

MIKRO-PULSAIRE®  
DUST COLLECTORS



**MIKROPUL**

DUST COLLECTION  
GAS CLEANING  
PRODUCT RECOVERY  
ENGINEERING  
SERVICES



# MIKROPUL ADVANTAFLO™ INLET TECHNOLOGY

Years of field and laboratory research revealed that a major problem with dust collector performance is uneven air flow distribution to the filter elements. This uneven distribution is the result of ineffective inlet and diffuser device designs.

Several diffuser designs were investigated: Impingement Plate, Perforated Disc, and Perforated Mail-Box. In all cases the air stream formed two vortex motions. The primary vortex occurs in the filter housing causing very high localized dust laden velocities. A secondary vortex motion is created in the lower part of the hopper, causing high dust re-entrainment and uneven dust discharge.

This condition is the main reason for:

- Abrasion
- Short bag life
- Dust seepage
- High pressure drops
- Reduced air flow capacity
- High cleaning power consumption

## Two Solutions

MikroPul R&D arrived at two patented solutions that effectively distribute air flow evenly to the filter bags: The Cascadair™ hopper inlet and Expandiffuse™ side inlet, both described at right.

Cascadair™ and Expandiffuse™ can be retrofitted to improve the performance of any style or make of pulse-jet collector. The Cascadair can also be used to improve the performance of any dust collector with a hopper inlet including shaker or reverse air type units.

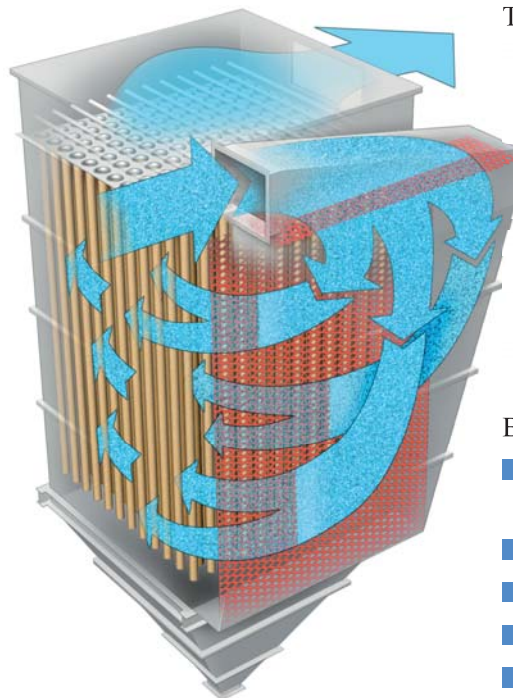
*Cascadair™ and Expandiffuse™ are protected by Australian, Canadian, European Community, Japanese, and U.S. patents.*



The **Cascadair™** diffuser uses a succession of orifice plates to gradually divert portions of the incoming air in stages.

The results achieved:

- Increased bag life
- Lower pressure drop or significantly increased air flow capacity
- Minimum dust re-entrainment
- Better overall filter performance



The **Expandiffuse™** is a two stage inlet with diffusers at right angles to each other. Air enters the filter housing from the side of the unit at velocities reduced by over 90%. This design improves pulse-jet performance by as much as 40% (or more when combined with MikroPul's Long Bag technology).

Benefits include:

- Higher A/C ratio; i.e. greater flow capacity
- Longer bag life
- Reduced pressure drop
- Elimination of dust re-entrainment
- Reduction of pulse air consumption
- Dramatically reduced maintenance costs
- Better overall filter performance

# MODELS AND APPLICATIONS

## Bin Vents

Bin Vent Collectors are used on top of silos and bins or where the bin loading system requires aspiration. Bin vent units are available for quick delivery upon request.

## Insertables

Insertable collectors are self-contained units which are integrated into an existing enclosure, allowing dust to be retained at the point at which it is generated. Common applications: mechanical and pneumatic conveyors, conveyor feed silos, air slides, process machinery, and bins in which powders are fluidized.

## Modular Units

Fully assembled Mikro-Pulsaire® filters are ideal for applications re-

quiring filter area generally between 5 and 500 m<sup>2</sup>. Common applications: size reduction machinery, spray dryers, separators, calciners, mixers, packaging machines, conveyors, chemical manufacturers, foundries, grinders, and many other industrial applications.

## Large Rectangular Units

For large applications, filters are provided in preassembled sections sized to suit shipping limitations. Sub-assemblies can be prepared for bolting and/or welding on site. Common applications: kilns, boilers, dryers, mixers, coke discharge systems, sinter strand systems, furnaces, ladle casters, foundry sources, smelters, and many chemical and mineral applications.

## Bag Access Styles

Mikro-Pulsaire® filters can be supplied with bag access from either the dust or clean side of the filter.

Choices include:

- Bottom removal—ideal for small baghouses or where headroom restraints prevent top removal
- Top removal—access doors on top of unit permit bag maintenance from the clean side, allowing quicker changeout. Leaking bags can be detected rapidly and easily.
- Top removal with walk-in plenum—Also protects maintenance personnel, media, and valuable, recoverable product from the weather. Work platform and access door provide entry into the clean air plenum.



*Bin vent*



*Modular*



*Top removal*



*Large sectional*



*Top removal with walk-in plenum*

# DESIGNS FOR SPECIAL APPLICATIONS

## Cylindrical Units

MikroPul cylindrical collectors are for high vacuum or high pressure applications. Units can be supplied for bag replacement from either the clean or dirty side of the tubesheet. Special designs are available including:

- Housing diameters up to 9 m (30 ft)
- Abrasion resistant design
- Quick changeout design where all bags are removed and installed as a unit.
- Heated filter housing by means of heating coils or vessel jacket
- Explosion relief housing design
- Housings built to pressure vessel code specifications

Common applications: milling, spray drying, separating, coal grinding, mixing food manufacturing, car loading, and product receiving from process applications.

personnel have an unobstructed surface for servicing the bags and pulse valves. The K/LP is capable of handling very large capacities.



*Typical custom built CIP filter*

Common applications: cement kilns, boilers, or any application where high cost media is used or space is at a premium.



*Tangential inlet design for low bulk density dust*

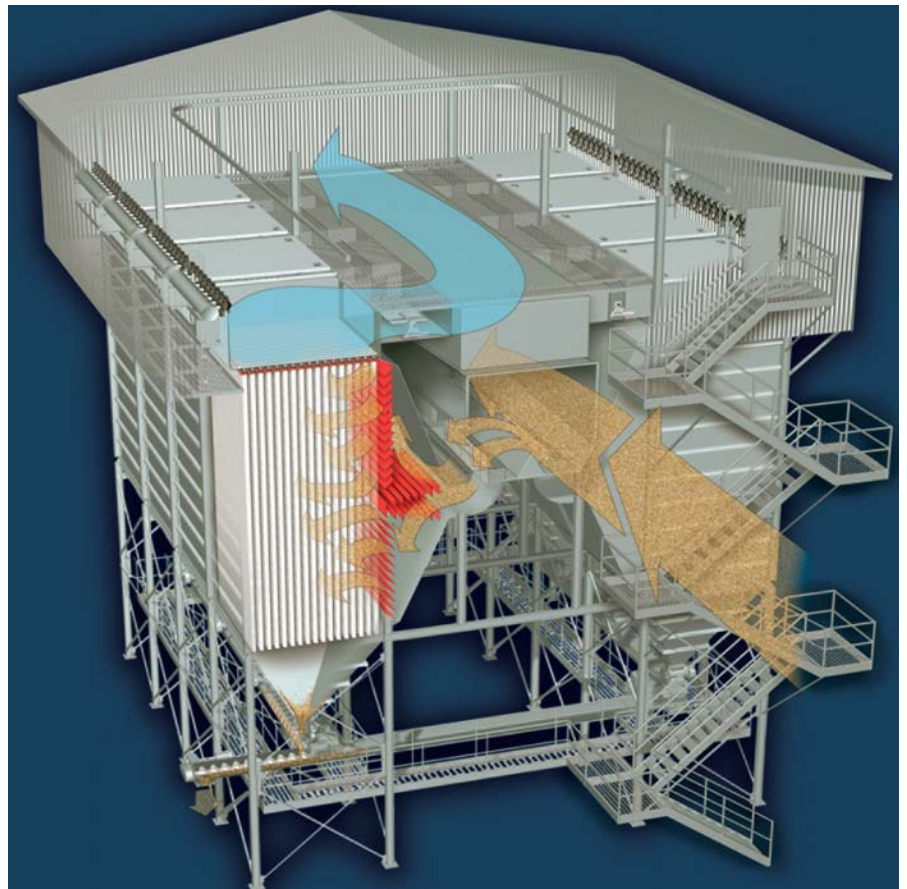
## Tangential Inlet Model

The Mikro-Pulsaire® tangential inlet collector can handle dust loads over  $1 \text{ kg/m}^3$  (450 grains/ft<sup>3</sup>) and air-to-cloth ratios of up to 3:1. The inlet acts as a cyclone, causing the air to spin and consequently throw the heavy particles to the walls and then into the hopper. The fine particles are collected on the filter bags. This design can handle between 1,000 and 100,000+ m<sup>3</sup>/h (600 and 60,000+ cfm).

Common applications: sander dust, fine lint, cellulose, and fiberglass.

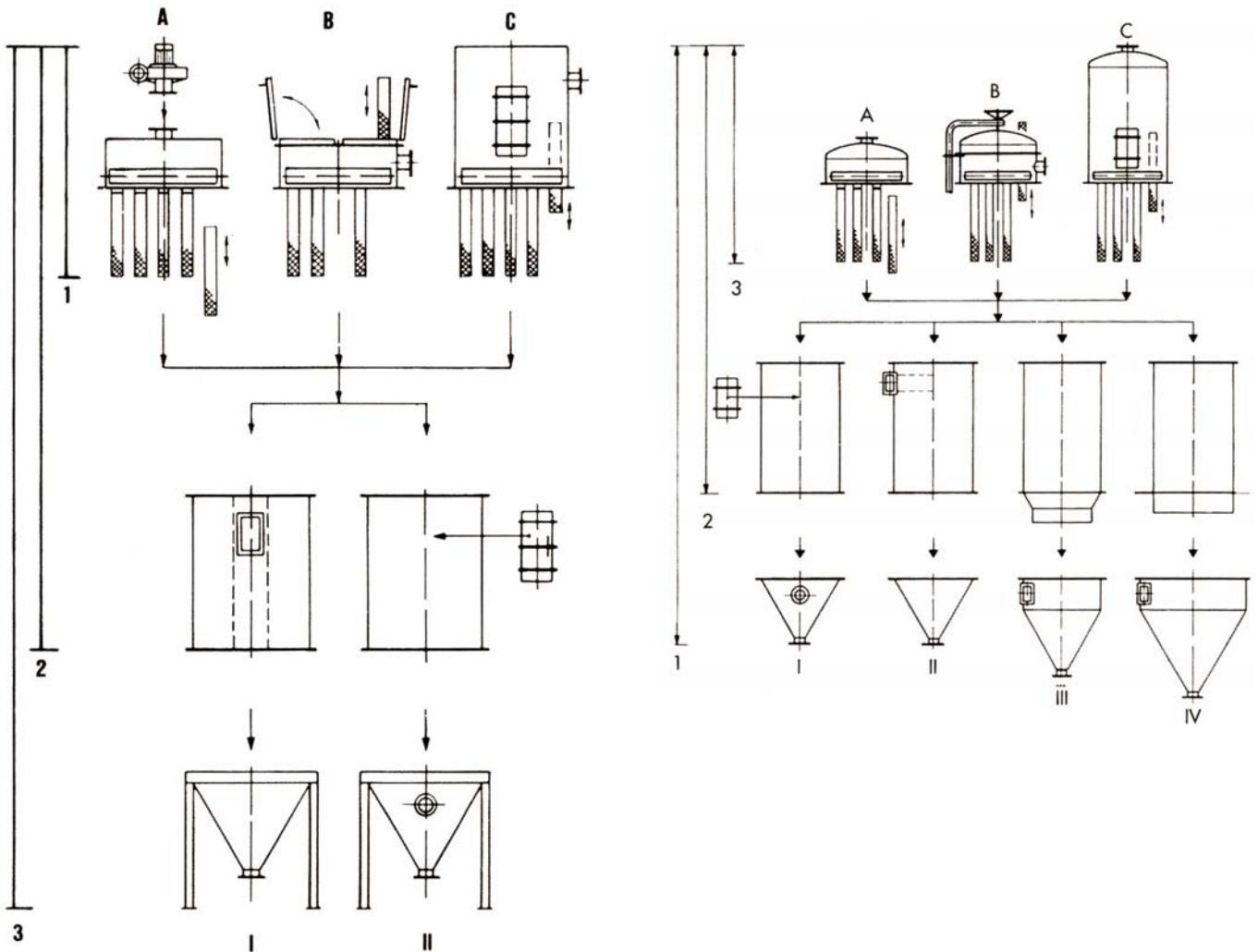
## Low Pressure Kiln Design

The Mikro-Pulsaire® K/LP combines low pressure cleaning with the low velocity Expandiffuse™ inlet to provide the best performance and bag life available for high temperature applications. The unique design is very compact, making use of long bag technology, and maintenance



*K/LP low pressure kiln collector shown with penthouse, monorail hoist system, and screw conveyor system*

# FILTER CONFIGURATIONS



	Rectangular	Cylindrical
A	bag exchange from dust side	bag exchange from dust side
B	bag exchange from clean gas side TRL (Top Removal Low), low clean gas chamber with roof doors	bag exchange from clean gas side TRL (Top Removal Low), low clean gas chamber with pivoting or hinged top
C	bag exchange from clean gas side TRH (Top Removal High), walk-in plenum	bag exchange from clean gas side TRH (Top Removal High), walk-in plenum
1	filter top	hopper filter
2	bin mount unit	bin mount unit
3	hopper filter	filter top
I	raw gas inlet below tube sheet	raw gas inlet into hopper
II	raw gas inlet into hopper	raw gas inlet below tube sheet
III		tangential raw gas inlet with internal cyclone separation
IV		tangential raw gas inlet with cyclone separation

# BAG REPLACEMENT AND FILTER CONTROL

MikroPul clampless Bayonet-Venturi-Technology allows quick and safe installation of bags and retainers. With a simple tool, venturies, bags and cages are fastened inside the tube sheet. A sewn in gasket at the top of the bags provides sealing and prevents the bags from falling through the tube sheet during maintenance. The bayonet rings are riveted or bolted into the tube sheet. As further advantage, bag retainers are electrically grounded, without need for earthing straps.



*Bag Fastening in Tube Sheet*

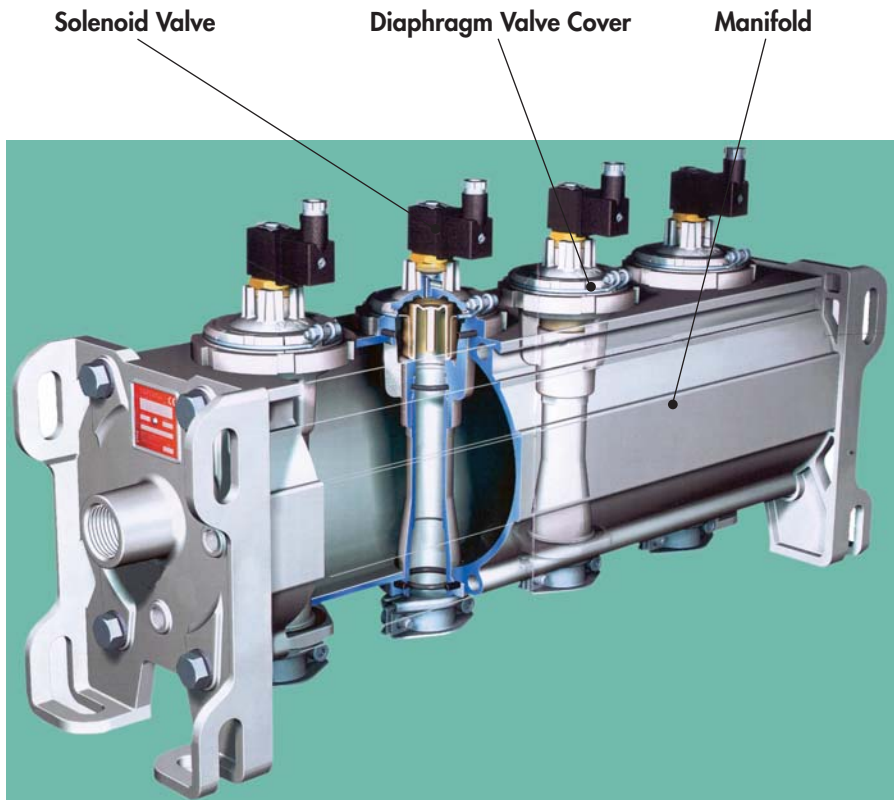
### Bag Exchange

To install or dismantle filter bags, blow pipes are removed. The standard version features a coupling for each pipe. Alternatively, a faster bag access can be provided through pivoting pipe groups.

### Integrated Diaphragm Valve System

Compressed air reservoir and diaphragm valves are integrated into one

unit. This combination provides a higher efficiency and a lower air/gas pressure requirement. The manifold body is designed in aluminium die casting. Corrosion and other negative impacts on the valve function are eliminated. No control/discharge pipe is necessary since solenoid valves are mounted directly to the manifold, building the outside bag cleaning system.



*IMV System*

### Setronic Filter Cleaning Control

Depending on time and/or pressure, the Setronic Filter Cleaning Control determines the bag cleaning cycles by either adjustable interval and/or on reaching a preset differential pressure level. The modular design is available in standard or ATEX version. Computer or PLC control is possible via RS 485 interface. A bus-compatible master/slave operation with parallel programming is available.

### Emtronic Filter Monitor

The MikroPul Emtronic DEM-C offers an easy and inexpensive solution to monitor dust emission behind dust filters. The triboelectric effect generates an electrical current which is processed and provided by the device as a common analogue signal. It is easy to install and to maintain, but offers high accuracy.



*Emtronic Filter Monitor*

# MIKROPUL SUPPORT

## Maintenance

MikroPul backs up our products and systems with worldwide customer support. Contact us any time you need help.

## Spare parts

MikroPul systems are known for long lasting, reliable operation. Using original MikroPul spare parts ensures that your plant always operates with maximum performance. We supply a full line of parts, from gaskets, filter bags, retainers, pulse valves or timers and differential pressure gauges to major components for all our products. High wear items are kept in stock for immediate shipment.

## Service

MikroPul provides an array of services to help you select, install, operate, and maximize your equipment investment. If your collector needs upgrading to meet increased demands or process changes, our engineering and service staffs are here to help you.

Services include:

- Process analysis
- Inspections of plants and components
- Converting old equipment to new technology
- Conversions/Replacements
- Maintenance seminars
- Technical training



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INNOVATION IN FILTRATION