



Donaldson<sup>®</sup>  
FILTRATION SOLUTIONS

**WSOFLEX**

# OIL MIST COLLECTORS



Donaldson.  
**Torit<sup>®</sup> DCE**



# MARKET-LEADING FILTRATION

for oil mist  
in metalworking

## WHY IS OIL MIST FILTRATION NECESSARY?

Oil mist and smoke are typical in almost every metalworking operation and have a potentially harmful impact on employee' 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 operation 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 employee' 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.

### 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 WSOFl<sub>ex</sub> DIFFERENCE



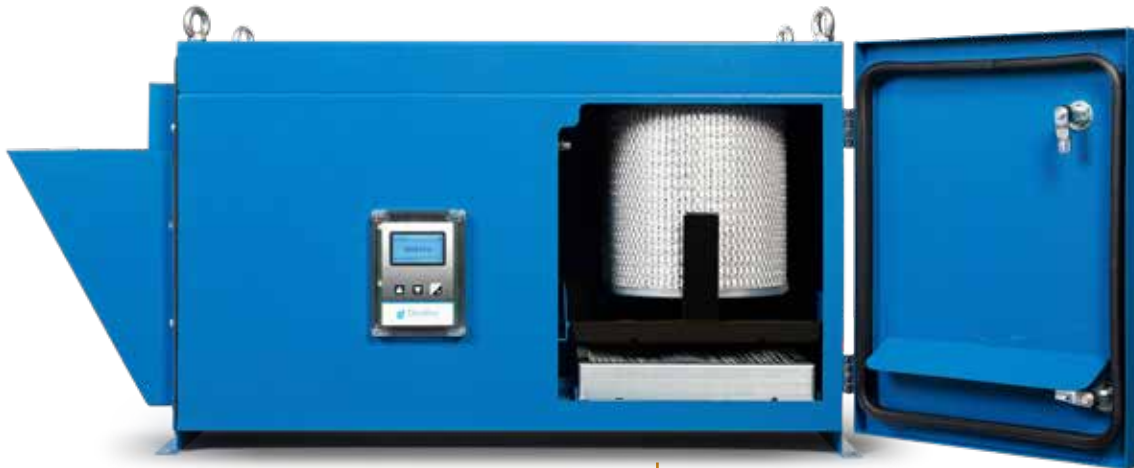
## HIGH PERFORMANCE AND HIGH EFFICIENCY FILTRATION

- Multistage coalescent filtration
- Cross-flow design for better
- Advanced Synteq XP™ and HEPA media for the most challenging applications



## «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



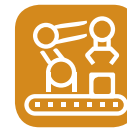
## IMPROVE WORKING CONDITIONS

- Zero leak design
- Quiet operation
- HEPA filters for critical efficiency specifications or when workers are directly exposed to the discharge air from the mist collection system.



## EASY, QUICK AND PREDICTABLE MAINTENANCE

- Pivot lever securely retains the filter element
- Easy access to filter elements
- LCD controller with programmable  $\Delta p$  alerts



## FITS YOUR ENVIRONMENT

- Available for machine mounting and floor stands
- The design can accommodate AC and EC fans
- Available in 2 sizes



# Smoke



# Water

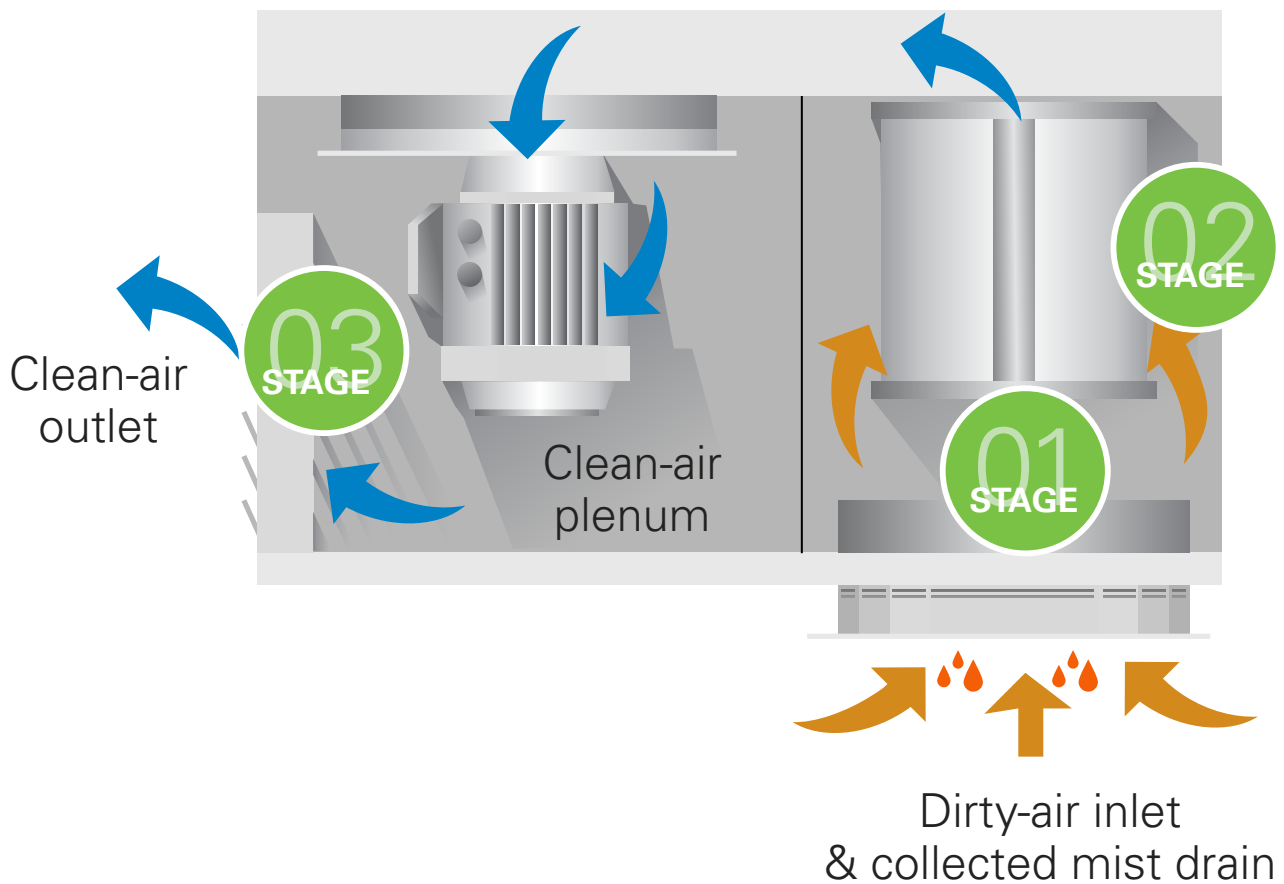


# Oil

# 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.

# 01 STAGE

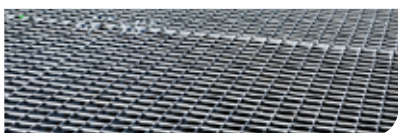
## STAGE ONE

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.



**Metal wire mesh**  
for most water-soluble mist



**Thin metal screen**  
for heavy particle loading applications



**Polypropylene mesh**  
for heavy liquid loading applications

# 02 STAGE

## 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.



### 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.

# 03 STAGE

## 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.



### HEPA

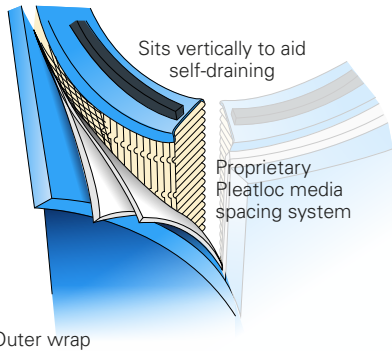
99<sup>97</sup>%  
efficiency

# 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**.

#### DRYFLO

##### WATER SOLUBLE

Typical particle size: 2-20 micron

- > Largest mist particles
- > **99.8%\*** removal efficiency

#### WSO

##### STRAIGHT OIL

Typical particle size: 0.8-5 micron

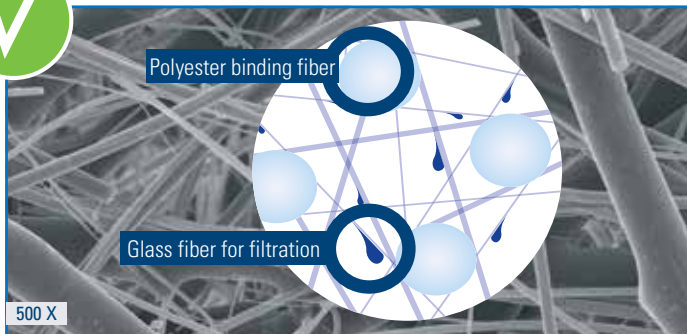
- > Submicron oil mist
- > **99.5%\*** removal efficiency

##### SMOKE AEROSOLS

Typical particle size: 0.07-1.2 micron

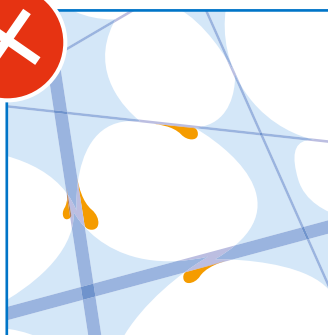
- > Smallest aerosols from machining
- > **99.97%\*\*** removal efficiency

\* Stated efficiency typical for water-soluble and straight oil applications. The use of 95% DOP or HEPA filter may be required.  
\*\* Stated efficiency typical for oily smoke application using a HEPA final filter.



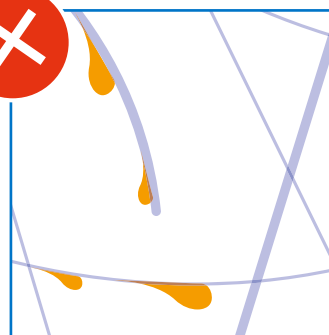
#### SYNTEQ XP MEDIA TECHNOLOGY WITH RESIN-FREE, BINDING FIBERS

- 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





**INDUSTRY** Machining

**PROBLEM** Excessive smoke generated from hobbbers during gear production process

**SOLUTION** Donaldson WSO filters significantly reduces the amount of smoke in the plant, maintenance time, and cost

# REAL BENEFITS for your real-world applications

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 hobbbers 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 hobbbers 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.

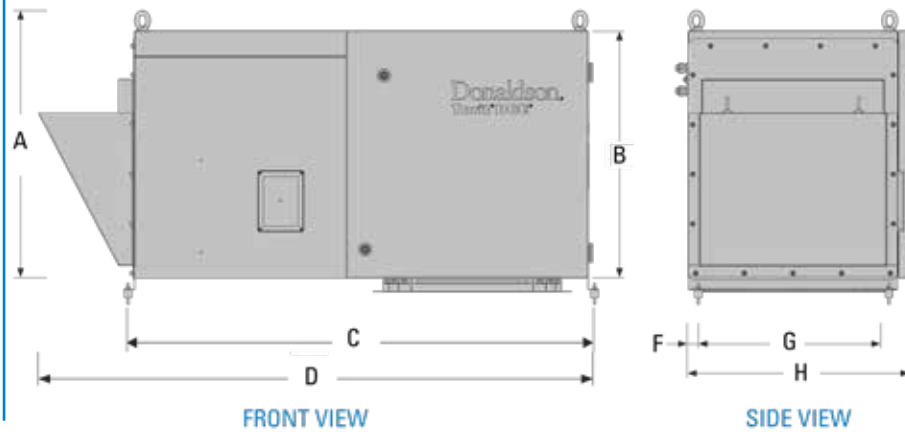
With Donaldson’s oil mist collection technology, the problem was resolved. **“Both our maintenance time and cost have been significantly reduced, and our employees are no longer complaining about the smoke in our facility”, said Mr. Hubbert.** “We had tried other collectors. They vibrated too loudly, 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

	No. of filter elements	dimensions in mm							Approx. net weight*
		A	B	C	D	F	G	H	(kg)
MMA	1	580	530	883	1100	25	400	517	80
MMB	1	938	688	1223	1470	26	500	617	110

\* depends on type of configuration



<b>Operating temperature</b>	5° to 60°C
<b>Standard finishing</b>	RAL 5019 (blue)*
<small>* Corrosion category C equivalent; this paint has been successfully tested resistible to mineral/cutting oils/fluids.</small>	

## PRE AND FINAL FILTERS

	PRE FILTERS		
	Metal wire mesh	Thin screen	Polyprop
MMA	2622465	2622464	2622466
MMB	2634286	2634288	2634287

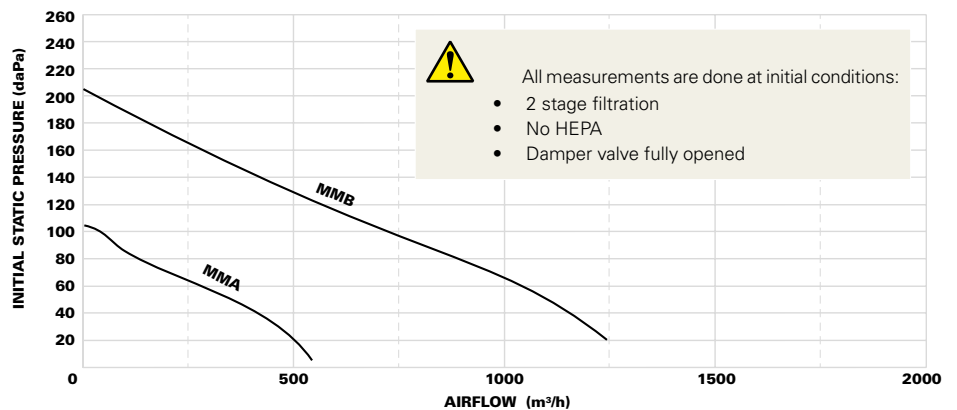
	HEPA		
	Q (m³/h)	Initial ΔP (Pa)	Digit code
MMA	570	295	8PPAM0323000
MMB	1100	325	8PPAM0367100

## DRYFLO - WSO FILTERS

		Height	Outer	Width	Code	Filtration area
Dryflo	MMA	206	276	-	2622471	3.8
	MMB	305	417	-	2625083	7.6
WSO	MMA	254	387	241	P033271	4.2
	MMB	382	502	362	P786780	7.9

## AC FAN MOTOR SPECIFICATION

	MMA	MMB
<b>Power</b>	0.75 kW	1.1 kW
<b>Voltage</b>	230 V / 400 V	230 V / 400 V
<b>Cycle</b>	50Hz	50Hz
<b>Speed</b>	~ 2750 RPM	~ 2750 RPM
<b>Noise level (ISO 3744)</b>	69 dB	72 dB



### 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.

**Donaldson Europe B.V.B.A**  
 Interleuvenlaan 1  
 B-3001 Leuven · Belgium  
 Phone +32 (0) 16 38 38 11

**Donaldson Filtration (GB) Ltd.**  
 Humberstone Lane · Thurmaston  
 Leicester · LE4 8HP · United Kingdom  
 Phone + 44 (0) 116 269 6161

Discover our range on [www.donaldson.com](http://www.donaldson.com)  
 Shop for filters the easier way at [shop.donaldson.com](http://shop.donaldson.com)  
 Contact us on [iaf-europe@donaldson.com](mailto:iaf-europe@donaldson.com)