iCue™ Connected Filtration Service for Dust Collectors
Here Because We Heard You

Born out of a customer need for greater access to real-time product performance data, the Connected Solutions group at Donaldson develops innovative technologies and services that enable organizations to monitor 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 expertise and the latest IoT technology, the Connected Solutions group has designed a service that remotely monitors a facility’s dust collection equipment and provides operational insights directly to end-users. The service will revolutionize the way organizations monitor, manage, and optimize their dust 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

The Donaldson iCue™ connected filtration service monitors industrial dust and fume collectors – virtually eliminating the need to manually check readings.

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

Support Efficient Maintenance and Operation
• Automatically monitor the status of all your dust collectors from a single web-based dashboard
• Identify potential issues before they create the need for larger, more time-intensive corrective action

Reduce Unplanned Downtime
• Monitor key parameters on the collector and proactively address issues
• Set and configure alerts so you receive notifications when pre-set thresholds are breached or your dust collector is operating outside the pre-set parameters

Manage and Track Regulatory Compliance Information
• Access real-time performance data to complete compliance reports
• Manage potential employee exposure risks by monitoring airflow levels through the collector

CASE STUDY

How Early Warnings Saved $6,000

A livestock feed mill filtered sticky material that frequently plugged the hopper and filled the plant with dust, requiring two hours of downtime and clean-up for every incident. Donaldson’s iCue connected filtration service provided earlier notice of hopper plugging, reducing the fix time to 15 minutes, avoiding clean-up costs, and saving $5,899 USD per incident.
Anytime Access to Insight

The iCue service works with nearly all major brands of dust and fume 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 your dashboard. This web-based dashboard displays the status of all dust collection equipment across your operation, and lets you 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.

Immediate alerts notify responsible parties when issues arise that may require attention.

A weekly status report summarizes the overall status and performance of all connected dust collectors.
Installation Without Complication

The iCue service 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.

Once installed, simply log in, configure your dashboard settings and alarm thresholds, and designate the team members who will receive reports and alerts.

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 service 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.
Wireless Sensors Gather Real-Time Performance Data

Because certain functions are important to monitor in all systems, the iCue service integrates four standard sensors into its cellular gateway. Four additional sensors are available, depending on your dust management needs.

**Standard Sensors**

**A. Differential Pressure Sensor**
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: a sudden spike can mean a plugged air line or failed cleaning mechanism, while a rapid drop can mean a ruptured or damaged filter. You can also see when filters are approaching their maximum life, and plan filter changes around scheduled downtime.

**B. Relative Airflow Sensor**
This sensor reads static pressure entering the collector's dirty-air plenum, measuring whether there is sufficient air draw to pull dust into the collector.

Low-trending airflow could be the result of a plugged filter and lead to potential employee exposure. Conversely, excessive airflow can draw valuable process materials or potential ignition sources into your collector. Combined with dP data, airflow data confirms when filters are expired.

**C. Compressed Air Sensor**
Placed on the compressed air manifold of a self-cleaning dust collector, 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 Sensor**
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.
Dashboard Puts Data at Your Fingertips

Once the iCue service’s sensors are installed, a web-based dashboard 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.

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

Optional Sensors

Additional sensors can be added to the iCue service. These sensors aren’t integrated into the system’s gateway like the standard sensors, but they can be wired into it with ease.

- **Particulate Monitor Sensor**
  Placed in the exhaust vent of a dust collector, 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 limits, which can save the cost of unnecessary testing.

- **Point Level Sensor (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. Preventing a full-blown obstruction can reduce employee exposure, unnecessary downtime, and potential costs associated with cleaning the collector.

- **Internal Temperature and Humidity Sensor**
  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.

- **Secondary Differential Pressure Sensor**
  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, similar to dP monitoring for primary filters.
  A sudden spike in dP can indicate that the primary filters have a leak and require immediate attention. A gradual rise in dP helps determine optimal service intervals for these expensive HEPA filters.
To learn more about the Donaldson iCue connected filtration service, or to request a demo, contact ConnectedSolutions@Donaldson.com.