

We Design  
We Fabricate  
And  
We Commission IT



FANS

DAMPERS

VENTILATION SYSTEMS

DUST COLLECTION EQUIPMENTS



**MECHTRIO TECHNOLOGY PVT LTD**

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

**Mechtrio Technology** was incorporated by engineers who have been associated with Centrifugal fans, Gas tight dampers, systems like Fume, Dust extraction, Ventilation systems, Environmental protection etc. The areas of specialization covered are system Design, Detailed Engineering, Manufacturing technology, Errection and commissioning, During its period the company has supplied several fans, Dampers and pollution control equipments for reputed customers.

## **DAMPERS**

Damper is a valve or plate that stops or regulates the flow of air inside a duct, Chimney, air handler, or other air handling equipment.

Mechtrio industrial dampers are one of the leader force in india and international in damper market with supply oh high specification flue gas, Diesel, Bio-Diesel, Boiler, Petrochemical, Offshore, cement, with many relevant years of experience, we offer unique damper design that are specific to customer needs with comprehensive installation and operating information.

Mechtrio dampers are manufactured to deal with temperatures from -80°C to +1100°C, and 100% leak proof.

### **Types of Dampers**

- Butterfly dampers
- Goggle Valves
- Stack Damper
- Guillotine isolator
- Flap Isolators
- Inlet guide vane damper
- Multi-Louver Damper
- Emergency Shut-off & open
- Two stage damper with seal air

### **Types of Operation**

#### **Manual**

1. Lever Operated
2. Manual operated with gear box
3. Hand wheel
4. Chain wheel

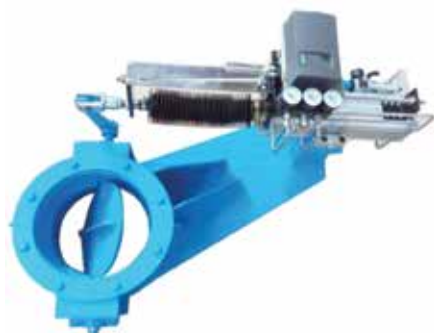
#### **Automatic**

1. Electric Drive
2. Pneumatic Drive

### **Butterfly Damper**

Butterfly dampers provide a simple & cost effective method of control and isolation. Stainless steel dampers for high temperature applications are available in a variety of sizes. Various sealing arrangements can be used to provide the correct efficiency for your application. Sealing efficiency can be increased to 100% with addition of twin seals and a sealing air fan.

Butterfly dampers can be actuated pneumatically, electrically or manually by a simple hand lever or reduction gearbox.



**CIRCULAR**



**RECTANGULAR**



**WITH CASTABLE INSULATION**

## *Guillotine Damper*

Guillotine dampers can be used in any application where a positive location is required for routine maintenance or entry to a duct behind a medium source. Actuation can be manual, pneumatic or electric, with various designs to suit all budgets and specifications. Occasionally, Guillotine dampers are specified for bypass ducts, if operation requirements allow enough time for the slow-moving blade to travel across the opening.

### *Construction*

The basic mechanical elements of the guillotine damper are a blade, a peripheral-seal system to prevent gas leakage at all stages of blade movement, support members for the blade, and continuously from open to close and back again. Where flow control is not required but positive shut off is mandatory, guillotine dampers are the most logical choice



### *Function*

- Isolates a duct section for process of maintenance reasons.
- 100% Isolation is achieved with seal air.
- Actual forces conveyed by robust rack & pinion.

### *Advantage*

- Short face-to-face length
- Low Pressure drop
- Low seal air requirement
- Closed bonnet design avoids condensation

## *Inlet Guide vane Damper*

The inlet guide vane damper is predominantly used on fan inlet applications, offering an enhanced level of flow and pressure control. An inlet guide vane damper has multiple blades arranged around a central hub enhancing the performance of the fan by introducing swirl into the fan inlet providing an efficient method of control.



## Goggle Valve

Goggle valves are used to positively isolate downstream media flow. They are typically used in 20 inch to 100 inch diameter lines. They provide 100% man safe shut-off.

### Applications

Goggle valves are frequently found in the petrochemical, steel, pulp and paper, maritime and oil and refinery industries. Positive pipeline close or off is vital in many piping systems to assure safety of assure safety of personnel working on downstream equipment, Particularly when flammable, toxic liquids or gases could sleep past a closure, a goggle is mandatory to comply with certain plant safety regulations when visible proof of shut or off is necessary. The valve will render an absolute tight shut-off in blast furnace, basic oxygen, open hearth or other gas main applications. It is designed for vertical application in a horizontal main or with roller support and other applications for horizontal operation in a vertical main.



## Stack Damper

To minimise heat loss from the boiler and to prevent the ingress of rain water, Mechtrio have a range of stack isolating dampers which are designed for use with stacks from 300mm dia to in excess of 7m diameter.

The stack isolating damper can be the butterfly, twin louver, multi louver or twin flap design and can incorporate an automatic pressure relieving system to prevent over pressurisation and damage to the turbine.

## Slide Gate

A slide gate has a flat closure element that slides into the flow stream to stop the materials. They are one of the most commonly used valves, and are primarily used to permit or prevent the flow of materials

Gate valves can be used in demanding environments such as high temperature and high pressure environments.



### Application

- Power Plants
- Water Treatment
- Mining
- Offshore Application



## Multi Louver Damper

The louver type of damper consists of several blades mounted parallel across a duct, with centrally pivoted shafts extending out through a frame and driven by a linkage. Louver dampers are versatile, size: upto 7000mm to handle any application in the power plant. Louver dampers are best applied to balance or control flow.

### Advantages

- Reduced flange to flange size
- Reduced Weight
- Floating blade design eliminates thermal distortion
- Upstream and downstream blades may be supplied in different materials
- Suitable for cladding with alloy stainless steels
- Low pressure drop
- Insulated blade design available



## Double Flap Valve

Double flap valve that allow flow of dust and maintain airlock across the valve. Manufactured with suitable for handling highly abrasive and gritty materials along with high vacuum across the valve. Available in several designs and technical specifications, this double flap valve can be availed from us at most economical prices are best applied to balance or control flow.

## Flap Diverter

The use of a flap diverter or flap damper is a common way to redirect a flow of hot gas from one outlet to another. These are relatively simple devices in which the frame or housing represents a large piece of ducting with a secondary outlet for flow. Diverters are capable of tight shut-off as well as modulation.



## Diverting Gate

Diverter gate are used to change the direction of flow of bulk materials as they are discharged from equipment above. Bulk materials can be diverted to another process stream or used to divert off-spec material to a bin.



### Features

- Reliable operation
- Rugged design
- Easy to use and maintain
- Corrosion Resistance



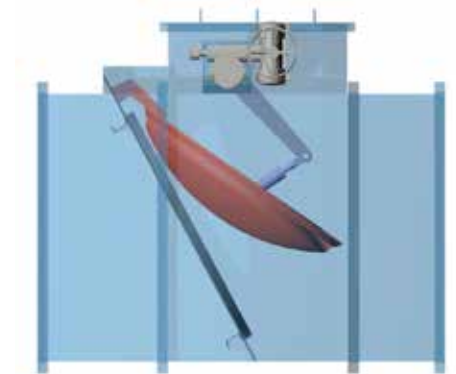
## DTPA Valve

Owing to our rich domain expertise, we are engaged in offering an exclusive range of high capacity DTPA Damper to our clients. It is commonly used to isolate, control or regulate hot flue gas from various industrial applications. Offered damper is manufactured by utilizing quality grade metal alloys and components as per industrial standards. Clients can purchase provided DTPA Damper from us in several specification at market leading price.



### Features

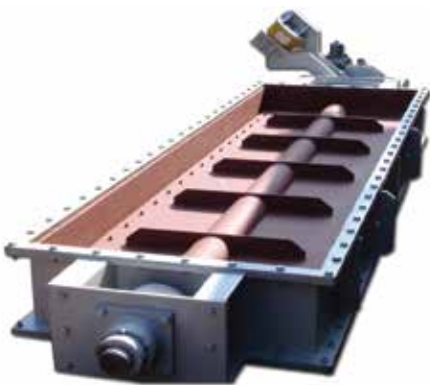
- Excellent for Isolation
- Fast operating speeds
- Little or no outside space required for support structure
- No leakage to ambient



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## Emergency Shut-off damper

An emergency shut off damper is an actuated valve designed to stop the flow of a hazardous fluid upon the detection of a dangerous event. This provides protection against possible harm to people, equipment or the environment. Shutdown dampers form part of a safety instrumented system. The process of providing automated safety protection upon the detection of a hazardous event is called functional safety. Shutdown dampers are primarily associated with the petroleum industry although other industries may also require this type of protection system.



### Rectangular Emergency Shut-Off Damper

Application: Coal mill Bagfilter

Operating time: 1 sec



### Circular Emergency Shut-Off Damper

Application: Coal mill Bagfilter

Operating time: 1 sec

# FAN & BLOWERS

Industrial fans and blowers are machines whose primary function is to provide and accommodate a large flow of air or gas to various parts of a building or other structures. This is achieved by rotating a number of blades, connected to a hub and shaft, and driven by a motor or turbine. A blower is another name for a fan that operates where the resistance to the flow is primarily on the downstream side of the fan

## Types of Fans

- Centrifugal fans
- Fans In Series
- Boiler ID, FD & SA Fans
- Axial Flow Fans
- Limit Load Fans
- Single and Multi Stage
- High Pressure Blowers

## Types of Drive

- Directly mounted on motor shaft
- Belt Driven
- Coupled Driven

## Range

### Backward Bladed Fans

Type HB-1: Flow range - 300 to 36000 m<sup>3</sup>/hr, Pressure - 2000 mmwg

Type HB-2: Flow range - 10000 to 1000000m<sup>3</sup>/hr, Pressure - 2000 mmwg

Type HB-3: Flow range - 30000 to 2000000m<sup>3</sup>/hr, Pressure - 2000 mmwg



### Axial Flow Fans

Type HAF: Approx range 3600 to 100000 m<sup>3</sup>/hr - 120mmwg

Type HAF: Approx range - 100000 to 300000 m<sup>3</sup>/hr - Pressure 300mmwg



### Limit Load Fans

Type HL: Approx range 3000 to 500000 m<sup>3</sup>/hr - pressure 150mmwg



## Impeller Materials

- Mild Steel
- Stainless Steel
- FRP
- Aluminium
- Weddox
- Duplex
- Rubber Lining and other special materials based on the applicaritons.



## *Axial Fan*

- Direct / Belt Driven
- Type: Fixed and adjustable pitch blades
- Size from 300 to 2000mm
- Capacity upto 360000CMH
- Static pressure upto 100mmwg
- Application: Ventilation (Supply & Exhaust)

## *Bifurcated*

- Type: Fixed and Adjustable Pitch Blades
- Size from 300 to 2000mm
- Capacity upto 360000 CMH
- Static pressure upto 100mmwg
- Application: Host Air Fan and Fume Exhaust



## *Inline Centrifugal Fan*

- Backward Curved / Inclined
- Size from 300 to 1400mm
- Capacity upto 80000 CMH
- Static pressure upto 220mmwg
- Application: Ventilation and smoke spill applications



## *Jet Fan*

- Size upto 600mm
- Capacity upto 5000 CMH
- Application: Carpark and Tunnel Ventilation



# ***VENTILATION & DUST COLLECTION EQUIPMENTS***

## ***Ventilation***

ventilation is the process of exchanging or replacing air in any space to provide high indoor air quality which involves temperature control, oxygen replenishment, and removal of moisture, odors, smoke, heat, dust, airborne bacteria, carbon dioxide, and other gases. Ventilation removes unpleasant smells and excessive moisture, introduces outside air, keeps interior building air circulating, and prevents stagnation of the interior air.



Ventilation includes both the exchange of air to the outside as well as circulation of air within the building. It is one of the most important factors for maintaining acceptable indoor air quality in buildings. Methods for ventilating a building may be divided into mechanical/forced and natural types.

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## ***Air Washer System***

A device for cooling and cleaning air in which the entering warm moist air is cooled below its dew point by refrigerated water so that although the air leaves close the saturation with water it has less moisture per unit volume than when it enters.

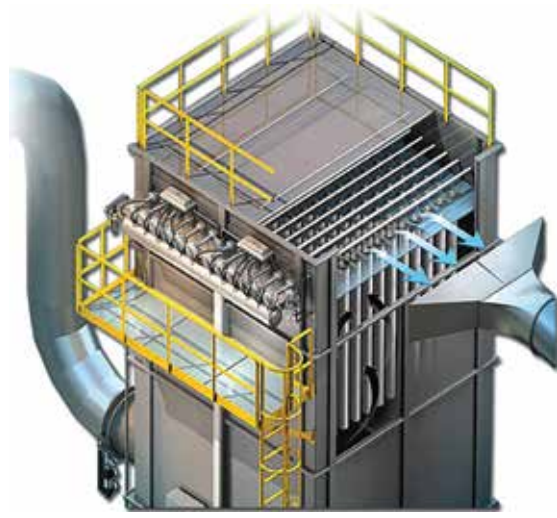
### ***Functions***

- Cool the air
- Humidify the air
- Dehumidify the air
- Hyperionize the air



## ***Air Pollution Control Equipments***

- Fly ash arrestor for boilers
- Multi Cyclones
- Tangential cyclones
- Bag Filters
- Wet Scrubbers
- Mist / Dust / Fume Extraction System
- Dust Suppression
- Ventilation system
- Pressurization system
- Kitchen Exhaust system



## ***Dust Collection Equipments***

Dust collection is the process of removing or collecting solid particles from airflow to comply with stringent air pollution standards. Large filters trap airborne particles before they are released into the outside air. Bag type collectors are one of the most common air pollution control technologies that removes particulate matter from the air waste stream being emitted from a broad range of industrial processes. The particulate-laden air stream passes through a woven or felted fabric that filters out the particulate matter and allows the air to pass through.

### ***Types***

- Bag Type Collectors
- Cyclone Collectors
- Multiclone Collectors
- Wet Scrubbers



## ***Mist Extraction System***

Centralized High efficient mist collection, Design and installation by Mechtrio incorporating dry filter unit to achieve pollution free work environment.

### ***Operation***

The centrifugal fan when running creates negative pressure at each of the suction hood through which the mist which are emitted during the process is sucked inside and reaches the filter unit where it is filtered leaving only the clean air to leave the filter unit.



### ***Emission Sources***

Mist Emission occur from various machineries during the process polluting the atmosphere.

#### ***The system consisting the following***

- Suction hood with control dampers
- Branch ducting and main ducting
- Dry Filtration unit
- Centrifugal ID Fan with motor
- Clean air outlet duct
- Oil Drain arrangement

## *Packed Bed Scrubber CFM*

Air flow through the scrubber, based on cubic ft/min. this is determined by the process to be handled by the scrubber, through information provided by customer and Mechtrio analysis. System capacities of heavy service Vertical flow systems range to 100,000 cfm and above.

### *Configuration*

Internal vs External recirculation system, fan location in relation to tower, duct sizes, inlet and outlet plus location of pump systems, tower access service ports, service platform requirement.

### *Materials of construction*

Determined by application: because most contaminants involve corrosive gases and fumes, material must be able to withstand continuous contact with high and low pH gases and scrubbing solutions.

Standard construction materials include: polypropylene, fiberglass and PVC, Optional materials include high alloy metals such as stainless, Hastelloy and Inconel, also dullamiae structures incorporating FRP over PVC, PP, PVDF and Teflon liners are available.



## *OTHERS WORKS*



*Expansion Joints*



*Rotary Air Locks*



*Screw Conveyors*



*Any Kind of Design / Site Based Fabrication and Erection works*





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