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Donaldson
FILTRATION SOLUTIONS

Connected Technology for Simpler Dust and Fume Management

Media Fact Sheet

Background: Donaldson is a technology-led filtration company and one of the largest manufacturers of dust, fume, and mist collectors for the metal fabricating, mining, milling and grain, food and pharmaceutical, and wood products industries. Collectors help remove contaminants from industrial and commercial processes. *(See more about Donaldson's recent R&D initiatives on p. 2.)*

What's new: Donaldson is introducing a connected solution on November 5, 2018. The technology monitors dust and fume collection equipment and prompts owners to take early, cost-saving maintenance actions. Donaldson will offer the solution through an early-adopter program, with a formal launch in 2019. The components of the early adopter program are being demonstrated at FABTECH.

How it works: Using cloud connectivity, the Donaldson technology gathers real-time data from an operating collector, applies Donaldson's filtration analytics in the cloud, and relays actionable insights back to the owner via a web-based dashboard and text or email alerts.

What an installation includes:
The technology can be installed on existing or new industrial dust and fume equipment and includes:

- **Sensors** to gather data in real time as the equipment operates
- **IoT Gateway** to send the data to the cloud
- **Data analytics** developed by Donaldson data scientists to convert the data into meaningful insights
- **Web-enabled dashboard** to view trends and historical behavior
- **Automated email alerts and reports** providing operators with suggested actions

User benefits: The technology provides intelligent insights that enable earlier detection of performance concerns, so that operators have the chance to address them before they become disruptive and impact production. This can help achieve:

- Increased production uptime (less unplanned downtime),
- Reduced labor hours for dust/fume management, and
- Optimization of filter life and equipment function.

All these benefits help to *lower total costs* to own and manage dust/fume collection equipment.

Why it matters:

- As limited facility teams focus on production, maintenance of ventilation equipment can fall behind.
- Owners have minimal data from their dust and fume collectors to optimize their maintenance efforts
- Connected technology can help solve a labor and experience gap as manufacturers try to fill 3.5 million jobs over the next decade. ("The Skills Gap in U.S. Manufacturing: Outlook 2015-2025," Deloitte Consulting LLC and the Manufacturing Institute.)

Proof of value: Donaldson conducted pilots in a variety of facilities. Benefits varied with the application and number of collectors managed. Here are two of the pilot participants' experiences:

- A facility experiencing a plugged collector hopper twice a month on average required two to three hours per incident to fix it. The technology's early alerts reduced corrective action time to 15 minutes.

- A facility seeing short filter life could not identify a cause. Using data from the connected solution, the Donaldson support team quickly helped the customer diagnose the issue and restore normal filter life.

Industry interest: Donaldson has confirmed a high level of interest in dust management using connected solutions. A survey of industrial engineers by *Plant Engineering*, sponsored by Donaldson, found that:
- 88% of respondents are interested in real-time performance monitoring of their dust collector
- 87% are interested in receiving filter change-out alerts
- 27% have some products compatible with IoT (Internet of Things);15% are studying potential applications

What's next: Donaldson will continue to develop the applicability and value of the solution.
- Expansion of sensor points to detect more areas of customer interest for dust collector management and maintenance.
- Longer predictive capability to align with customer maintenance schedules, further helping to reduce disruption for maintenance efforts.

About Donaldson

Founded in 1915, Donaldson Company, Inc. (NYSE: DCI) is one of largest industrial filtration companies in the world, providing filter technologies that serve industries from aerospace, agriculture, and construction, to metal fabricating, food and beverage, manufacturing, and transportation. There are 140 Donaldson locations in 44 countries.

Recent Donaldson Initiatives

Donaldson is in a multi-year initiative to increase R&D spending to between 3% and 4% of sales revenue. The company invested approximately $60 million in R&D in FY18, a 10% increase from FY17, and a similar increase is planned for FY19. Top investments have included connectivity, improving materials science and other core capabilities, and technology to advance product offerings and customer service, including ecommerce and global enterprise resource planning (ERP) to standardize and optimize processes worldwide.

About the Experts

Wade Wessels is global director of IoT and connected solutions for Donaldson. He has 18 years of experience in technology development beginning at Donaldson with earlier roles in engineering and business development. Wessels rejoined the company in 2017 from six years in applications and marketing management at Honeywell, where he was systems leader for sensing and IoT. Wessels has a bachelor's degree in mechanical engineering from Iowa State University and a master's in business administration from the University of Minnesota Carlson School of Management.

Brent Nelson is business development manager for connected solutions for Donaldson, specializing in using machine data and IoT platforms to drive value for Donaldson's customers. He joined Donaldson from six years at Digi International, where he was senior product manager for emerging IoT products. Prior to that, Nelson worked for 10 years as an electrical design engineer specializing in wireless solutions. He holds a bachelor's degree in electrical engineering from the University of Minnesota.