



INDUSTRIAL AIR FILTRATION

Wet Machining Mist Control



Wet Machining

The Proliferation of Mist in CNC Machining

As demand has grown for higher quality parts with tighter tolerances at higher output rates — and all at a lower cost — the amount of coolant and lubricant, the pressure at which coolants and lubricants are delivered, and the speed of the machining tools have increased. The quantity of mist generated has also increased, while the particle size of mist has decreased.

This results in ever-decreasing indoor air quality and production challenges at manufacturing plants, requiring improved mitigation methods to reduce airborne mist levels.

Mist Mitigation Needs Vary

Machining and metalworking operations vary in how mist is formed, how much mist is generated, and size of the mist droplets to be captured. That's why it's important to choose a mist control solution that fits your specific needs. Mist collectors, when properly selected and applied, help maintain a cleaner work environment and reduce maintenance on process machinery in manufacturing facilities.

A Proven Partner

Donaldson is a global provider of filtration solutions for manufacturing industries. Our advanced technology, extensive portfolio of filtration products, and unrivaled customer support help manufacturers meet their clean air needs and reduce long-term costs of operation.

Backed by more than 250,000 global installations over four decades, and a select network of partners, no other equipment manufacturer is more capable — or more trusted — to solve dust, fume and mist collection challenges than Donaldson.



We Know Mist Collection

For more than 40 years, Donaldson has provided mist collection and filtration expertise for a range of mist-producing applications, including machining and metalworking.

With more than 90,000 mist collectors installed, Donaldson has the expertise to provide a range of solutions for mist control, helping machining facilities maintain safe and efficient operations.

Wet Process Applications

Principle applications for Donaldson mist collectors include wet processes such as:

- Machining
- Turning
- Cutting
- Forming
- Grinding
- Quenching



Example images of applications.

Challenges

Coolant and lubricant mists — whether water-soluble, oil or oily smoke — can negatively impact indoor air quality, adversely affecting workers who are exposed to it, and lead to maintenance problems.

That's why manufacturers are under increased pressure to consider the potential impact of unmanaged machining mist on their employees, equipment and facilities.



Specifying for Optimal Efficiency

With so many variables in play, it can be difficult for a manufacturer to dial in the appropriate mist collection system. Too much coolant — or too little — reduces the life of machining tools and equipment and can cause maintenance problems. In addition, metalworking mist often forms liquid droplets that can settle on surrounding surfaces, decreasing worker efficiency and posing a slipping hazard.



Meeting Regulations

Effective mist control is critical for meeting OSHA and ACGIH standards to protect workers from exposure to potentially harmful substances, as well as ANSI/NFPA and regulatory requirements governing fumes, dust and particulates generated during manufacturing.



Ongoing Support & Maintenance Available

If a machining mist control system is not properly maintained, you will have an ongoing struggle on your hands. From break-downs and compromised air quality to accidents and injuries, poor machine mist management can cause a host of health and production problems. Access to local support resources is important.

Solutions

Our commitment to advancing filtration for a cleaner world drives our ongoing ability to meet the health and safety needs of our equipment partners. With global reach and a local touch, Donaldson offers a clear path to seamlessly integrate customized and reliable water, smoke, or oil mist management solutions into any machining processes. Just ask Donaldson!

Decades of Experience

At Donaldson, we understand the challenges associated with manufacturing, and we can provide proven solutions to the challenges inherent in the process. Our expert consultation helps ensure the proper level of airflow control for the highest levels of productivity and efficiency — for every machining application — with seamless OEM equipment integration.

Regulatory Expertise

Our local technical specialists understand the laws and health concerns surrounding metalworking fluids, which drive the need for mist collection. There are several mist collector technologies and mist filtration medias available, each with their advantages and disadvantages, each designed for specific filtration needs and requirements, such as managing indoor air quality of metalworking fluids down to 0.3 microns.

Donaldson has the expertise to help manufacturers comply with local, state, and federal indoor air quality standards.

Configurable, Built to Last, Higher Efficiency

Donaldson Torit® mist collectors provide the optimal level of mist control for every operation with the industry's highest level of build quality including:

- Water, smoke or oil options with airflows from 100-5,500+ CFM
- Durable motors and build quality
- UL certified components
- Backed by our 10-year equipment warranty

Our broad range of advanced filter media improves performance, removes submicronic particles, and extends the life of your filters and collector. Our mist collectors and filters have been engineered for easy maintenance and management.

Higher quality equipment and filters means fewer maintenance headaches.

Ensure the proper level of airflow control for the highest levels of productivity and efficiency — for every machining application — with seamless OEM equipment integration.



Smart Collector

BY DONALDSON

Donaldson's Industrial Filtration Services

Donaldson's Industrial Filtration Services allows users to remotely monitor mist collection equipment while providing real-time operational data to help optimize collector performance.

The Right Filter Media Makes a Big Difference

Matching the right mist solution with specific application requirements is critical for ensuring performance. Donaldson offers a range of high-efficiency filter media technologies and has dedicated expertise to appropriately apply them.

Synteq XP™ Media Technology

Proprietary Synteq XP media is engineered with a blend of small and large fibers with a resin-free bonding system. The small fibers are proven to increase filtration efficiency, while the larger fibers provide structural support and clear drain channels. The result is superior draining, resulting in lower pressure drop and longer filter life.

High Loft Fiberglass Media

High loft fiberglass media is a good choice when there is a large amount of swarf in the mist, or when the mist is waxy, sticky, or excessively dirty. Typically applied in surface grinding, brazing, die casting, EDM, or soldering operations, high loft fiberglass has great loading characteristics for solid particulate yet still allows the collected mist to drain. Filters made from high loft fiberglass are available in 65% or 95% ASHRAE efficiency levels.

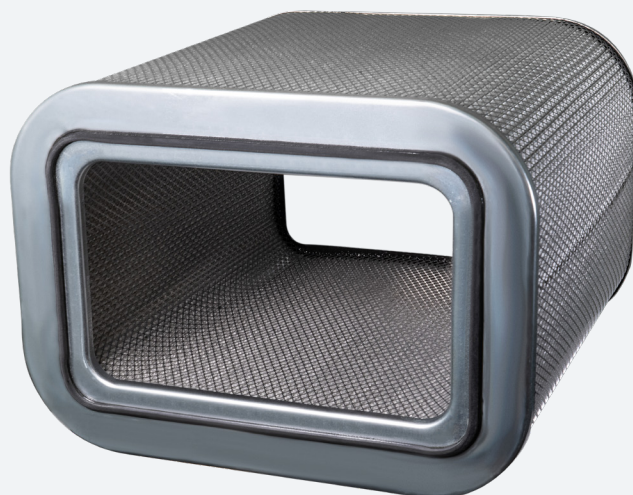
95% DOP Filters

95% DOP filters are often used as after filters to improve the efficiency of the primary mist collection system. They remove 95% of particles/mist droplets 0.3 microns in size, have good holding capacity, and meet most emission standards.

HEPA After Filters

HEPA after filters remove 99.97% of particles/mist droplets 0.3 microns in size. The filters are used in conjunction with a primary mist collection system when there are critical efficiency specifications or when workers are directly exposed to the discharge air from the mist collection system.

Donaldson's portfolio of industry-leading media technologies and replacement filters is available at Shop.Donaldson.com.



Case Study: Mist Capture During Bearing Manufacturing

Challenge

When a Midwestern bearing manufacturer installed its centralized collection system many years ago, it was state-of-the-art, top-of-the-line — a real performer in its day. But with the passing of time, innovations in filtration technology had outpaced the efficiency of the aging behemoth which included miles of ductwork that hung from the plant's ceiling. The centralized system was inefficient and outdated, resulting in excessive operating costs.

Solution

Donaldson mounted a WSO Mist Collector on each of 20 machines on the manufacturing line. The WSO Mist Collector provides three filtering solutions for the three mist categories: water-soluble coolants, straight oil, and oily smoke — an ideal solution for the wet manufacturing processes used in bearing manufacturing. As coolant is sprayed on hot metal during the bearing-forming process, mist is generated that can be harmful to the operator. The WSO Mist Collector captures the mist using a cross-flow filter manufactured with Synteq XP filter media for optimum performance.

By installing a dedicated WSO for each machine on the production line, the bearing manufacturer realized a host of operating efficiencies:

- Reduction in energy usage, as only those machines being operated require the use of the WSO collection system;
- Line operators can monitor filter maintenance by the prominently placed differential pressure gauge, thereby extending filter life; and
- Simplified servicing for less maintenance time and cost.

Why Donaldson?

When an industrial process produces mist, a Donaldson Torit mist collector can:

- Provide cleaner air for workers
- Reduce exposure to hazardous mist fluids
- Aid compliance with indoor air quality standards
- Reduce maintenance costs
- Improve part quality
- Provide protection for electronics
- Aid in plant safety and housekeeping

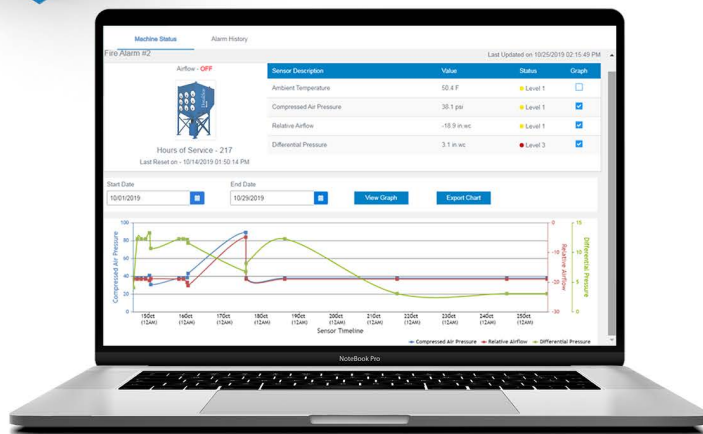
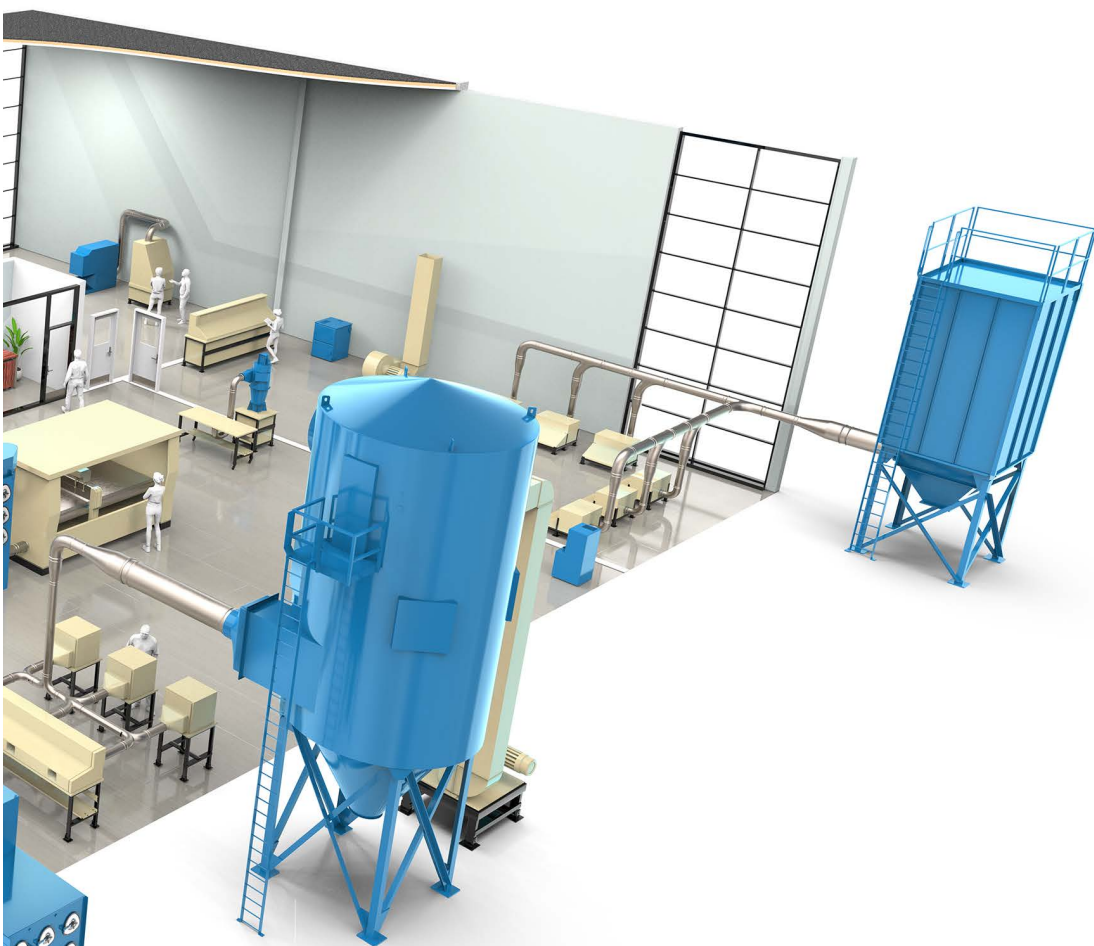




With a Donaldson Smart Collector, organizations can easily track dust collector operations in real-time and leverage the data to optimize performance.

Meeting Your Needs

Donaldson brings more than a century of filtration experience, industry-leading technology, and unrivaled support to proficiently address dust, fume, and mist collection challenges for our customers. Our solutions have become an integral part of many organizations' mitigation strategies. With our Consultative, Comprehensive, and Connected approach, we can help ensure you get the ideal solution for your processes and applications.



To discuss mist control requirements and solutions for your facility or specific application, contact your Donaldson representative, or scan the QR code.



Mist Collection & Filtration Solutions

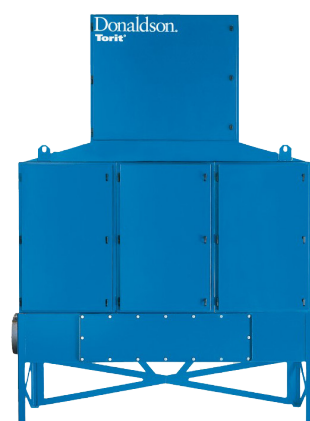
Donaldson mist collectors are available in a range of sizes from small individual machine collectors to large, centralized units, giving manufacturers more flexibility in creating a simplified solution with lowest total cost of ownership. All models feature solid construction built to last and are fully customizable to fit your footprint.



WSO Mist Collector



Centrifugal Oil Mist Collector



Modular MediaFilter™ Vertical Mist Collector



Mini-Mist Oil Mist Collector



Dryflo® Machine-Mountable Coolant Mist Collector



Modular MediaFilter™ Horizontal Mist Collector

Collecting Confidence

Donaldson's comprehensive dust collection solutions help process owners effectively address their dust, fume, and mist collection challenges by providing knowledgeable guidance, industry-leading equipment as well as unrivaled aftermarket service and support.

With our Consultative, Comprehensive, Connected approach to dust, fume, and mist control, Donaldson is with you every step of the way.



Consultative: Donaldson completes a thorough review with you, listening to your operational needs and challenges.



Comprehensive: With that understanding, we will develop a solution using industry-leading products and technology.



Connected: You will have unrivaled access to global aftermarket specialists, collector performance monitoring, along with service and support professionals providing the answers you need.



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