



**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Air Filtration Systems

### Bag / Cartridge Filtration Units

Our self-cleaning dry dust collector is able to operate continuously 24 hours a day. The filtration media is needle-punched, cleaning is performed via a counter-current compressed jet of air which shakes the media to release dust and other contaminants held within the filter casing.

Our design is capable of handling very fine powders, while maintaining a high yield of uptake, down to micron sized particulates. Utilizing specialized fabrics including glass fiber, the system is able to handle elevated temperatures up to and exceeding 200°C (400°F). Selection of durable materials extends to the design and construction of the casing, allowing operation in the presence of acids or strong negative pressures. To assist in maintenance, the design has been made to include access to the top of the filter, allowing maintenance and control of all operations that make up the filtration system.

Putting forethought into the operation of the filter, the support baskets hold the fabric in form, additionally, a venturi placed on each basket allows increased velocity and in turn an increase in efficiency when cleaning. In total, the system allows for quick and efficient replacement of parts and maintenance.

The cleaning phase of the system can depend on the operating conditions of the filter, as such, the cleaning control systems allow the cleaning phase to start only when it is necessary, eliminating unnecessary early cleanings.

Filter yields are consistently in the 99% range, all while providing service to many industries including, ceramics, foundries, steel mills, cement factories, food service industry, plastics production, detergent production, rubber production and various other sectors.



All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDenviro.com](http://www.BDenviro.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDenviro.com](mailto:Industrial@BDenviro.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



**BD ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Air Filtration Systems

### Cyclonic Separation

Cyclonic separation is performed by the use of an inertial arrestor that utilizes the energy of the induction fan.

Covering the caveats of fabric or cartridge filters, the cyclonic separation provides for the filtration of medium to high specific weight molecules, with preference to particulates of 50 microns or larger. When utilized upstream of a fabric based filtration system, cyclonic separation allows for the separation of particulates which are not compatible with fabric, all while providing overall efficiencies in the range of 90%. Additional benefits arise from the reduction in plugging of fabric filters allowing for longer run-times and reduced maintenance. The addition of anti-abrasive materials may be necessary in applications where the particulate is excessively erosive.

Many applications in varying fields may benefit from the use of cyclonic separation. Types of separators to which the system may be applied are; general inert powder, explosive dust, flammable dust and others.

#### Serviceable Sectors

- Wood Processing
- Metal Processing
- Steel Production / Foundries
- Cement / Brick Production
- Marble, Stone, Granite and Resin Processing
- General Material Recycling
- Food Service Industry



All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDenviro.com](http://www.BDenviro.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDenviro.com](mailto:Industrial@BDenviro.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



**BD ENVIRONMENTAL SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Air Filtration Systems

### Wet Scrubbers

The wet scrubber or purifier is a widely used and simple system for the purification of a polluted process stream. The basic operating principle is similar in most applications, however, all scrubber/purifiers are engineered to accommodate the target elimination. In general an air scrubber uses intimate contact between the air itself and a certain an engineered liquid/water, entraining the pollutant into the engineered liquid stream. These liquids are selected in the engineering phase to ensure the proper reaction between the pollutant and the liquid. Following the capture of the pollutant in the water, direct discharge into the atmosphere is possible while remaining within the permitted limits of the treated air.

Through careful design and materials selection, our wet scrubbers are able to guarantee an efficiently conditioned stream and able to provide a long operating life as well.

Through experience and empirical data, we are able to design a system that builds on established knowledge while also keeping to the general mathematical formulas required of the design in wet scrubbers.

Sectors which would be generally benefited from wet scrubbers are chemical, pharmaceutical, food service, and other pertinent applications.



All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDenviro.com](http://www.BDenviro.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDenviro.com](mailto:Industrial@BDenviro.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



**BD ENVIRONMENTAL SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Air Filtration Systems

### Activated Charcoal Adsorbers

Activated charcoal adsorbents rely on the attractive forces between solvents and solid surfaces under certain conditions. Utilizing a carefully selected material, the system can take advantage of condensation caused by Van Der Waals forces, causing the solvent to collect on the surface. A commonly used surface is "activated carbons" whose activity is directly proportional to the surface porosity.

Once the solvent has collected the pollutant, it is then condensed by capillary forces and then retained within the carbon itself. The adsorption capacity is therefore proportional to the surface area, as well, is strongly influenced by factors such as; the concentration of the SOV to be purified, relative humidity, temperature, stream velocity, contact time and the size of the activated carbon particles.

Studying the saturation curve of the selected carbon will direct the selection of the correct quality of carbon so as to correspond to its proper isotherm value. Furthermore, the study of the yield curve will deliver the proper quantity of the activated carbon as well.

Sectors which would be generally benefited from wet scrubbers are chemical, pharmaceutical, food service, and other pertinent applications.



All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDenviro.com](http://www.BDenviro.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDenviro.com](mailto:Industrial@BDenviro.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



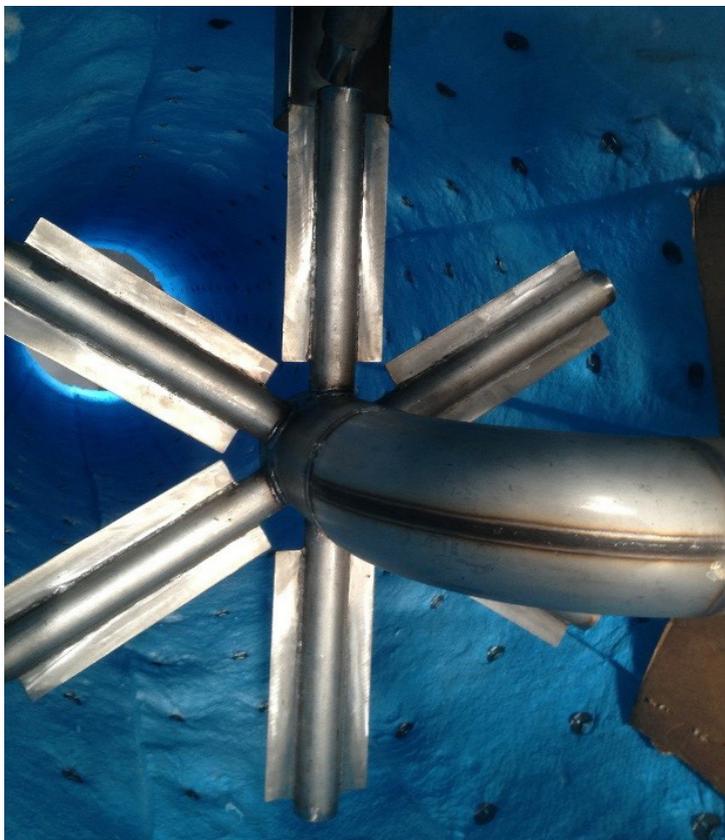
**BD ENVIRONMENTAL SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Biogas Flares

### Enclosed Biogas Flare

High gas flows and difficult access to digesters may cause a need for a deviation from the standard design of biogas flares, which are used to dispose of waste streams coming from landfills, biogas, biomass and wastewater facilities. Enclosed flares are designed to maintain a high destruction ratio within the vertical combustion chamber and a regular and stable combustion necessary for many biogas streams contaminated with VOCs and Hydrogen Sulfide.

BD Environmental Solutions provides off the shelf designs for various flow rates ready for expedited supply and commissioning. Our design includes features to automatically operate the flares by use of an onboard control panel, reducing maintenance and creating a user-friendly interface.





**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Biogas Flares

### Elevated Biogas Flare

An elevated biogas flare is a cost effective design when environmental permits allow to flare openly in the Plant, for waste streams coming from landfills, biogas, biomass and wastewater facilities. These waste streams are typically a mixture of methane and carbon dioxide. Because of the high content of inerts in the waste streams, these type of flares need to be properly designed in order to achieve the required destruction efficiency. BD Environmental Solutions provides off the shelf designs for various flow rates ready for expedited supply and commissioning





**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Flares

### Flares

Flares have the objective of disposing waste gases safely and effectively. Safety and Efficiency are key parameters when designing flares, which are relatively inexpensive solutions to meet federal and local regulations and customer's demands. Demountable, self-supported, derrick, guy wired, vent stacks, burn pits, sonic tips, steam and air assisted tips are only some of the configurations available.



### Steam / Air Assisted Flares

Depending on the waste gas composition and utilities available for the flare, steam or air assisted tips can be used to increase the mixing and the air entrainment, actively promoting smokeless combustion of low pressure waste gases. To attain best efficiency, the tips are CFD (Computational Fluid Dynamics) evaluated for optimal performance.





**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Flares

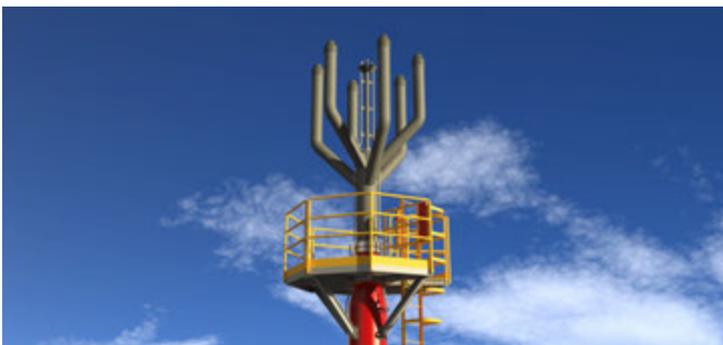
### Biogas Flares

Gases that are created from the decomposition of organic matter like municipal waste, biomasses, and landfills must be incinerated in a flare for proper treatment of the stream. Typical products treated are a Carbon Dioxide and Methane mixture. Features such as flame arrestors, flame detectors and high performance pilots are essential parts of the stream destruction.



### High Pressure Flares

When the waste gas is delivered at high pressure, sonic flares can be proposed in order to achieve smokeless / low radiation flaring, converting the internal energy of the high pressure gas into kinetic energy therefore increasing mixing and air entrainment. Multipoint sonic flare technology reduces low pressure zones and burnback inside the flare to increase efficiency and extend flare tip life.





**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Industrial Process and Chemical Plants

Thanks to the experience gained over the years and the continuous technological evolution in industrial processes, instrumentation, and construction materials; we are able to design in detail and formulate chemical and industrial process plants. Heeding our client's ideas and needs, we are able to deliver them into production completing the plants with the appropriate management automation. Our plants are completely designed using the best available environmental technologies. Sectors of interest would be all general chemical plants, on both a pilot plant scale and full industrial production scale, including; liquid dosing systems, mixing plants, reaction plants, and polymerization plants, for further capabilities, please inquire within and we would be happy to assess your application.

 All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDEnviron.com](http://www.BDEnviron.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDEnviron.com](mailto:Industrial@BDEnviron.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



**BD ENVIRONMENTAL SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Thermal Oxidizers

### Regenerative Thermal Oxidizers

A Regenerative Thermal Oxidizer (RTO) has heat recovery chambers containing beds of ceramic material to recover heat from the exhaust gas. This design allows for thermal efficiency as high as 97+ while maintaining the highest destruction efficiency (99+). This type of installation, depending on the concentration of VOCs in the waste stream, can nullify the need for support fuel consumption via "flame-less" combustion.



### Catalytic Thermal Oxidizers

Catalytic thermal oxidizers use a catalyst to promote the oxidation of selected contaminant molecules. Catalytic oxidation occurs through a chemical reaction between the molecules and a precious-metal catalyst bed within the stream. With an operating temperature in the range of 400-600°C this application has the benefit to drastically reduce the required auxiliary fuel and NOx production. Recuperators can be included in the system to further reduce operating costs and emissions.



9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

Info@BDEnviron.com  
Europe: +39 392 5917815  
U.S.A.: +1 (281) 978-2897



**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Thermal Oxidizers

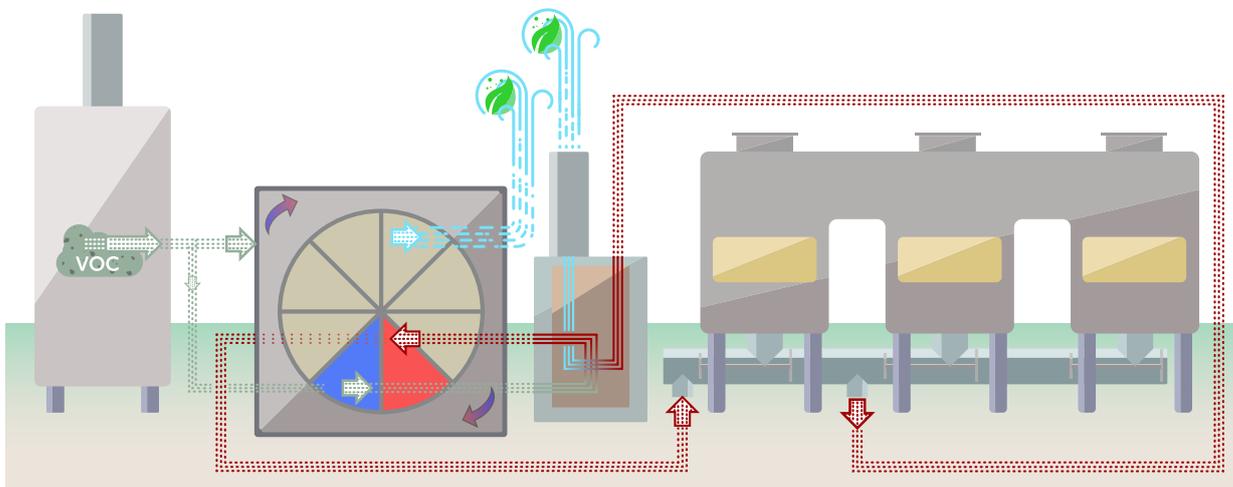
### Recuperative Thermal Oxidizers

Recuperative Thermal Oxidizers utilize heat recovered from incorporating waste heat boilers, combustion air / waste gas preheaters, hot oil heaters downstream of the Thermal Oxidizer. When the energy recovered is collected via heat exchangers in the flue gas duct leaving the unit, the Thermal Oxidizer becomes a waste-to-energy unit (WTE Unit) able to transfer thermal energy from the oxidation process to other plant utilities, in turn reducing auxiliary fuel consumption, emissions and operative costs.



### Rotor Concentrator Thermal Oxidizers

Rotor Concentrators provide a cost effective method for VOC reduction in high volume / low concentration streams. With the desorption air reaching VOC ratio up to 1:20, the oxidizer can maintain a "flame-less" mode when coupled – for example - with a Regenerative Thermal Oxidizer. Varying Zeolite pore sizes further attract different contaminants for oxidation.





**ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Ventilation, Climatization and Energy Recovery

### High Induction Distribution System

To ensure the proper mixing and to maintain a homogeneous temperature gradient, a special calculation program is used. The program will define, according to each design, the optimum opening arrangement by providing parameters for number, size and position of the openings on the diffuser. These calculations ensure that the system will work at a high velocity while maintaining a high degree of efficiency.

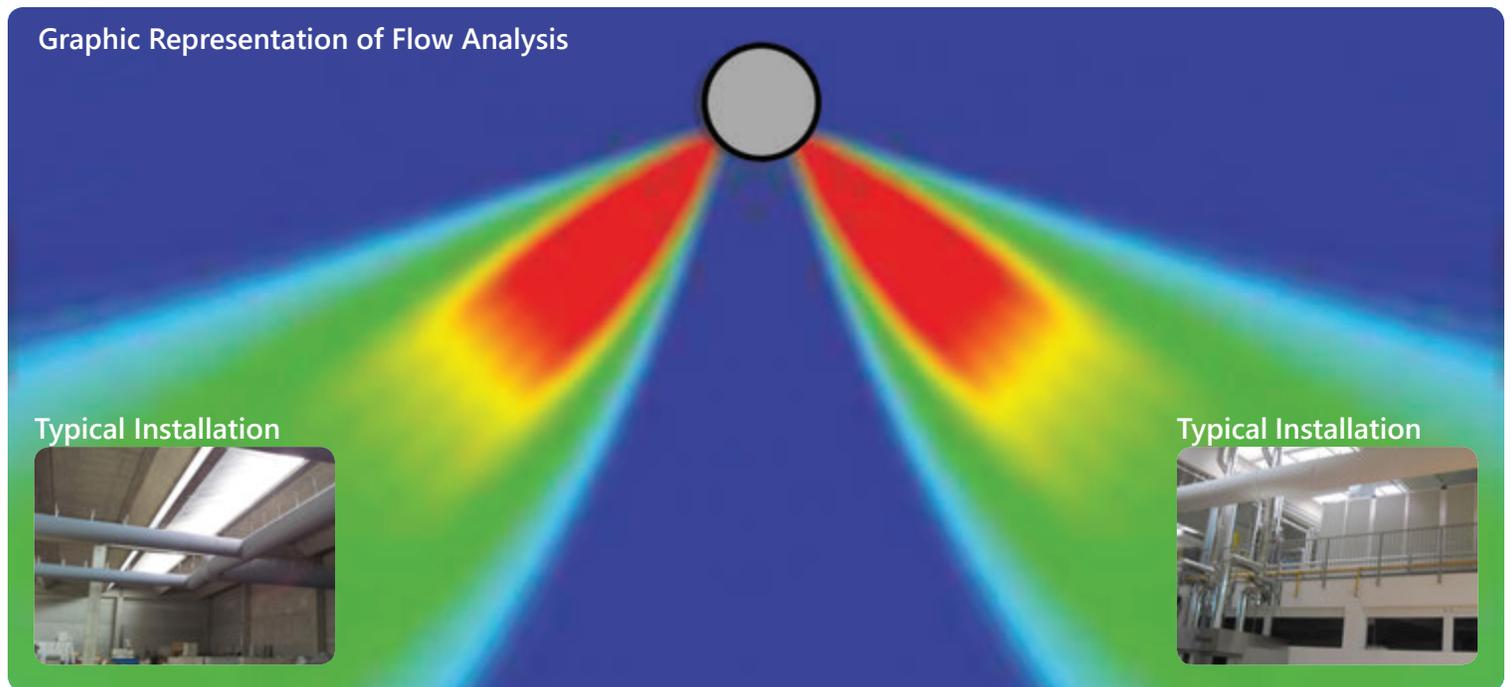
The software can be used to analyze the air jets, displaying the trends graphically for air-conditioning both in cooling and heating modes. The high induction distribution system ensures that the outflow of air through the calibrated openings mixes perfectly with air within the room, thus achieving a high level of indoor comfort.

Specifically, the jet in system guarantees a very large interface between the introduced air and the air within the room. The interface at the exit of the jet provides adequate negative pressure and vortices that allow further mixing of the air.

Benefiting from the principle of conservation of energy, providing an inducted initial impulse will provide the movement of a much higher volume of air than the amount of air utilized for the movement. This action is based on the diameter and shape of the air jet openings and static pressure. The resultant effect is a flow of up to 50 times higher in volume than the flow-rate of the supplied air. The volumetric ratio of the air moved and air supplied is known as the induction ratio and is defined based on the distance from the ducting.

Using an inductive system avoids the typical scenario in which localized air supply points do not adequately form uniform temperature and therefore cannot be guaranteed.

#### Graphic Representation of Flow Analysis



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDEnviron.com](http://www.BDEnviron.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDEnviron.com](mailto:Industrial@BDEnviron.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy



**BD ENVIRONMENTAL  
SOLUTIONS**  
A BD GROUP INDUSTRIES COMPANY

## Ventilation, Climatization and Energy Recovery

### Commercial HVAC Systems

In addition to our specialized HVAC solutions, BD Environmental is able to provide generalized HVAC systems to meet and exceed your heating, cooling, air conditioning and ventilation requirements. HVAC systems can be designed with energy recovery in mind to increase the general efficiency of the system. Able to accommodate a varying array of scenarios, we can provide systems for warehouses and commercial applications.

With our experience, BD is also capable of providing full air handling systems for laboratories in which air flows must be controlled to strict standards. Other factors taken well into consideration are the efficiency benefits provided by a fully engineered product by taking in to account all pressure and flow requirements. All aspects of the provided product are tailored to the needs of each individual client.



All products are able to be designed with consideration to ATEX.



**United States Office**  
9180 Oakhurst Road  
Suite 4  
Seminole, Florida, U.S.A. 33776

[www.BDenviro.com](http://www.BDenviro.com)  
Europe +39 3664511356  
USA +1 (727)392-0492  
[Industrial@BDenviro.com](mailto:Industrial@BDenviro.com)

**Italian / EMEA Office**  
Viale Andrea Doria, 7  
20124 Milano (MI) Italy