OIL MIST COLLECTORS
WHY IS OIL MIST FILTRATION NECESSARY?

Oil mist and smoke are typical in almost every metalworking operation and have a potentially harmful impact on employees’ health, equipment and overall production performance. Due to significant hazards associated with metalworking fluid aerosols, a number of strict norms and regulations have been established on occupational exposure limits and indoor air quality.

Airborne particles produced during metalworking operations are linked to a number of health issues, from respiratory problems to certain types of cancer.

Metalworking fluids collected on walls and ceilings create slippery surfaces and increase the risk of work hazards. Greasy floors create numerous opportunities for tripping, slipping and falling, putting employees’ safety at risk.

Oily fluid on machine equipment is very likely to slow down production and cause unplanned shutdowns for maintenance, driving up costs. Talking about costs, proper oil mist filtration will maximize the amount of coolant that can be retrieved and returned back to the process, resulting in major savings over operation time.

MARKET-LEADING FILTRATION for oil mist in metalworking

WSOFlex IS THE ULTIMATE FILTRATION SOLUTION FOR APPLICATION GENERATING METALWORKING FLUIDS AEROSOLS

By combining smart, versatile, and compact design with media technology of the highest performance and efficiency, WSOFlex series evolve with your metalworking applications and maximize production uptime. WSOFlex collectors provide a complete solution for water-soluble coolant, straight oil, and the most challenging, oily smoke.

Additionally, WSOFlex collectors help reduce the adverse effects of exposure to metalworking fluids, comply with indoor air quality standards, cut down maintenance and housekeeping costs, and enhance product quality. WSOFlex keeps your working environment safe and clean - guaranteed by Donaldson’s global leadership in filtration solutions for over 100 years.
THE WSOFlex DIFFERENCE

HIGH PERFORMANCE AND HIGH EFFICIENCY FILTRATION
- Multistage coalescent filtration
- Cross-flow design for better drainage
- Advanced Synteq XP™ and HEPA media for the most challenging applications

EASY, QUICK AND PREDICTABLE MAINTENANCE
- Pivot lever securely retains the filter element
- Easy access to filter elements
- LCD controller with programmable Δp alerts

FITTS YOUR ENVIRONMENT
- Available for machine mounting and floor stands
- Multiple mounting configurations
- Available in 2 sizes

IMPROVE WORKING CONDITIONS
- High performance filtration
- Zero leak design

“ONE-FOR-ALL” FLEXIBILITY
- 3 in 1 solutions for water-soluble coolant, straight oil, and oily smoke with a simple filter change
- Optional filtration stages to efficiently cover specific applications
- Airflow can be controlled by damper valve

Smoke

Water

Oil
HOW IT WORKS

WSOFlex is specifically engineered for the demands of your wet machining applications. Up to three filtration stages work together to clean the air with a focus on maximum efficiency and a low maintenance cost.

The WSOFlex provides the most efficient oil mist filtration in the most demanding metalworking applications.

BENEFITS OF CROSS-FLOW FILTER DESIGN

Cross-flow filter design for better drainage means longer filter life. Dirty air flows horizontally through the walls of the WSOFlex filter, perpendicular to drainage of collected and coalesced mist. This design promotes optimum drainage, which extends filter life and returns collected coolant for re-use. Conventional mist collectors have an up-flow design which impedes drainage and shortens filter life.
Combining superior media technology with effective multistage filtration, the WSOFlex offers high performance, lower pressure drop and longer filter life. Engineered for superior drainage, the WSOFlex cross-flow design optimises the coalescence process, ensuring maximum coolant recovery and reuse.

**STAGE ONE**
Contaminated air enters the WSOFlex mist collector through the dirty air inlet, located at the bottom of the unit. The air then passes through the pre-filter which is designed to collect and coalesce large droplets and particles. Depending on the application, a different first stage prefilter can be selected.

**STAGE TWO**
At this point, the air still contains smaller mist droplets. The filter element is the heart of the mist collector as it ensures that only cleaned air is returned to the plant environment. The filter is positioned vertically, allowing droplets to drain and collecting additional particulate from the airstream.

As mist particles coalesce, the droplets become large enough to run down the filter element. The filtered air exits through the clean air outlet and can be recirculated into the environment.

**STAGE THREE**
For applications that generate very fine particles or smoke, or when workers are directly exposed to discharge air from the collection system, a HEPA filter is recommended. With a rated efficiency of 99.97% on 0.3 m particles, this is the final step to filtration performance excellence.

- **Metal wire mesh** for most water-soluble mist
- **Thin metal screen** for heavy particle loading applications
- **Polypropylene mesh** for heavy liquid loading applications
- **HEPA 99.97% efficiency**
- **DRYFLO®**
  Dryflo cartridge filters use a combination of two proprietary filtration media best suited for applications using water-soluble coolants.
- **SYNTEQ XP™**
  Synteq XP offers the highest efficiency for the most challenging applications. It is especially designed for mist from straight oil and smoke machining.
BOOST PRODUCTION
with high-efficiency Oil Mist filtration

Matching the right oil mist solution with specific application requirements is critical for ensuring peak performance. WSOFlex benefits from Donaldson’s wide range of filter media technologies and our expertise to apply them appropriately.

DRYFLO®
EFFECTIVE AND EFFICIENT

Dryflo filter media is made from proprietary synthetic media incorporating both small and large fibers. A three-layer wrap of synthetic high-loft material collects small mist drops into larger oil droplets. Along with vertically oriented pleats, the filter cartridge incorporates the Pleatloc™ media spacing system, which enhances drainage and provides a lower pressure drop, higher filtration efficiency and less re-entrainment of collected mist.

WSO with SYNTEQ™ XP
ADVANCED FILTRATION FOR THERMALLY GENERATED OIL MIST

The WSO filter combines the revolutionary Synteq XP media for oil mist collection with an oblong shape offering up to 45% more filtering surface than traditional solutions. WSOFlex delivers significant improvement in draining, airflow performance, and efficiency compared to other technologies for application generating straight oil mist and smoke aerosols.

SYNTEQ XP MEDIA TECHNOLOGY WITH RESIN-FREE, BINDING FIBERS

- Engineered blend of small and large fibers, with proprietary, resin-free bonding system
- Small fibers are scientifically proven to increase efficiency
- Large fibers provide structural support and clear drain channels
- Proprietary bonding system stabilizes pore structure for optimum performance

TRADITIONAL MIST CARTRIDGE MEDIA (WITH RESINS)

- Made with resins to bond fibers
- Resins reduce air pathways and block drainage

TRADITIONAL MIST PANEL FILTER MEDIA (LOOSE FIBERS)

- Four-layer media structure without fiber bonding
- Fibers sag under weight of oil
- Fiber movement creates larger holes that pass oil

WATER SOLUBLE
Typical particle size: 2.2-20 micron
> Largest mist particles
> 99.8%* removal efficiency

STRAIGHT OIL
Typical particle size: 0.8-5 micron
> Submicron oil mist
> 99.5%* removal efficiency

SMOKE AEROSOLS
Typical particle size: 0.07-1.2 micron
> Smallest aerosols from machining
> 99.97%** removal efficiency

* Stated efficiency typical for water-soluble and straight oil applications.
** Stated efficiency typical for oily smoke application using a HEPA final filter.

Polyester binding fiber
Glass fiber for filtration
United Gear & Assembly, Inc. (UGA) is a manufacturing company of precision gears, shafts & related assemblies used by OEM manufacturers worldwide. One of their plants was dealing with excessive smoke generated from hobbers during the gear production process.

Hobbing is a machining process in which gear teeth are progressively generated by a series of cuts with a helical cutting tool called a hob. Gear hobbing uses sulfuric oil, which generates a high degree of smoke. Dry hobbing, while cutting down on the amount of oil used, still generates excessive smoke when the gears are cleaned with compressed air.

“The sulfuric oil used in our gear hobbers was generating too much smoke – our facility was filling up in just a few minutes. Our people were complaining, and we needed a way to stop it,” said Tom Huppert who is in charge of maintenance at United Gear & Assembly, Inc.

With Donaldson’s oil mist collection technology, the problem was resolved. “Both our maintenance time and cost have been significantly reduced, and our employees are no longer complaining about the smoke in our facility,” said Mr. Hubbert. “We had tried other collectors. They vibrated too loudly, their filters had to be changed too often – which added to our cost – or parts and service were not immediately available to us. Donaldson has met our expectations in all levels of performance.”
## TECHNICAL SPECIFICATIONS

### UNIT SPECIFICATIONS MMA - MMB

<table>
<thead>
<tr>
<th>No. of filter elements</th>
<th>dimensions in mm</th>
<th>Approx. net weight (kg)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
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<tr>
<td>MMA</td>
<td>1</td>
<td>580</td>
</tr>
<tr>
<td>MMB</td>
<td>1</td>
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</table>

* depends on type of configuration

Operating temperature: 5° to 60°C

Standard finishing: RAL 5019 (blue)*

* Corrosion category C equivalent; this paint has been successfully tested resistible to mineral/cutting oils/liquids.

### PRE AND FINAL FILTERS

#### PRE FILTERS

<table>
<thead>
<tr>
<th>Material</th>
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<th>MMB</th>
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<tbody>
<tr>
<td>Metal wire</td>
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<td>2625083</td>
</tr>
<tr>
<td>Thin screen</td>
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<td></td>
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<tr>
<td>Polyprop</td>
<td>2634286</td>
<td>2634288</td>
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<tr>
<td>Digit code</td>
<td>8PPAM0323000</td>
<td>8PPAM0367100</td>
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</table>

### DRYFLO - WSO FILTERS

<table>
<thead>
<tr>
<th>Filter</th>
<th>Height (mm)</th>
<th>Outer Width (mm)</th>
<th>Code</th>
<th>Filtration area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMA Dryflo</td>
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<td>276</td>
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<td>MMB Dryflo</td>
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<td>MMA WSO</td>
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<td>387</td>
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<tr>
<td>MMB WSO</td>
<td>382</td>
<td>502</td>
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</table>

### HEPA FILTERS

| MMA             | 570        | 295               | 8PPAM0323000 |
| MMB             | 1100       | 325               | 8PPAM0367100 |

### AC FAN MOTOR SPECIFICATION

<table>
<thead>
<tr>
<th>MMA</th>
<th>MMB</th>
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<tbody>
<tr>
<td>Power</td>
<td>0.75 kW</td>
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<tr>
<td>Voltage</td>
<td>230 V / 400 V</td>
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<tr>
<td>Cycle</td>
<td>50Hz</td>
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<tr>
<td>Speed</td>
<td>~ 2750 RPM</td>
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<tr>
<td>Noise level (ISO 3744)</td>
<td>69 dB</td>
</tr>
</tbody>
</table>

**All measurements are done at initial conditions:**
- 2 stage filtration
- No HEPA
- Damper valve fully opened

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Donaldson, your single filtration source

Donaldson offers a complete range of solutions and services designed to improve your productivity, guarantee production quality and help protect the environment while reducing energy consumption and total cost of ownership.

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Contact us on [iaf-europe@donaldson.com](mailto:iaf-europe@donaldson.com)