



Think Smaller and Smarter About Baghouse Dust Collection

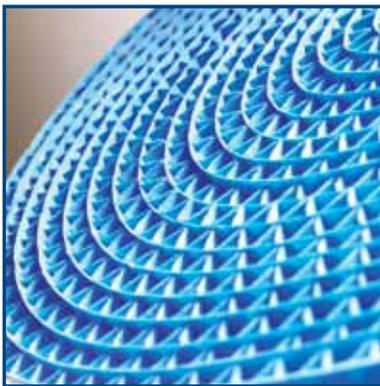
Breakthrough in dust collectors and filters puts big, labor-intensive baghouses out to pasture

Baghouse dust collection now has exactly what manufacturers need to keep pace in our high stakes global economy. With the introduction of smaller and smarter Torit® PowerCore® dust collectors and filters in May 2008, a new breed of baghouse dust collection emerged that delivers significantly better technology for both collectors and filters, greater flexibility to downsize and maximize floor space and lower cost of ownership.

By Kristine Graham, Product Manager
LaJean Larsen, Applications Engineering Manager
Donaldson Torit

CONTENTS

- Smaller, smarter baghouses 2
- Advancing performance 2
- How filter packs work 3
- PowerCore with Ultra-Web® 3
- Overcoming challenges 4
- Eliminating bridging 4
- Maximizing plant floor 5
- Success in grain 5
- Success in wood 5
- Success in concrete 6
- Success in plastic 6



Baghouse dust collection was the first filter technology for industrial air filtration at the turn of the 20th Century, and this enduring technology has experienced several major innovations throughout the last 100-plus years. In 1948, The RF baghouse collector addressed the need for high air volume and extremely heavy dust loading. The Dalamatic® cased and insertable continuous duty baghouse collectors

emerged to provide a solution for handling difficult product recovery applications. In 2002, Dura-Life™ filter bags enhanced the industry by offering twice the bag life and fewer bag changes along with energy, labor and replacement bag savings for all types of popular baghouses.

While these innovations and others advanced baghouse dust collection miles from where it had been at the time, the introduction of smaller and smarter Torit PowerCore dust collectors with PowerCore filter packs in 2008 is the front runner and puts baghouse dust collection on the fast track to better filtration.





It's Time for Smaller and Smarter

With uncertainty in steel and oil prices and ongoing efforts in manufacturing to reduce operational costs, timing couldn't be better for Torit PowerCore dust collectors. Dramatically smaller and substantially smarter than traditional baghouse technologies, Torit PowerCore collectors and PowerCore filter packs are an extension of Donaldson Company's proprietary PowerCore technology that is well-proven in engine filtration. Torit PowerCore is only available from Donaldson Torit.

manufacture and transport collectors that are 50-70 percent smaller than traditional baghouses. In addition, smaller sized Torit PowerCore collectors allow new applications for dust collection at point of use and can eliminate the need for complicated ducting or large, energy-consuming central dust collectors.

Torit PowerCore offers many advantages over traditional centralized dust collectors. First, a centralized dust collector consumes a lot of energy because larger motors are needed to supply high airflow rates continuously. With Torit PowerCore collectors installed at the point of use, airflow is required at each individual collector only when the associated process is running. Second, with centralized dust collectors, entire sets of workstations or processes need to be shut down for bag change-outs or collector maintenance. With Torit PowerCore installed at point of use, single workstations or processes can be shut down independently as maintenance is required. Third, it is often true that centralized collectors are installed outdoors, where they are left to bake in the sun or freeze in the cold. Bag changes are unpleasant during weather extremes, and the collectors can be neglected from an operation and maintenance standpoint since they are "out of sight and out of mind". With Torit PowerCore, the substantially shorter collectors can be installed indoors, where routine maintenance is easier.

Providing greater flexibility in a much smaller package, Torit PowerCore gives manufacturers the power to contain costs while maximizing plant floor space like never before.



Already making significant headway in major wood, grain, cement and plastics manufacturing operations, stand-alone Torit PowerCore dust collectors are up to 50 percent smaller than traditional baghouses, and bin vent models are up to 70 percent smaller than other bag bin collectors. This adds up to significant savings before and after Torit PowerCore arrives on the plant floor. Less steel and oil is required to





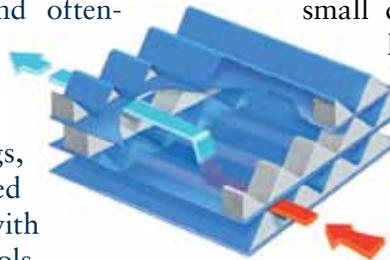
The Power to Perform

What’s the key to smaller and smarter Torit PowerCore dust collectors? PowerCore filter packs. Not a cartridge or a bag, PowerCore filter packs are integral to the downsizing of these collectors. Just seven inches tall, one PowerCore filter pack replaces six traditional eight-foot long polyester filter bags. To put this in context: a 20,000 cfm traditional baghouse requires 256 filter bags compared to a 20,000 cfm Torit PowerCore collector with only 48 filter packs.



Small and mighty, PowerCore filter packs provide better filtration than traditional bags because they combine Donaldson Torit’s proven and proprietary Ultra-Web® nanofiber surface-loading technology with a corrugated fluted media configuration that allows more media in a small volume. This compact and rugged configuration has alternately sealed fluted channels that allow air to enter through an open flute on the dirty side of the pack and force air through the media and exit out an adjacent flute on the clean side.

That’s an astounding reduction, especially considering that filter bag changes with a traditional baghouse collector are dirty, cumbersome and often-avoided jobs. In contrast, changing PowerCore filter packs is incredibly easy. Rather than hours or days to remove traditional filter bags, PowerCore filter packs are removed from the clean side of the collector with one hand in minutes without using tools.



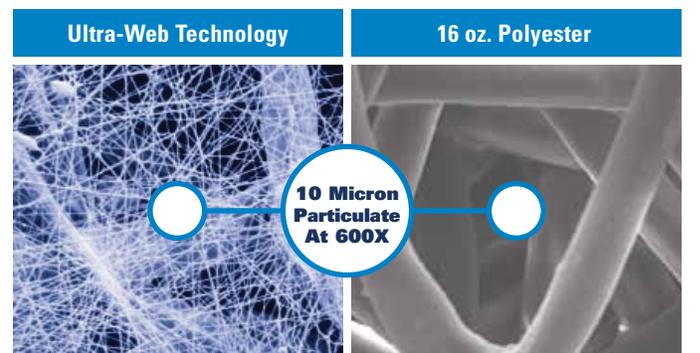
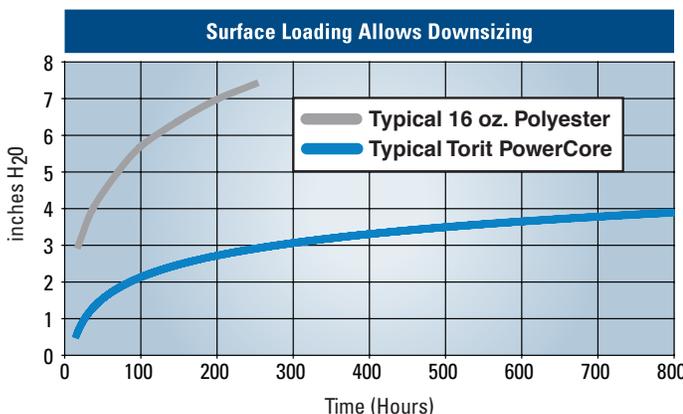
With Ultra-Web added to this unique configuration, PowerCore filter packs capture both large and small dust particles while extending filter life, lowering emissions and using less energy. Independent lab tests using EPA PM 2.5 standards show that PowerCore filter packs with Ultra-Web media provide up to 78 percent fewer emissions than traditional bags—translating to cleaner plant air and greater product recovery.

A Winning Combination

The fluted media configuration combined with Ultra-Web technology make a powerful team. While the fluted media configuration provides strength and structure to the PowerCore filter pack, Ultra-Web adds high performance. The mesh-like Ultra-Web media layer traps even submicron dust on the surface of the PowerCore filter pack, so dust easily pulses

off during cleaning. Because surface loading helps prevent plugging, PowerCore filter packs last longer and filter better while using less energy compared to traditional 16 oz. polyester filter bags.

Surface loading technology prevents dust from penetrating the PowerCore filter pack media. With





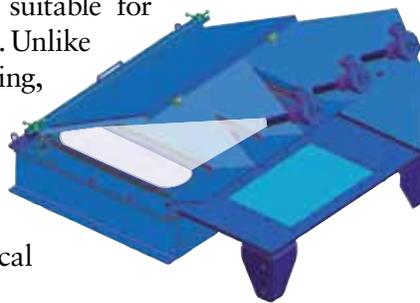
A Winning Combination (cont.)

traditional depth-loading filter bags pressure drop starts high and rises quickly, using more energy due to blowers working harder to pull air through the system. PowerCore filter packs with surface loading

Ultra-Web technology maintain lower operating pressure drop for a longer period of time, reducing energy consumption and costs.

Experience Put To the Test

Adapting proven PowerCore technology to dust collection was not without challenges. Donaldson's PowerCore technology has been performing in engine filtration for nearly 10 years. Donaldson then successfully adapted the technology for gas turbine filtration. But just because a technology performs well in one or two industries doesn't necessarily make it suitable for other applications such as dust collection. Unlike engine filtration that doesn't require pulsing, dust collection requires a collector to pulse clean the filters and maintain a stabilized pressure drop. Furthermore, dust collection equipment must handle far heavier dust loads than typical gas turbine intake systems.



Always up for a challenge, Donaldson Torit engineers applied the company's more than 90 years of experience in industrial air filtration to engineer a pulse cleaning system that can handle much greater magnitudes of dust in a smaller footprint. The result is the proprietary Compact Oblique Pulse Cleaning System housed inside every Torit PowerCore dust collector. Designed to match the filter pack's obround shape, the pulse flow spans the entire media pack, pulsing off dust from the fluted channels while enhancing filtration efficiency and keeping pressure drop low.

Bridging Eliminated

Bridging has been a persistent and perplexing problem for manufacturers with traditional baghouse collectors especially on stringy, fluffy and agglomerative materials like wood, fiberglass and plastic. Bridging occurs in traditional baghouses across the spaces between the bags. The pulse-cleaning mechanism knocks accumulated dust down the length of the bag and the dust often accumulates in the lower interstitial spaces. With particulate that tends to stick to itself or nest, the accumulation builds, eventually into a bridge between bags. By designing the Torit PowerCore collector and PowerCore filter pack together, Donaldson Torit has developed an optimized solution to eliminate bridging.

Torit PowerCore is engineered differently than a typical baghouse so bridging problems don't exist. In the Torit PowerCore collector, air flows into the

bottom of the pack, unlike traditional baghouses where air enters through the sides of the bags. With negligible airflow through the sides of the packs, there is no contaminant between the filter packs, which eliminates bridging. Furthermore, 7-inch deep PowerCore filter packs take full advantage of the pulse energy, unlike traditional bags where portions are cleaned more effectively than others.

With traditional baghouses there is a constant battle between the upward airflow between the bags and the dust that is trying to settle out. With Torit PowerCore there is virtually no airflow between the filter packs; all airflow is directed to the bottom face of the filter packs, so bridging between the packs doesn't occur. The flutes clean very effectively because they are only 7 inches deep.



Maximize Plant Floor Space



Torit PowerCore dust collectors and PowerCore filter packs deliver new flexibility to maximize plant floor space, downsize to a smaller collector, or install at the point of use. These smaller and smarter collectors can eliminate the need for ducting and/or for a large central baghouse.

For example, a grain manufacturer was able to eliminate a complex and maintenance intensive zipper duct on a tripper hood by installing Torit PowerCore. Now a Torit PowerCore collector sits right on top of the tripper; the manufacturer was able to eliminate the ducting from the central dust collector. The Torit PowerCore collectors installed in this grain handling application use two 5-HP blowers that enable much lower peak power and energy use.

Stand-alone Torit PowerCore dust collectors can be ducted to many different applications. Available in a range of airflows, from 800 to 20,000 cfm, stand-alone Torit PowerCore collectors use less floor space and fit into tight spaces. Bin vent models are available with airflows of 300 to 8,040 cfm and can be used on silos, conveyor transfer points, conveyor discharges, blenders and mixers.

Our Customers Say It Best



Torit PowerCore at Anchor Block.

In addition to successful applications of Torit PowerCore in industries including cement, wood, grain, plastic and many others, Donaldson Torit continues to test and develop Torit PowerCore for additional markets that currently rely on underperforming and large traditional baghouse technology. Based on our customer accounts so far, Torit PowerCore is the solution for these manufacturers who are limited by traditional baghouse dust collection.

Shakopee, Minnesota-based Anchor Block, a leading producer of standard concrete block, decorative masonry units, landscape retaining walls and paving stones turned to Torit PowerCore in 2007 for relief from frequent filter changes with its traditional baghouse dust collectors.

“The PowerCore filter packs have worked really well since the collector was installed,” said Jay Battenberg, safety director at Anchor Block. “Every time I go by the collector the pressure gauge is hovering at the one-inch mark. Our other collectors—baghouse and cartridge—never run that low.”

**Our Customers Say It Best** (cont.)

While Anchor hasn't had to change its first-fit PowerCore filter packs yet, Battenberg expects the process to be easy. "There are a couple of handles and the filter just sits in the collector. It almost looks like an air filter in a car," he said.

Bloomington, Minnesota-based Brunk Corporation, which pulverizes PE plastic into powder for the rotational molding industry, switched to Torit PowerCore in 2007 when its dust collector wasn't doing the job.

"I'm very impressed with Torit PowerCore. It's a very small footprint for the amount of filter area you get in a unit," said David Loeffler, Plant Manager at Brunk Corp. "I used to have a FARR 8-D cartridge collector for my attrition mills but the filters would plug after a couple weeks, reducing air volumes and decreasing productivity. I considered replacing it with a larger, more expensive baghouse collector but then we tried Torit PowerCore and it gave us the right amount of filtration area in a much smaller unit."

Upgrade to Smaller and Smarter

Visit Donaldson.com/ToritPowerCore or call today at 800-365-1331.

FOR MORE INFORMATION CONTACT:

Kristine Graham
952-877-3562
Kristine.Graham@Donaldson.com

LaJean Larsen
952-887-3442
LaJean.Larsen@Donaldson.com