



## FIBER BED MIST COLLECTORS



### System Design

The **Monroe Environmental**® Fiber Bed Mist Collector is a custom designed unit consisting of a continuous-duty, aerosol coalescing filter, fan assembly and, when needed, an optional pre-filter stage.

Mist is coalesced in a deep bed filter consisting of micro-fine fibers. The compacted media is in the form of cylindrical elements. These long-life filters can provide several years of service before replacement is necessary.

When the mist quantity is high and/or dust particles, pre-filtering is provided by separate filters. The Monroe Fiber Bed Mist Collector is available in capacities from 500 to 50,000 CFM in a single unit and may be integrated with existing duct work.

The Monroe Fiber Bed Mist Collector is well suited for many oil mist applications including asphalt fumes and synthetic fiber processing.

### High Performance

Many industrial and chemical applications generate submicron mists. The Monroe Fiber Bed Mist Collector, developed after lengthy research and testing, is an ideal solution for these troublesome mists. Mist particles are efficiently removed through interception, inertial impact, diffusion (Brownian movement) and gravitational sedimentation.

The Monroe Fiber Bed Mist Collector removes particles as fine as 3 micron and below. While normal filters permit these particles to re-entrain into the outgoing clean air Monroe's self draining filter is designed to prevent oil re-entrainment and recirculate clean air to the atmosphere.

Monroe carefully selects fiber bed filters to give constant efficiencies as high as 99.5% by weight for < 3 micron particles.

### Custom Built Units

For special applications, when mist is generated at high temperatures, Monroe provides custom designed condensing heat exchangers. Gas to air or gas to water heat exchangers are offered, depending upon the application. Optional HEPA filters can be added as a final stage for recirculating clean air back into the workplace.

#### Features

- Fiber bed filtration
- Oil, mist, smoke and vapor
- Acid mist and fumes
- Efficiencies to 99.5% by weight for < 3 microns
- Capacities from 500 to 50,000 CFM
- Continuous draining during operation
- Low maintenance
- Easy to use filter clamps for ease of maintenance

## Multi-Stage Filtration

For difficult applications where there is a high concentration of mist or the mist is dust laden, Monroe provides multistage filtration with various pre-filtering elements followed by the fiber bed filters.



*The Monroe Fiber Bed Mist Collector removes particles as fine as 0.3 micron and below. Monroe's self-draining filter is designed to prevent oil re-entrainment and recirculate clean air to the atmosphere.*

## Special Features

### A wide range of construction materials.

Heavy gauge steel, stainless steel, and nonmetallic units are available to meet specific needs.

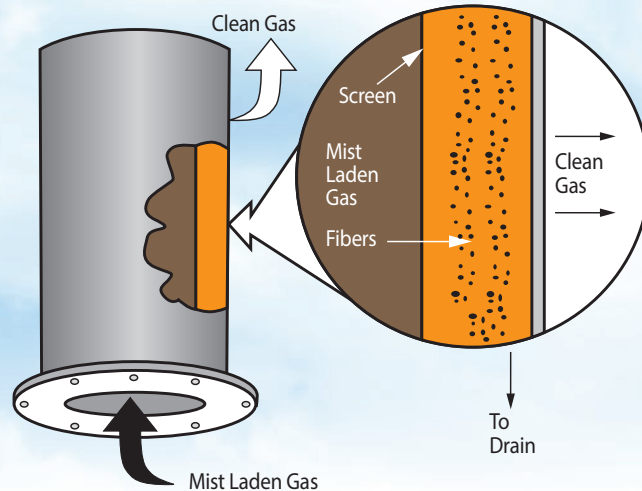
**Large, easy to open access doors** with airtight seals, for all serviceable areas.

**An AMCA rated fan** on the outlet side of the collector with either a direct coupled motor or a "V" belt drive.

**Quite operation.** Rubber isolation sleeves, vibration mountings, and sound attenuators are available for the fan assembly if needed.

**Optional differential pressure gauges** are available to indicate filter pressure drops.

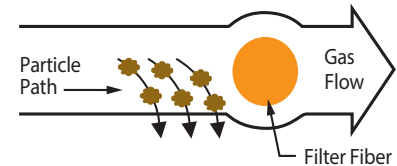
**Complete electrical controls** are available to meet customer application requirements.



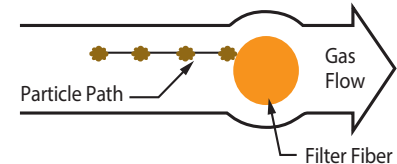
## Filtration Efficiency

The mist particles in the Monroe Fiber Bed Collector are deposited on the filter in four ways:

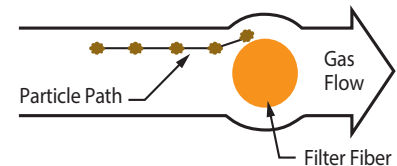
1. **Gravitational sedimentation** occurs for heavier particles or droplets in the first stage and for coalesced droplets in the final stage.



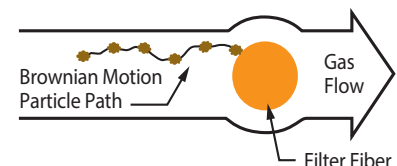
2. **Inertial impaction.** Particles are unable to adjust quickly enough to the abruptly changing streamlines in the vicinity of fibers (>3 microns).



3. **Interception.** Particles follow a gas streamline that comes within one particle radius of the surface of the fiber (1 to 3 microns).



4. **Diffusion or Brownian movement** greatly enhances the submicron particles tendency to attach themselves to fibers due to their random movement (<1 micron).



## Applications

- Machining operations
- Metal cutting
- Metal forming
- Steel and aluminum
- Rolling mills
- Tool and die
- Parts washer exhaust
- Synthetic fiber processing
- Food processing
- Sulfuric acid plants
- Produced oils and coolants
- And many others



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