

SECTION 1: DONALDSON ICUE[®] CONNECTED FILTRATION SERVICES

SECTION 2: ICUE" MONITOR SERVICE

SECTION 3: INSTALLATION AND CONFIGURATION

SECTION 1: DONALDSON iCueTM CONNECTED FILTRATION SERVICES

This section answers general questions on Donaldson iCue[®] Services.

WHAT ARE THE iCue[™] CONNECTED FILTRATION SERVICES?

Building on more than a century of filtration experience and the latest IoT technology, Donaldson's iCue[¬] service is designed to remotely monitor a facility's dust collection equipment and provide operational insights directly to end-users. The information can help manufacturers reduce unplanned downtime, support efficient maintenance and operation, and automatically capture compliance data. The service will revolutionize the way organizations monitor, manage, and optimize their dust collection systems.

The service tracks dust collector status and sends alerts when normal thresholds are breached. iCue[®] technology then stores and exports historical data to help identify machine problems and optimize performance; and automates data capture for compliance reporting.

1. ARE THERE DIFFERENT SERVICE LEVELS?

There are two levels of the iCue[™] Service

iCue Connect: With the iCue[®] Connect Service customers get access to iCue[®]'s dashboard, alerts, reports and historical data. The iCue[®] dashboard is a web based software that is available on any connected device. Connect customers will configure their account and alarm thresholds for their operation. If an alert occurs, the customer can use iCue[®]'s real time and historical data to quickly troubleshoot and resolve the issue.

iCue Monitor: iCue[®] Monitor customers get access to all the features of Connect, but their account will also be monitored by Donaldson's product specialists. When an alarm occurs the Donaldson team will review and troubleshoot. They will contact the customer directly with any recommended maintenance or service activities.

2. HOW DOES THE iCue" SERVICE WORK?

The iCue[®] service is comprised of four key components that work together to deliver a comprehensive set of benefits:

- iCue^{**} Gateway: Captures data from the collector and sends it to Donaldson's secure cloud over a secure cellular link, where our predictive analytics turn the data into actionable insights.
- **Online dashboard**: Shows equipment status in near real-time, as well as historical trend data for each connected collector. Customers can also graph and export data directly from the dashboard.
- Alarms and notifications: Alert you when immediate maintenance actions may be required, based on deviations from pre-set parameters.
- **Reports:** Provides condition summaries of all connected dust collectors across your operation. Reports can be customized based on your individual needs.
- Product Specialists (Only available with the iCue[™] Monitor Plan): Donaldson product specialists monitor all alarms generated from your dust collectors. When an alarm occurs they will review the alarm and all available data to determine corrective action. They will contact customers directly to communicate next steps

3. HOW WILL IT MAKE MY JOB EASIER?

Continuous monitoring with the iCue[™] services has four advantages:

- It can help identify and trouble-shoot issues before they escalate into disruptive downtime
- It promotes timely maintenance, such as changing filters, which can improve equipment performance and help control costs
- It saves time by reducing visual inspections, manual instrument readings and recording and reporting data.
- iCue[™] can automatically capture data for compliance reports, ensuring you have accurate and available data. This eliminates the need for manual recording data on clipboards or spreadsheets.

4. DOES IT CONTROL MY DUST COLLECTOR?

No, the iCue[¬] service is "read-only" and does not control any functions on your collector. It operates independently of your local control network (SCADA or DCS), so it does not compromise the security of control systems or internal data.

5. WHAT FUNCTIONS IN A DUST COLLECTOR DOES THE iCue[®] SERVICE MONITOR?

Issues in dust collectors are generally related to several key functions. The iCue[®] service monitors these functions with dedicated sensors. Click <u>here</u> to review the iCue[®] Standard Sensors.

6. ARE THERE ANY OPTIONAL SENSORS FOR THE iCue[®] SERVICE?

Yes, Donaldson offers a full range of optional sensors to monitor other aspects of the dust collector. Click this <u>link</u> to review the iCue[®] Optional Sensors

7. IS THERE ANY SOFTWARE TO INSTALL?

No, the iCue[®] software is a web-based Software as a Service (SaaS). It can be accessed by any internet connected device; (PC, Smartphone, Tablet).

8. HOW DOES THIS INFORMATION COMPARE WITH WHAT I CAN SEE ON MY STANDARD CONTROLLER?

Non-connected dust collectors typically show only differential pressure (DP) and compressed air pressure at a point in time, with no automatic alerts or historical data. The iCue[™] service monitors those two indicators plus many other aspects of the dust collection system. You also receive alerts, remote access to the data, trends, and weekly reports that provide a more complete picture of the machine's health. With the iCue[™] service dashboard, you can see the status of multiple dust collectors across your entire operation.

8. CAN I ADJUST ALARM THRESHOLDS FOR MY SPECIFIC OPERATION?

Absolutely. You establish baselines and alarm thresholds that are specific to your process. Deviations from those ranges will trigger an alert. For example, if your dust collector manufacturer recommends compressed air pressure in the range of 90 to 100 psi, you can set alerts at 85 psi and 105 psi. When that range is breached, you will receive an alert.

iCue[™] Monitor customers do not need to set alarm thresholds themselves, they will be set by the Donaldson product specialists.

9. IS THE iCue[®] SERVICE DEVICE DIFFICULT TO INSTALL AND USE?

No. The components are designed for easy installation. The wireless gateway mounts to the collector with a magnet, and sensors are adhered to key points inside the unit. Because it's webbased, there's no software to install. You just need to login to the system, configure the dashboard settings and alarm thresholds, and designate team members to receive reports and alerts.

10. MY CELL PHONE DOES NOT WORK ON THE PLANT FLOOR. WILL iCue"'s CELLULAR CONNECTION WORK IN MY PLANT?

While we can't guarantee connectivity at every plant, we have successfully connected in many locations where cellular coverage is spotty. The iCue[®] gateway has a much larger antenna than a cell phone and iCue[®] uses cellular standards designed for low data rate devices, to improve sensitivity.

11. WHO CAN SEE MY DATA?

Your data is secure. Each user you designate will receive a login to a private, secure dashboard. Donaldson administrators will be able to access your data for analytical purposes when needed. If you work with Donaldson dealers for service and support, you can choose to give them access to your data and alerts as well.

12. HOW DO YOU CHARGE FOR THE iCue" SERVICE?

The iCue[®] service is available by subscription, on an annual per-collector basis. The total percollector cost is typically far less per year than one incident of downtime on the collector.

13. CAN I USE THE DASHBOARD TO GET HISTORICAL DATA?

Yes, the iCue[®] service will store data for up to one year. This data can be graphed in the iCue[®] application or exported to a spreadsheet.

SECTION 2: iCue[™] MONITOR SERVICE

This section specifically covers frequently asked questions for Donaldson's iCue[®] Monitor service.

1. HOW QUICKLY WILL DONALDSON REPLY AFTER AN ALARM?

For Level 3 alarms, the most critical alarms, Donaldson's product specialists will review and respond, if necessary, with in four business hours. For alarms that occur after normal working hours, they will respond within four hours of the start of the next workday.

For level 2 and level 1 alarms, Donaldson will review and respond within 24 hours.

2. HOW WILL DONALDSON CONTACT ME?

This depends on the severity and time sensitivity of the alert. For alerts that indicate an ongoing problem that is getting worse the longer it goes un-addressed, Donaldson will call all the contacts we have to notify them of the issue. For less critical, non-time sensitive alarms, emails may be sent describing the issue and recommended actions. Some alarms may not require any response.

3. I AM WORKING WITH A DONALDSON DEALER FOR SERVICE AND REPLACEMENT PARTS, WILL DONALDSON CONTACT MY DEALER?

Yes, in most cases we will include your dealer on any correspondence regarding issues that may require replacement parts or service.

4. HOW ARE ALARM THRESHOLDS SET?

Donaldson will set alarm thresholds based on your collector type and application. The support team follows standard rules for setting alarms based on our experience with iCue[®] and dust collectors. We will also work with you to customize the alarms if necessary. For example, if you have an air permit that defines allowable range of differential pressure, we can set alarms based on those thresholds.

5. WILL I STILL HAVE ACCESS TO THE iCue DASHBOARD AND ALERTS?

Yes, iCue[™] Monitor customers have access to the iCue[™] Dashboard, reports, and alerts, the same as a Donaldson Connect customer.

SECTION 3: INSTALLATION AND CONFIGURATION

1. HOW ARE THE PRESSURE SENSORS INSTALLED?

The iCue[®] gateway has external taps to connect to air lines coming out of the clean and dirty air plenums in the dust collector. In most applications, these lines are already running to a dust collector controller or magnahelic gauge. The gateway taps off these lines to determine differential pressure and relative airflow.

The iCue[™] gateway also has a compressed air pressure sensor. To connect this run a high-pressure line between the gateway and the compressed air pressure manifold.

2. HOW DO THE OPTIONAL SENSORS CONNECT TO THE GATEWAY?

Optional sensors have low voltage wires that are wired to the gateway through a watertight cable grip at the bottom of the gateway. The sensor wires are connected to a screw terminal inside the gateway.

3. HOW IS THE GATEWAY POWERED?

The gateway requires 24V DC power to operate. The installation kit includes an AC/DC converter so it can be powered from AC sources. In some cases the 24V can be pulled directly from the controller and the AC/DC adapter is not required.

4. HOW IS GATEWAY MOUNTED ON THE COLLECTOR?

The gateway includes magnet mounts that enable it to easily attach to the dust collector wherever placement is most convenient.

5. CAN I CONNECT TO SENSORS THAT ARE NOT PURCHASED FROM DONALDSON?

The iCue[®] gateway can connect to other sensors if they have a 4-20mA or dry contact relay output. There is an additional fee to setup the sensor in your account. Contact **iCueSupport@Donaldson.com** for more information.

6. HOW DO I SET ALARM LEVELS AND WHAT DOES EACH ONE MEAN?

You can set alarm thresholds through the dashboard on any data point tracked by the iCue^{**} service. These parameters can be configured as high- and/or low-level alarms. Each data point has two high-level and two low-level thresholds. The alarm levels serve as both a visual indication of severity and to also trigger notifications. You can disable alarm notifications if you prefer.

Note: Only iCue[™] Connect customers need to set alarms. The alarm thresholds for iCue[™] Monitor customers are set by the Donaldson Customer Success team.

7. WILL THE iCue^{TT} SERVICE CREATE SECURITY VULNERABILITIES IN MY CONTROL SYSTEMS?

Donaldson provides the cellular communication to pass data from the gateway to the cloud. The data never touches any of your corporate networks or control systems, so it does not introduce any new vulnerabilities. Using the iCue service does not require any changes to your existing network infrastructure.

8. CAN THE DATA INTEGRATE WITH MY EXISTING PLANT SOFTWARE (HISTORIAN, DCS, ETC.)?

The iCue software has an Application Programming Interface (API) that enables customer software to pull data from iCue into their own internal systems. For more information on accessing the API, contact **iCueSupport@Donaldson.com**

9. DO THE INTERNAL PRESSURE SENSORS REQUIRE CALIBRATION?

Calibration of the pressure sensors require no action from the user. The iCue[®] gateway performs an Auto-Zero calibration on the dirty and clean air lines every time the dust collector is off. It also performs an Auto-Zero calibration on the compressed air sensor every time the compressed air pressure is off. This is consistent with the sensor manufacturers recommendation on sensor calibration.

10. DO OPTIONAL SENSORS REQUIRE CALIBRATION?

This depends on the optional sensor required. Most of the iCue[™] optional sensors are calibrated at the factory and do not require calibration on installation.

Particulate Monitor sensors do not require calibration; however they can be correlated to an actual dust level by doing a dust injection test. Contact Donaldson for more information.

Digital sensors like the Zero Speed Sensor and Hopper Plug detector do not require calibration.

For questions on calibrating other sensors, contact iCueSupport@Donaldson.com

Important Notice: Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, specifications, availability and data are subject to change without notice, and may vary by region or country.



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