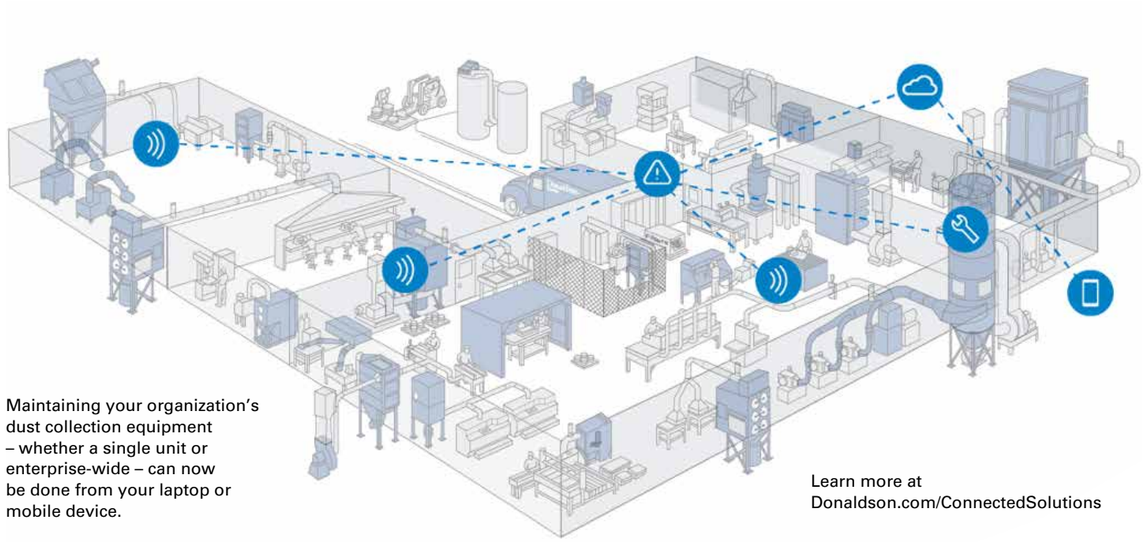
iCue™ Connected Filtration Monitoring for Dust Collectors

Donaldson
FILTRATION SOLUTIONS

Here Because We Heard You

Born out of a customer need for greater access to real-time performance data and support on their dust collectors, the Industrial Solutions group at Donaldson develops innovative technologies and services that enable organizations to track and maintain their filtration equipment more effectively. All while freeing up valuable time and resources to focus on mission-critical initiatives.

Building on more than a century of filtration experience and the latest IoT technology, Donaldson's iCue™ filtration monitoring is designed to remotely monitor a facility's dust collection equipment and provide operational insights. This data can help Donaldson's team of product specialists, dealers, or a manufacturer's maintenance team manage this critical equipment. Revolutionizing the way organizations can monitor, manage and optimize their industrial collection systems.



Maintaining your organization's dust collection equipment – whether a single unit or enterprise-wide – can now be done from your laptop or mobile device.

Learn more at Donaldson.com/ConnectedSolutions

Dust Collector Remote Monitoring Made Easy

Donaldson iCue Connected Filtration Monitoring tracks performance data of industrial dust and fume collectors – virtually eliminating the need to manually check readings.

By continuously monitoring equipment operation and putting real-time performance data and recommendations at your fingertips, iCue Monitoring can help:

Support Efficient Maintenance and Operation

- The operational status of all of your dust collectors is available from a single web-based dashboard
- Potential issues are identified before they create the need for larger, more time-intensive corrective action
- Manage and track compressed air and fan energy use to support your sustainability initiatives

Reduce Unplanned Downtime

- Key parameters on the collector are monitored, enabling users to proactively troubleshoot and identify maintenance needs
- Alerts are sent when pre-set thresholds are breached or your dust collector is operating outside the normal parameters

Manage and Track Regulatory Compliance Information

- Access real-time and historical performance data to complete compliance reports
- Manage potential exposure risks by monitoring airflow levels through the collector

Manage Work In Challenging Environments

- Help manage staff exposure by reducing the need to access equipment and lower exposure to harsh weather, heights, ice or debris
- Help support your overall environmental, health and safety management plan

CASE STUDY

Donaldson iCue Monitoring helped avoid unnecessary filter replacement, saving the customer over $5000 dollars.

A manufacturing plant utilizing a dust collector experienced a failed regulator that caused a compressed air increase of 50 PSI at the collector.

As a result, iCue Monitoring immediately generated a high compressed air alert which was reviewed by a Donaldson Product expert. The Donaldson team then contacted the customer, arranged a repair of the regulator and returned the collector to normal operating parameters.

By addressing the issue immediately the Donaldson team helped the customer avoid prolonged high pressure, which could have caused damage to the filters requiring them to be replaced, saving the customer over 5000 dollars in filter cost.

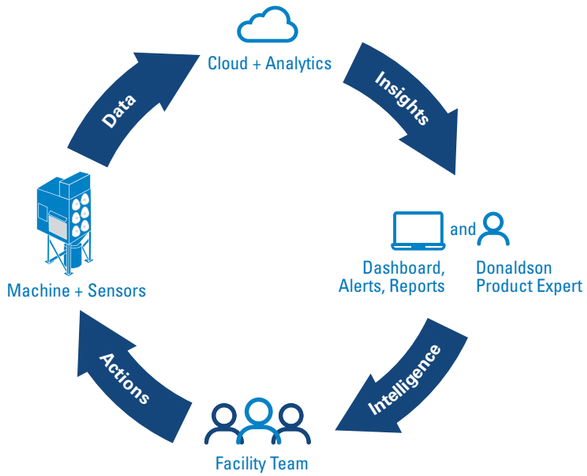
Savings calculated June 2022

Anytime Access to Insight

iCue Monitoring works with nearly all major brands of dust, fume and mist collectors, and includes a variety of sensor options so you can track the performance metrics that are most critical to your operation.

Machine data from each connected device is collected and sent to Donaldson's secure cloud, where it is transformed into actionable insights that are available on the iCue dashboard. This web-based dashboard displays the status of all dust collection equipment across your operation, and lets you or a Donaldson expert configure alarm levels and notifications.

- **A sensor integrated gateway** monitors the dust collector's core operation, tying into existing air lines and measuring several data points.
- **Aggregated data** is sent to Donaldson's secure cloud via a cellular connection, avoiding the need to link to a facility's internal network.
- **An easy-to-use online dashboard** enables visibility into all connected dust collectors at one or more facilities.
- **For more complex analysis,** plotted data over various sensors and timeframes adds understanding of longer-term performance trends.
- **Real-time alerts** notify responsible parties when issues arise that may require attention.
- **Status reports -** weekly or customizable reports summarize the overall status and performance of all connected dust collectors.



Dashboard Puts Data at Your Fingertips

Once the iCue Monitoring sensors are installed, a web-based dashboard display lets you see the status of all dust collection equipment across your enterprise. In addition to near real-time equipment status, you'll have access to historical trend data for each connected collector. Your dashboard also lets you set alarm thresholds based on the needs of your specific application or compliance requirements. When a data point crosses an alarm threshold, an email alert is sent out to the designated users of the application.

The dashboard and alerts can be monitored by Donaldson's product specialists, dealers, or your maintenance team, who will contact you if an issue occurs.

Real-time alerts, weekly status reports and detailed dashboards help you better manage your filtration, support uptime, and reduce operating costs.

CASE STUDY

How Monitoring Pressure Saved Nearly $20,000

A metalworking operation was experiencing short filter life (less than six weeks) for unexplained reasons. Their iCue Connected Filtration Monitoring indicated the compressed air pressure was inadequate to pulse-clean the filters.

Adjusting the compressed air system extended the average filter life from six weeks to one year, saving $19,703 USD annually in time, parts, and labor.

Savings calculated June 2020

Analytics and Integrated Sensors Gather Real-Time Performance Data

Because certain functions are important to monitor in all systems, iCue Monitoring utilizes several sensors integrated into its cellular gateway. Additional sensors are also available and can be combined to monitor additional parameters based on your maintenance, compliance and operational needs.

STANDARD MONITORING

A Differential Pressure
This sensor monitors pressure drop as air passes through the filter media. Differential pressure (dP) is a valuable indicator of filter condition, and many regulatory agencies require dP reporting for air permits. By continuously monitoring dP, the iCue service can provide early alerts about filter issues.

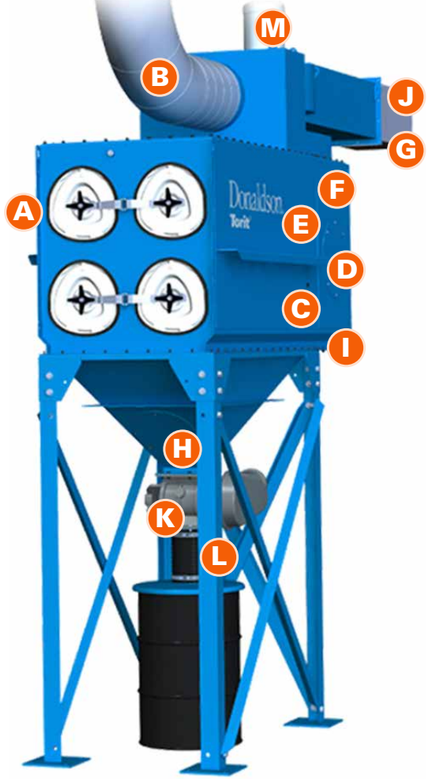
B Airflow
This sensor monitors relative airflow, air volume and velocity in the collector's main inlet duct, measuring whether there is sufficient airflow to pull dust into the collector. Low-trending airflow could be the result of a plugged or expired filter and lead to potential employee exposure.

C Compressed Air Pressure
This sensor monitors changes in the compressed air pulse that cleans the filters. Data from this sensor can alert you to the need to restore normal cleaning functionality, increasing filter lifespan and generating potential savings on parts, labor, and unplanned downtime.

D Gateway Temperature
This sensor promotes system longevity by tracking the temperature inside the wireless internet gateway device on the collector and providing alerts when optimal operating temperatures are exceeded.

E Pulse Valve Health
Pulse Valve Health monitors pulse valve functionality and pulsing frequency on collectors with up to three-manifolds to help detect compressed air problems or failed pulse valves which can affect filter life. If an issue arises with the pulse valves, the service sends an alert.

F Maintenance Hours of Service
The iCue service features a HOS feature that automatically detects when a machine is running, counts the hours of service and alerts users when it's time to perform regularly scheduled maintenance, based on their customized, pre-configured HOS thresholds.



OPTIONAL MONITORING

G Particulate Trend
This sensor monitors particulate trends in emissions. The particulate monitor provides alerts to prompt immediate attention before emissions limits are breached. It also provides accurate compliance data between tests, including documented evidence that particulate concentration is within defined regulatory limits.

H Point Level (Hopper Plug Detector)
This sensor, mounted on a rotating paddle inside the dust collector hopper, triggers an alert when the paddle can no longer rotate, which may indicate an obstruction. This sensor can also indicate a stopped rotary valve or overflowing bin. With early plugging detection, your team can troubleshoot the issue when it's smaller, before filtration is interrupted.

I Internal Temperature and Humidity
This sensor detects both temperature and humidity from a single probe mounted inside the collector or a duct. Notifications are sent if the collector operates outside normal ranges, helping to avoid issues that can damage product or equipment.

J Secondary Differential Pressure
Facilities with stringent air quality standards, or those returning air to the building, often have secondary filters, such as HEPA, included in their dust collection system. This sensor measures differential pressure (dP) across the HEPA media. Variations in dP across these filters can indicate they are damaged or need to be replaced.

K Zero Speed/Rotary Airlock
Typically used with collectors that have a rotary airlock. This sensor will detect when the rotary valve has stopped turning while the dust collector is running. Enabling users to take action before the collector fills with particulate.

L Bin/Drum Level
This sensor alerts users when their dust collector bins are nearly full, removing the guesswork about when to empty them, and preventing both filter damage and the mess that can result from dust overflow. This sensor is especially useful for operations whose bins fill frequently.

M Fan Energy and Power
Donaldson's iCue Monitoring can track power and energy use of the fan. It is ideal for customers whose dust collectors use a Variable Frequency Drive (VFD), that automatically adjusts fan speed to maintain optimal airflow.

Installation Without Complication

Donaldson iCue Monitoring requires minimal hardware and installs in minutes. There is no need to modify or replace your existing controller.

The wireless gateway mounts magnetically to the collector, with sensors adhered to key points inside. The gateway operates on 24V DC power and includes an AC (90V to 305VAC) to DC converter. Because it's web-based, there's no software to install. Donaldson's secure cloud and network communication keeps all data separated from your internal networks.

Donaldson

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donaldson.com/icue-collector-monitoring

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