

# **ICEBERG**®

ISO 9001  
BUREAU VERITAS  
Certification



AN ISO 9001 : 2000 CO.  
AN ISO 18001 : 2007 CO.  
AN ISO 14001 : 2015 CO.

## **Range of Products**

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Process Fans & Blowers  
Dust Extraction Systems (D.E. Systems)  
Bag House (Bag Filter Systems)  
Wet Scrubbers  
Cyclones  
Multi Cyclones  
Pneumatic Conveying Systems  
Rotary Air Locks  
Dampers  
Bulk Material Handling Equipments  
Heavy Fabrication

**MASTERS OF AIR**

## Company Profile

We are an ISO 9001:2008 certified company by BVQI and an engineering concern of repute belonging to the Iceberg group. We would like to give you a deeper overview about our company, its expertise and its exhaustive product range so that we may explore possibility of our being part of your activities.

Our company was founded in the year 1978 by a group of UK based engineers who have spent over 20 years in the British Industry. Our object was to render services in various fields in India. Our success is built on the service provided by our qualified technical staff i.e. enthusiastic and dedicated to listening to our clients and responding to their specific needs. Our sight and sense of responsibility remains firmly fixed on the future. With absolute control over production set-ups and time tested supply lines, we are in a position to fulfill all your requirements in these product lines.

Our manufacturing set up ensures quality with timely execution of orders. Quality product and timely deliveries get precedence. We are strong, motivated & committed team working for the benefit of the company as well as customer requirements. Our mission has been to provide with a full range of equipment built on the strength of Technology, Expertise and Service and to provide full range of innovative cost effective solution to a complex number of environmental issues and other fields covered by us.

### Key Features

- Established in 1978
- 20 years experience in British Industry
- Qualified Engineering Staff
- Excellent After Sale service
- Committed to Customer

### Our Mentor

**Mr. S.P. Dhiman**  
Managing Director  
55 Years Exp. in Fan Engineering



## Quality Policy

**We the staff and Management at Multivent Engineers are committed to :**

- Design, Manufacture, Sales & Service, Timely delivery of our equipments
- To meet the Quality requirements of the customers.
- To ensure the business growth through customer satisfaction at competitive prices.
- To continually improve the applied Quality Management System with close cooperation and involvement of all employees and business associated.





# Manufacturing Setup



## **Machinery Setup**

**EOT 30 TON CRANE**

**EOT 10 TON CRANE**

**SHEARING MACHINE**

**HYDRAULIC IRON WORKER**

**PLATE BENDING MACHINE**

**SECTION BENDING MACHINE**

**HEAVY DUTY LATHE - 25 FT.**

**HEAVY DUTY LATHE - 12 FT.**

**LIGHT DUTY LATHE - 6 FT.**

**SHAPER MACHINE**

**RADIAL DRILL MACHINE**

**SLOTTER**

**OVALITY CHECK MACHINE**

**HYDRAULIC BREAK PRESS**

**DYNAMIC BALANCING MACHINE**

**BROACH CUTTER MACHINE (HIGH SPEED DRILL)**

**PORTABLE / HAND HELD PLASMA CUTTING MACHINE**

**WELDING MACHINE**

**PORTABLE DYNAMIC BALANCING MACHINE**

**MIG MACHINE**

**HACKSAW MACHINE**

**TAPING MACHINE**

**KEYWAY CUTTING MACHINE**

**POWDER COATING MACHINE**



## Air Handling Equipments

Process Fans -  
Centrifugal &  
Axial Fans)

Ventilation  
Systems

Dampers

Air Curtains

## Dust Handling Equipments

Bag Filters

Multi - cyclones  
dust collectors

Suction Hoods

High Efficiency  
Cyclones

Duct Designing

Wet Scrubbers

## Material Handling Equipments

Pneumatic  
Conveying  
Systems

Husk/Ash  
Conveying  
Systems

Conveyors

Rotary Air Lock  
Valves (RALV)

Heavy  
Fabrication

## Application of our products in various industries

**I  
C  
E  
B  
E  
R  
G**

- De - Dusting
- De - Dusting
- Sugar & Distillery
- Cement & Rock Products
- Non Ferrous Metallurgical Industries
- Paint Booths
- Glass
- Chemicals
- Agriculture
- Boilers & Furnaces
- Textile
- Wood & Paper
- Incineration Plants
- Micro -chips
- Food Industry
- HVAC
- Marine & Offshore
- Iron & Steel
- Power Plants
- Tunnels & Testing Rigs
- Waste Water
- Tyres
- Fertilizers

# Design & Analysis

Our engineers use the most upto date software of 3D design and analysis for both mechanical and fluid dynamics divisions. From the results of these analysis we get the optimum material parameters for each duty. Particularly our engineers are experts in :

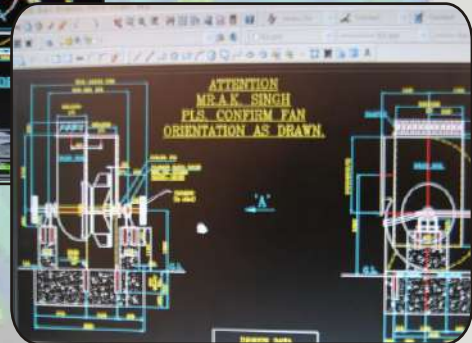
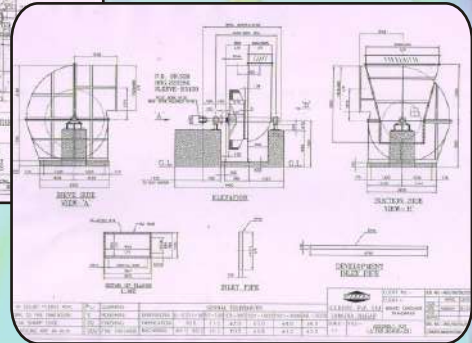
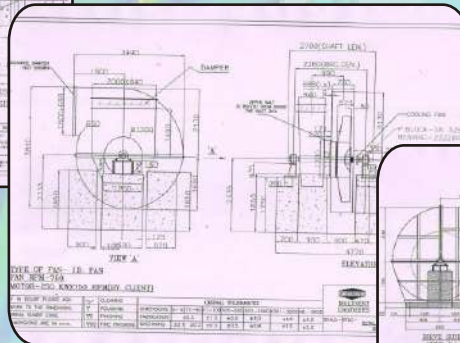
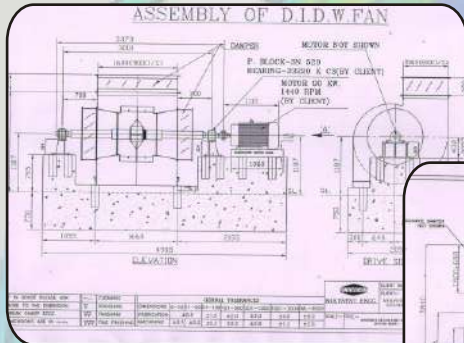
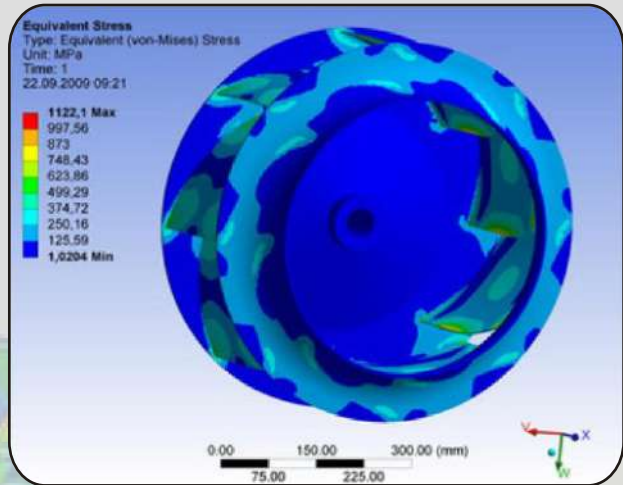
Finite Element Analysis

Fatigue Analysis

Stress Analysis

Critical Speed Analysis

3D Fluid Dynamics Analysis



# Process Fans

## Centrifugal Fans - Series 28

### MODELS AVAILABLE

- Small & Medium Duty Fans
- Large Duty Fans
- Heavy Duty Custom Built Fans

### Small & Medium Duty Fans

- **Wheel Dia. 315 mm to 900 mm**
- Arrangement Belt Drive, Direct Drive, Cantilever
- Accessories available as required

### Large Duty Fans

- **Wheel Dia. 1000 mm to 2000 mm**
- Arrangement Belt Drive, Direct Drive, Cantilever, Overhung
- Accessories available as required

### Heavy Duty Custom Built Fans

#### Wheel Dia. > 2000 mm

- Arrangement Belt Drive, Direct Drive, Simply Supported
- Accessories available as required

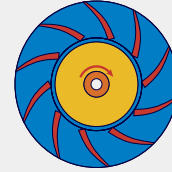
### Material Available

- Mild Steel-MS
- Stainless Steel-SS
- High Alloy
- Sail Hard, Sailma Series
- TISCRA

### Other Services

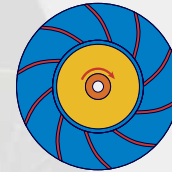
- Site measurements of technical parameters
- On site & off site balancing
- Bearing monitoring / vibration analysis
- Annual maintenance contracts (AMC)
- Retrofitting of impellers & shafts as per our design
- Retrofitting of impellers & shafts as per OEM design

#### AEROFOIL IMPELLERS



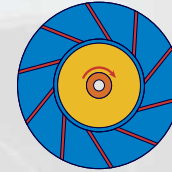
87% PEAK STATIC EFFICIENCY

#### BACKWARD CURVED IMPELLERS



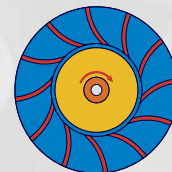
84% PEAK STATIC EFFICIENCY

#### BACKWARD INCLINED IMPELLERS



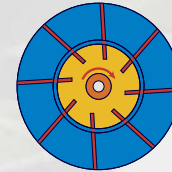
80% PEAK STATIC EFFICIENCY

#### RADIAL TIPPED IMPELLERS



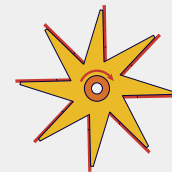
75% PEAK STATIC EFFICIENCY

#### RADIAL BLADED SHROUDED IMPELLERS



73% PEAK STATIC EFFICIENCY

#### RADIAL BLADED OPEN IMPELLERS



63% PEAK STATIC EFFICIENCY



## Process Fans

### Light Duty Range



### Applications

- Oven and dryer systems
- Pneumatic Conveying
- Clean-Side dust collection
- HVAC ventilation
- Air recirculation
- Air Knives
- Chemical Process
- Combustion Air
- Building Ventilation
- Fume removal
- Spray Booth exhaust
- Cooling

### Small & Medium Range



### Applications

- Dust Collection
- Pneumatic Conveying
- Scrubber Exhaust
- Combustion Air
- Pollution Control
- Incineration
- Fume-hood exhaust
- Dryer Applications
- Chemical Applications
- Forced Draft
- Induced Draft



# Process Fans

## Large & Heavy Duty Range



### Applications

- Cement Plant
- Steel Plant
- Power Plant
- Sugar Plant
- Paper Plant
- Boilers
- Food Processing
- Textiles
- HVAC
- Tunnel Ventilation
- Processing



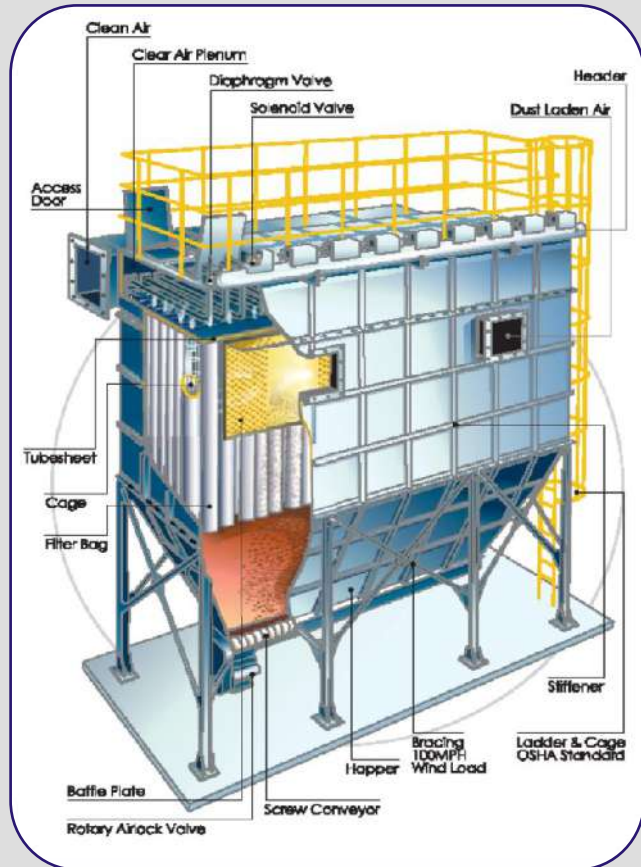
# Dust Collection System

## Characteristics

- High Efficiency filter bags selected for the specific application
- Heavy duty all welded construction
- Special pressure gauge
- Access platforms and ladders
- Easily changeable bags

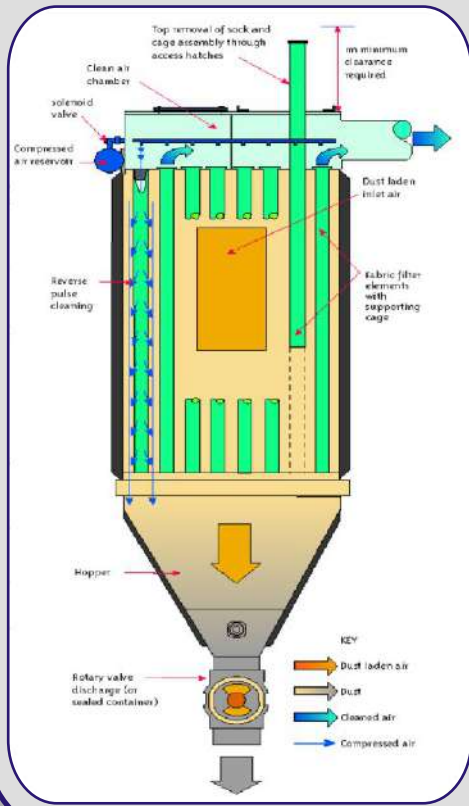
## Options

- Explosion Vents
- Material Handling Systems
- Photohelic pressure guage for pressure demand cleaning
- Special Finishes
- High Temperature construction
- Inlet and Outlet dampers
- Offline Cleaning
- Sprinkler



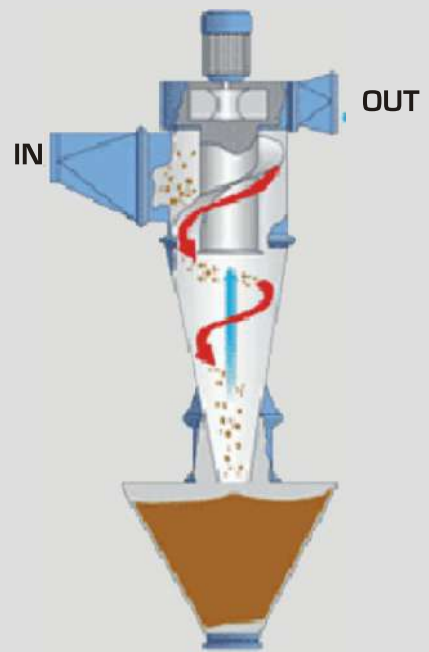
## The Development of the Fabric Filter

The first fabric filters, designed many years ago comprised a simple fabric bag (or series of bags) into which the dust laden air was blown to remove the contaminants. Inevitably the filter bags or sleeves became clogged with dust fairly quickly and various devices such as shakers were incorporated to increase the operational life of the filter elements before cleaning was needed. The pulsejet filter has been developed more recently and is now widely recognised as the most efficient type of fabric filter available. The dust laden air is introduced via an entry manifold at the top of the filter dust chamber or in the case of very high dust loadings into a separate inlet aisle. Heavy particles will be deflected directly into the hopper while lighter particles are drawn onto the outside of the filter socks to form a dust cake. Periodic pulsing of the filter socks (row by row) dislodges the dust cake into the hopper and thus maintains fabric permeability at a level which allows continuous operation. The pulse, a short burst of compressed air, and clean air induced by the sonic nozzle pulse, causes a pressure wave to travel down the filter sock, inflating the fabric and dislodging the dust. Simultaneously the airflow is momentarily reversed, further assisting dust removal. The design of filters includes a high level entry which provides a downward movement in the dust chamber, further assisting to deposit dust in the hopper and avoiding the common problem of loss of efficiency due to re-entrainment.



## High Efficiency Cyclones

Cyclone dust collectors, named after the cyclone weather phenomenon, are large funnel shaped sheet metal tubes connected to ducts often used in woodshops, machine shops, manufacturing plants, and powder processing plants. Dust and debris are sucked in at the top. Air containing fine dust blows out of the other side of the top, while chips and large dust particles fall out of the bottom into a drum or bin. Dusty exhaust air is either blown outside or filtered again using media filtration.



### Cyclones or Centrifugal Collectors

Cyclones (or centrifugal collectors) create a 'cyclonic' or centrifugal force similar to water going down a drain to separate dust from the polluted air stream. The centrifugal force is created when dust filled air enters the top of the cylindrical collector at an angle and is spun rapidly downward in a vortex (similar to a whirlpool action). As the air flow moves in a circular fashion downward, heavier dust particles are thrown against the walls of the collector, collect, and slide down into the hopper.

### Cyclone Collector Design Considerations

Cyclone dust collector efficiencies depend on :

- particle size (particles with larger mass being subjected to greater force),
- force exerted on the dust particles and,
- time that the force is exerted on the particles

Cyclone dust collectors can be designed with either large or narrow diameters depending on the application. Small diameter cyclones have high dust collection efficiencies at low dust loads (0.1 to 6 grains per cubic foot) and high pressure drop of 6 to 10 inches w.c. (water column). Owing to the small diameter they have the tendency to plug at high dust loads. Large diameter cyclones can handle high dust loads (50-100 grains per cu.ft) with low pressure drops (1.5 to 3 inch w.c.) efficiently. They are not very efficient at low dust loads.

To improve efficiencies, design considerations are,

- high narrow inlets reduce distances traveled by dust to the wall and thereby improve collection efficiencies
- small diameters have higher forces than larger diameter cyclones
- smooth transition ensures maximum efficiency.

### Use of Expansion Hoppers in Dust Discharge

In high pressure drop cyclones, dust collecting at the discharge point could be swept upward to the outlet tube. This phenomenon occurs due to the powerful inner vortex that is formed inside the main swirling stream at the discharge point. Use of expansion hoppers allows dust to be discharged through an airtight feeder. Expansion hoppers effectively squeeze out moisture in some heavy moisture applications.

### Other Products

Multi Cyclones, Trima Cyclones





## Pneumatic Conveying

Pneumatic conveying system transfers powders, granules, and other dry hulk materials through an enclosed horizontal or vertical conveying line. The motive force for this transfer comes from a combination of pressure differential and the flow of air (or another gas) supplied by an air mover, such as a blower or fan. By controlling the pressure or vacuum and the airflow inside the conveying line, the system can successfully convey materials.

Pneumatic conveying provides several advantages over mechanical conveying. A pneumatic conveying system can be configured with bends to fit around existing equipment, giving it more flexibility than a mechanical conveyor with its typically straight conveying path. This also means the pneumatic conveying system occupies less space than a comparable mechanical conveyor. The pneumatic conveying system is totally enclosed, unlike many mechanical conveyors, which enables the pneumatic system to contain dust. The pneumatic conveying system typically has fewer moving parts to maintain than a mechanical conveyor, as well.

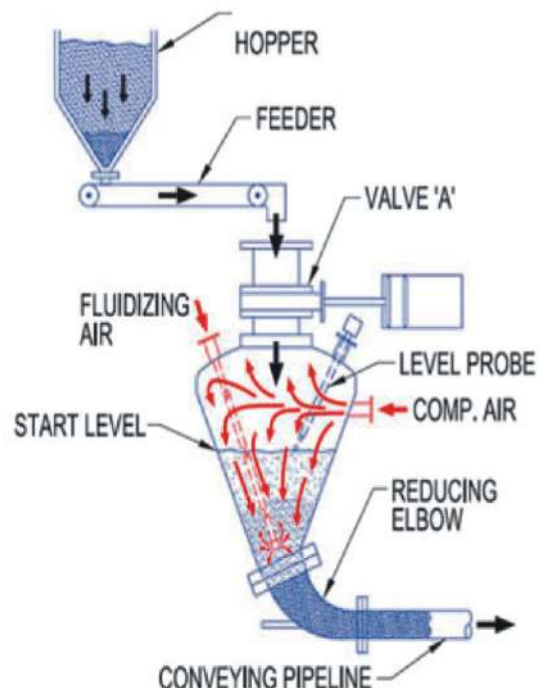
### Dense Phase

In dense-phase conveying, particles aren't suspended in the conveying air and are transported at high pressure and low velocity.

Dense-phase pressure conveying is suitable for gently conveying fragile or abrasive materials with particles  $\frac{3}{4}$  inch and smaller over long distances. Commonly handled materials include silica sand, feldspar, fly ash, glass cullet, alumina, glass batch mix, carbon black, sorbitol, dextrose, candies, resins, cocoa beans, hazelnuts, and puffed rice cereal. The system conveys material at a relatively low speed to reduce material degradation, air consumption, and abrasion on pipeline, bend, and diverter contact surfaces. This system can also stop or start with the conveying line full of material.

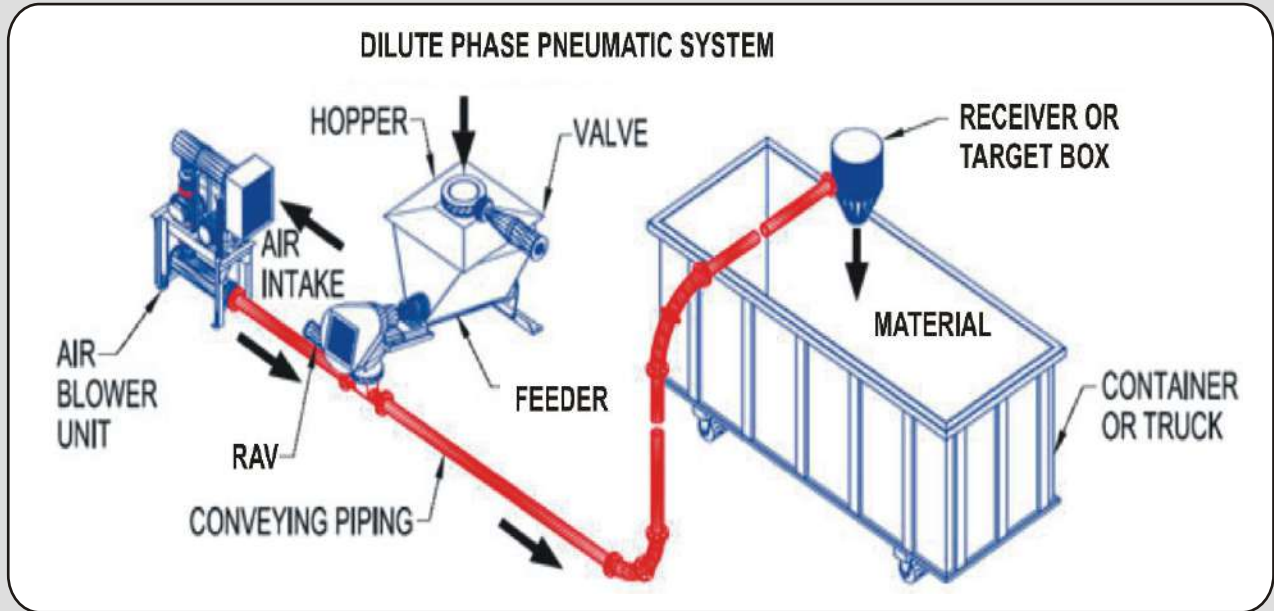
Pneumatic conveying also has some disadvantages compared with mechanical conveying. One is the pneumatic conveying system's typically greater use of horsepower than a mechanical conveyor, resulting from the pneumatic system's need to change air pressure to produce conveying power. The pneumatic conveying system also uses a comparatively larger dust collection system than a mechanical conveyor because the pneumatic system has to separate the material from the conveying air at the system's end. Some materials also have characteristics that make them difficult to convey in a pneumatic system. Examples are materials with a large particle size and high bulk density, such as gravel or rocks, and extremely sticky materials, such as titanium dioxide, which tend to build a coating on material-contact surfaces and can eventually block the conveying line. Pneumatic conveying systems are classified by their operating principle into two basic types: Dilute phase and dense phase. Either can run under pressure or vacuum.

### MODEL Denzvey





# Pneumatic Conveying



## Dilute Phase

## MODEL TURBOPAC

In dilute-phase conveying, particles are fully suspended in the conveying air and transported at low pressure and high velocity. Dilute-phase pressure conveying is one of the most common conveying methods for powders or granules.

In this method, illustrated as above, a blower at the system's start supplies a high volume of low-pressure air to the system, and material is fed into the conveying line through a rotary airlock valve. The system relies on the airstream's velocity to pick up and entrain each particle, keeping the particles in suspension as they travel through the conveying line. The dilute-phase pressure conveying system requires relatively little headroom and is simple to operate, economical, and ideal for conveying material from a single source to multiple locations.

Dilute-phase vacuum conveying is suitable for conveying materials that tend to pack or compress under pressure & must not leak into the workplace air. This system is typically used to convey materials over distances at low capacities. Dilute-phase vacuum conveying requires minimal headroom at the feed point and is ideal for conveying material from multiple sources to a single destination.





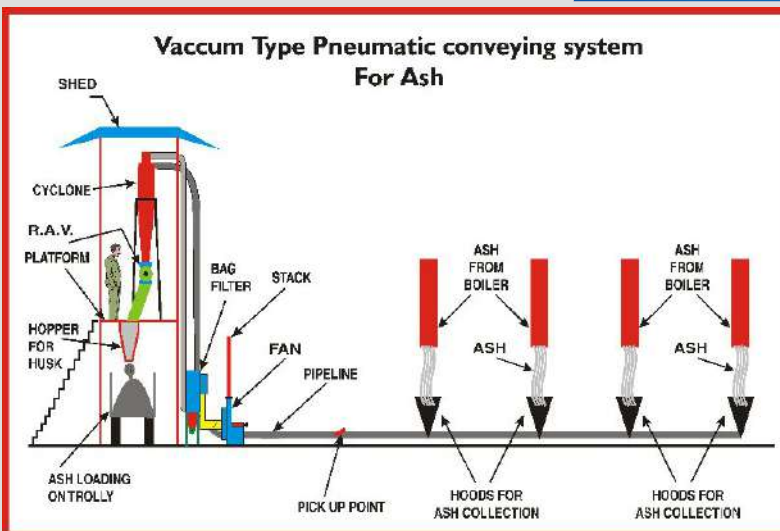
# Pneumatic Conveying

## Ash Handling System

Vacuum conveying system is a unique system in itself. It is specially designed to cater to the industry where small space is available for ash disposal. The working of the system is very simple. Ash is sucked in a pipe through a secondary nozzle/hoods by vacuum. Ash is then separated from air by a cyclonic effect created inside the cyclone. Ash then drops down through the RAV on to the platform or ash is collected in the trolley underneath, the dusty air passing through the pulse jet bag filters into the atmosphere through the high efficiency fan.

The pulse jet bag filter is an online system which with the help of compressed air cleans the plant ash filled bags. The advantage of using a pulse jet bag filter is its feature of online cleaning without stopping the whole pet. The fine material after being pulse cleaned is collected in a RAV fitted under the bag filter & disposed off into the trolley. The bends used are made of high grade steel with anti abrasive coating to protect against the abrasiveness of ash. System requires minimum workers to operate for ash.

### MODEL VAC-U-PAC



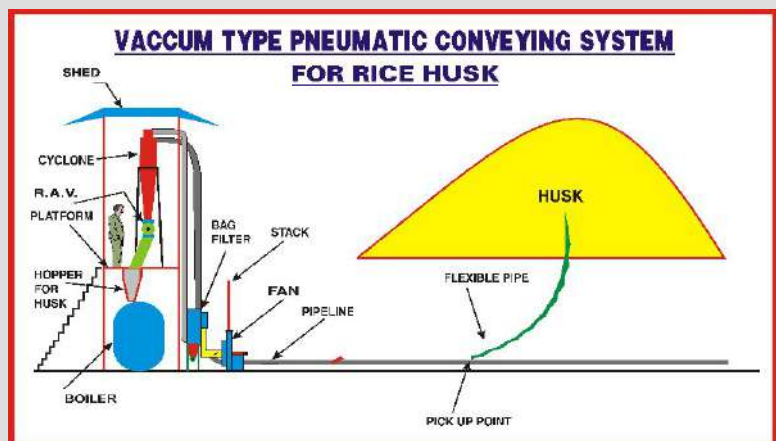
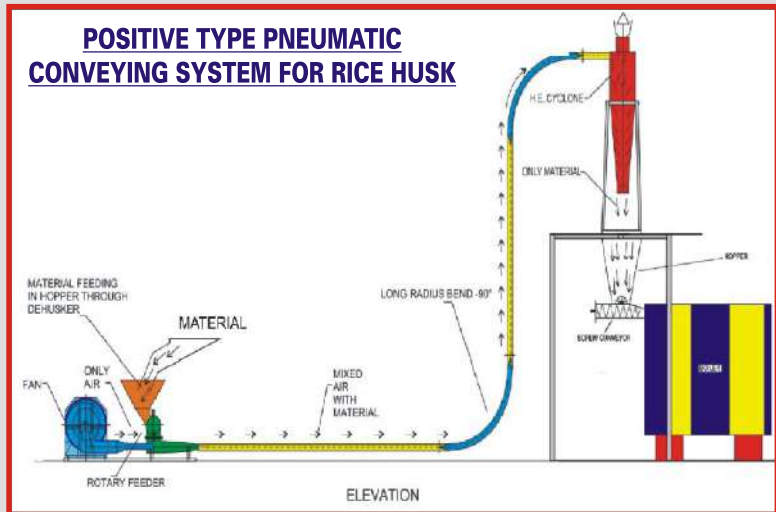
# Pneumatic Conveying

## Positive Conveying System

Model **Powerpac**

This is positive type of pneumatic conveying system which can handle maximum capacity of 1 to 10 TPH of boiler fuel and can throw material at a distance in excess of 800 ft. The system consists of either single stage or a two stage fan or a roots blower which conveys the material through pipe ranging from 4 inch to 12 inch.

The material is fed into the RAV through the material feeding hopper which is pushed by the air thrown by the fan. Long radius bends are used either in 90° or 45° so that the bends do not wear out. Special material for bends is used to enhance its life. The material is conveyed through the line up till the discharge point. If required a diverter can be used with the line to divert the material to some other place at one time only one line will convey.





# Dampers

Dampers are used to throttle the air entering or leaving a fan and to control airflow in branches of a system or at points of delivery. Dampers control airflow by changing the amount of restriction in an airstream. Increasing the restriction creates a larger pressure drop across the damper and dissipates some flow energy, while decreasing the restriction reduces the pressure differential and allows more airflow.

## Single Blade Dampers

This is the cheapest and simple type of damper normally fitted at fan inlet for manual control. This damper is suitable for situations where accurate volume flow is not required.



## Multivane Dampers

Control dampers are offered with either parallel or opposed blades. Each style has distinguishing characteristics in regards to control of the fan's performance plus a change in air velocity profile.

Parallel blade dampers have excellent control over the range of 75% to 100% wide open volume due to the amount of control arm swing required to modulate the blades. Parallel blades are used when greater control is required near the top end of the volume operating range or for systems requiring two position (fully open or fully closed) operation. Parallel blades should not be used upstream of critical components due to uneven airflow.

Opposed blade dampers offer the best control over the entire operating range. Opposed blades are used for applications where it is necessary to maintain even distribution of air downstream from the damper. This style of blade is the best selection for ducted outlets.



## Type of Dampers

- Backdraft Dampers
- Inlet Box Dampers
- Nested Inlet Vane Dampers
- External Inlet Vane Dampers



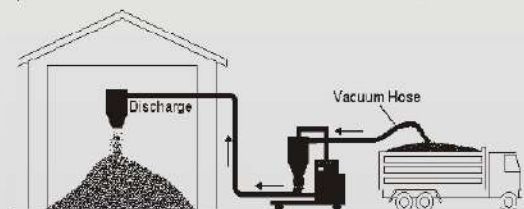
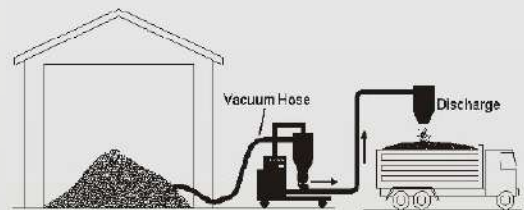
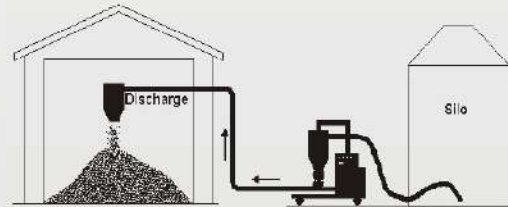
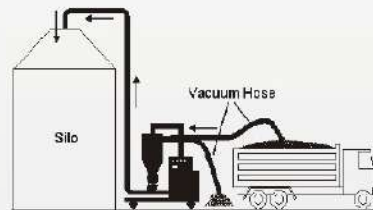
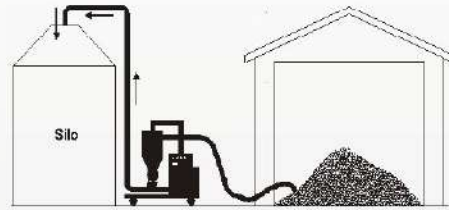
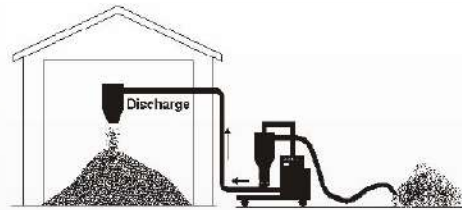
# Mobile Conveyors

## KwikVAC

KwikVAC mobile pneumatic conveying system are used in agriculture, food processing sector. It is capable of vacuuming the bulk solid from one point and transferring it to another point by pressure. A flexible suction hose is used to vacuum the material from basement silo container etc. Bulk material is conveyed to silo, truck, basement etc. by air pressure through the discharge hose. An optional discharge cyclone is connected to discharge hose which provides an easier truck loading. One user is enough for conveying operations. It can be operated by either electrical motor, diesel engine or tractor. Special hinge mechanism lets them to be carried by tractor.

### FEATURES:

- Bulk material does not pass through any high speed device like fan or propeller. Therefore no harm is seen on conveyed product.
- Dust Free Operation
- No moving parts like augers
- Product degradation is minimal.
- No adjustment required.
- Longer conveying distance
- In Built Bag Filter System





## Some of Our Clients





## **MULTIVENT ENGINEERS**

Works :  
Plot No. 65, HSIDC, Industrial Estate, Manakpur  
Chhachhrauli Road, NH-73A,  
Jagadhri-Yamuna Nagar-135001 (Haryana)  
Ph. : 01735-286128 Fax : 01735-286127  
(M) : 94162-24925  
Website : [www.multiventengineers.com](http://www.multiventengineers.com) / [.in](http://.in)  
[www.icebergfans.com](http://www.icebergfans.com)  
e-mail : [multivent@hotmail.com](mailto:multivent@hotmail.com)