorption or chemical reaction. It's important to note that while Venturi scrubbers are effective in controlling particulate emissions, they may consume significant amounts of water and can produce a wastewater stream that requires proper treatment before discharge to meet environmental regulations.

Packed Bed Scrubber

A packed bed scrubber utilizes a packed bed or tower filled with a packing material. The key features of a packed bed scrubber include:

- **Packed bed:** The tower contains a bed of random or structured packing material such as plastic or ceramic.
- **Gas-liquid contact:** The polluted gas stream passes through the packed bed in a counter-current or cross-flow arrangement. The packing material increases the surface area for contact between the gas and liquid phases.
- **Scrubbing liquid distribution:** The liquid, often water or a chemical solution, is evenly distributed over the packing material using spray nozzles or distribution systems.
- **Absorption and mass transfer:** Pollutants in the gas stream are absorbed into the liquid phase through mass transfer processes, where the liquid acts as a solvent for the pollutants.
- **Clean gas outlet:** The cleaned gas exits the top of the packed bed, while the liquid collects at the bottom and is recirculated or treated further.



Packed bed scrubbers are effective for removing gases, such as acid gases (e.g., sulphur dioxide) and ammonia, as well as for controlling odours and certain volatile organic compounds (VOCs). They are commonly used when gas-liquid contact and mass transfer are required for effective pollutant removal.

Hybrid scrubber

A hybrid scrubber combines different mechanisms and technologies to achieve pollutant removal. It typically incorporates both a Venturi scrubber and a packed bed scrubber, and additional components for gas absorption or chemical reaction. The additional features can vary depending on the specific design and application.



FILTER CLEANING SYSTEM WITH DUST COLLECTOR

The filter cleaning system comprises filter plenum, dust collector and blower.



The dust collector is of Pulse Jet Type whereby the cleaning is done automatically by compressed air through a timer and solenoid valve. The filters shall be Cartridge type made out of spun bound Polyester with anti-adhesive finish.

The system is designed to clean filters viz AHU panel filters and cartridge filters. The filter is cleaned using compressed air. The filter is placed in the filter plenum with the dirty side facing downwards. Air is injected from the top of the filter. The dust being on the reverse side of the filter gets sucked by the blower into the dust collector. The dust is removed in the dust collector.

The system is designed to clean 1no. filter of maximum size 610 x 610 x 300mm deep at a time.

The filter is placed on the filter plenum and is manually cleaned with compressed air gun. The dirty side of the filter is placed downwards. As the compressed air is injected from the top through an air gun the particulate matter is sucked from the bottom and conveyed to a dry scrubber. Thus, the filter is cleaned.

THIS IS NOT SUITABLE FOR WET CLEANING.

FILTER CLEANING SYSTEM WITH SCRUBBER

The system in general shall comprise of Filter plenum, ducting, Venturi scrubber, blower, pump and water recirculation piping etc. The dust laden air is sucked by a blower located after the scrubber and conveyed to the scrubber through ducting. This air is scrubbed using water as the scrubbing media. The scrubbed water is collected in the bottom recirculation tank which has to be drained periodically. The clean air with dust concentration of less than 30 mg/nm³ is discharged into the atmosphere through a stack.



The system is designed to clean filters viz AHU panel filters and cartridge filters. The filter can be cleaned by using water/compressed air. The filter is placed in the filter plenum with the dirty side facing downwards. Air/water is injected from the top of the filter. The dust being on the reverse side of the filter gets sucked by the blower into the scrubber. The dust is removed in the scrubber.

The scrubbed liquor is collected in the bottom recirculation tank which has to be drained periodically.

DEDUSTER COMBINED WITH SCRUBBER

Such systems are used to treat both particulate matter and fumes such as IPA/ethanol emitting from tablet coaters/wrusters etc.

1st stage deduster removes particulate matter more than 99% and further goes to a packed bed scrubber for removal of IPA/ethanol fumes by using water as scrubbing media. General efficiency is around 80% for fumes. For further removal if desired can be achieved by using additional packed bed scrubber.

(Please refer catalogue for working of dust collector/deduster and packed bed scrubber)





SS HOODS AND PENDANT

Hoods are localised extraction systems which are placed locally over the application machine. The air enters the hood and flows through the hose pipe into the pendants which are connected to the dust collector.



FILTER DRYING SYSTEM

Filter dryers are used to dry the filters of AHU/micro vee filters/cartridge filters.

The wet filters are loaded onto a SS trolley and further into a drier chamber. Hot air is passed over these filters for 15-20minutes for drying. The hot air temperature is controlled through a temperature controller. Drying can be with steam or electric heaters.

