Donaldson.
FILTRATION SOLUTIONS

POWERCORE®
SMALLER. SMARTER
DUST COLLECTORS.

PowerCore®
A Donaldson Filtration Technology

Changing the World of Dust Collection

Outperforming Dust Collection Technology

The PowerCore® dust collection technology from Donaldson outperforms every traditional baghouse and cartridge collector and does so in less space. In one extremely small but powerful package the PowerCore dust collectors handle high airflow, heavy dust loading, challenging particulate and fit into the smallest places, fulfilling the requirements of todays energy efficient and lean manufacturing facilities. The filter changeout is easy, quick and astonishingly clean compared to traditional filter bags and cartridges – leading to an easy and safe maintenance.
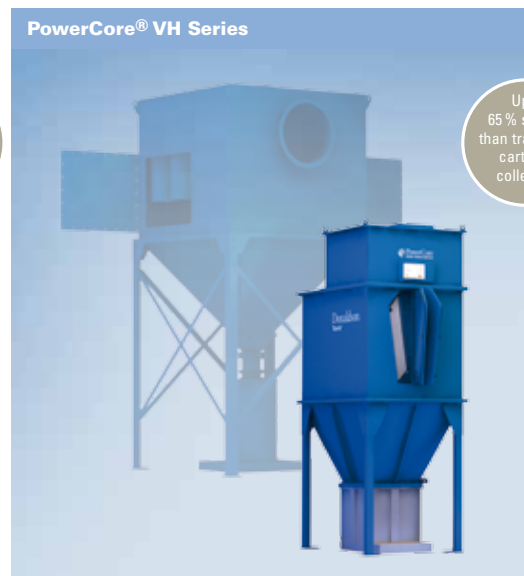
Up to 70 % smaller

PowerCore® dust collectors are available as stand-alone models that can be ducted to many different applications, and as bin vent models used on silos, conveyer transfer points, conveyer discharges blenders and mixers.

The whole range fulfills minimum space requirements as the comparison with conventional dust collectors shows and therewith clears space for other equipment.

PowerCore® CP Series

Up to 70 % smaller than traditional bag bin vents

Up to 50 % smaller than traditional baghouses

PowerCore® CPV-6 vs. Traditional Bin Vent

PowerCore® CPC-6 Dust Collector vs. Traditional Baghouse (81 Filter Bags)

PowerCore® VH Series

Up to 65 % smaller than traditional cartridge collectors

PowerCore® VH Dust Collector vs. Traditional Cartridge Collector

Bulk Handling	Chemical	Environment	Fibrous Materials	Foundry

2

Smaller, Smarter Dust Collectors

PowerCore® Advantages

- **Smaller.** Due to smaller footprint less floor space is required and mounting next to the application is possible.

- **Smarter.** PowerCore filter packs with Ultra-Web® technology provide higher efficiency with less emissions and an improved filtration performance.

- **Easy maintenance.** The replacement of the PowerCore filter packs is a remarkably clean process. The clean-side filter access and fewer, lighter filters enable an easy filter changeout and are therefore very service-friendly.

- **Cost effective.** Installation is faster and easier because the PowerCore system arrives mostly assembled and there are no bags or cages to install separately. Due to lighter weight, less crane time and pre-assembly are required. Transport and installation costs can be reduced to a minimum.

PowerCore® Series	Application	Airflow	PowerCore® Filter Pack	Filter Media
CP Series	• Fibrous dust • Fluffy dust • Agglomerative dust	1,200 to 27,000 m³/h (single module) >27,000 m³/h (multiple modules)		Ultra-Web® Ultra-Web® Antistatic
VH Series	• Abrasive dust from metalworking and mining • Bulk handling	3,000 to 13,000 m³/h (single module) >13,000 m³/h (multiple modules)		Ultra-Web® FR

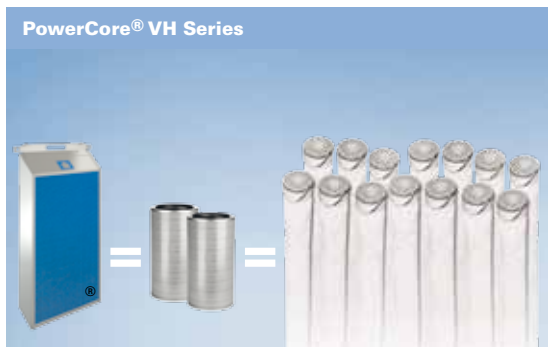**Metalworking** **Pigment** **Waste** **Wood Industry**

Not a Bag, not a Cartridge

A new Standard in Dust Collection

It is not a cartridge. It is not a bag. PowerCore® filter packs take proprietary Ultra-Web® nanofibre filter media and form it into flutes that collect particles without depth-loading. The new Donaldson technology allows handling more air through the same amount of media than conventional filter bags or cartridges and therewith enables the extreme downsizing.

PowerCore® CP Series

One PowerCore® CP Filter Pack replaces six 2.4 m long Filter Bags.
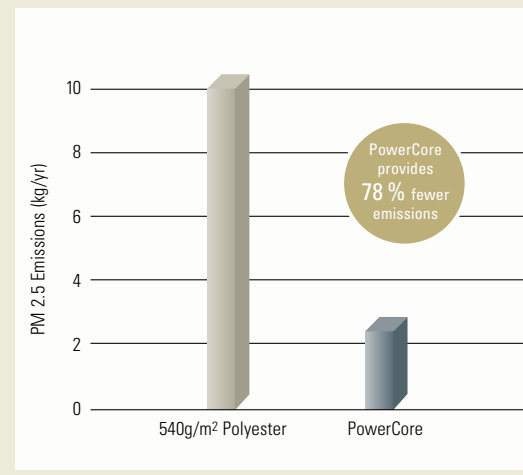
PowerCore® VH Series

One PowerCore® VH Filter Pack replaces at least two Cartridge Filters or fourteen 2.4 m long Filter Bags.

Lower Emissions with PowerCore® Filter Packs

But not only the filtration performance sets a new standard. Also the filtration efficiencies are outstanding and help to meet emission goals.

PowerCore® Filter Packs: 78 % Lower Emissions than Standard Polyester Bags

PowerCore provides 78 % fewer emissions

PM 2.5 Emissions (kg/yr)

540g/m² Polyester   PowerCore

These flat sheet results are based on independent lab tests using ASTM D6830-02 per EPA PM 2.5 performance verification. Annual emissions calculated assuming 24,466 m³/h airflow rate, 265 working days per year, and two shifts per day. Field measurements may vary due to differences in dust contaminant and sensitivity of measurement equipment.
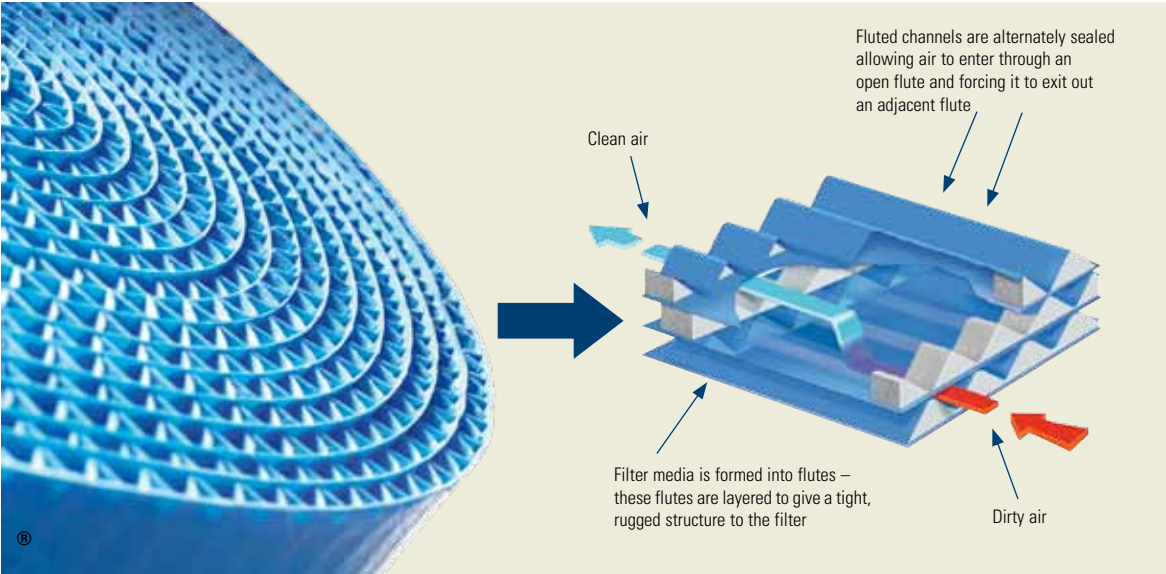
PowerCore® Filter Packs

- Changeout from the clean side of the collector
- Small, lightweight and easily be handled by one person
- Fewer filters to change dramatically cuts filter changeout costs related to labour and downtime – saving money with every filter change.

PowerCore® with Ultra-Web® Media

Breakthrough Technology unfolds

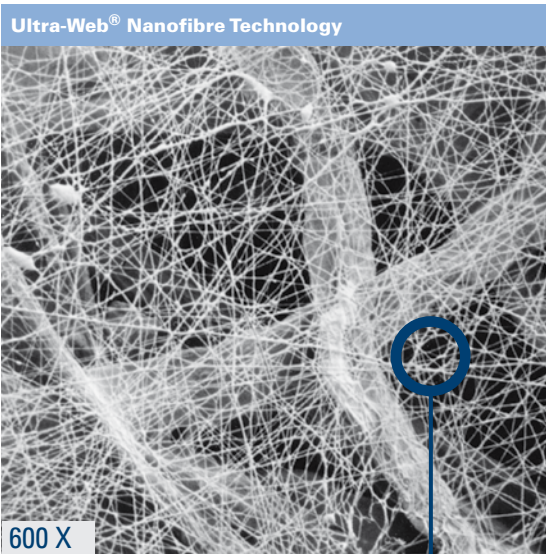At the core is PowerCore® – The most innovative filtration technology from Donaldson. PowerCore filter packs combine proprietary Ultra-Web® nanofibre technology with new media packaging expertise, creating a revolutionary filtration technology unlike anything else in the industrial filtration market.
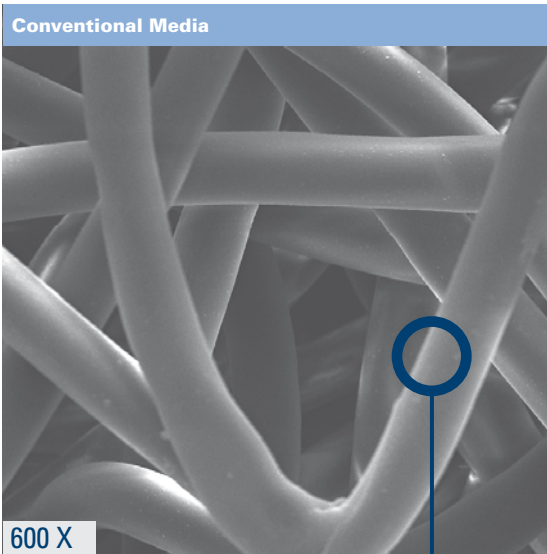

Clean air

Fluted channels are alternately sealed allowing air to enter through an open flute and forcing it to exit out an adjacent flute

Filter media is formed into flutes – these flutes are layered to give a tight, rugged structure to the filter

Dirty air

High Performance Filter Packs

A dramatic departure from traditional filter bags and cartridges, PowerCore® filter packs in conjunction with proprietary Ultra-Web® media, trap more dust on the surface of the media flutes – down to sub-micron in size – than conventional depth-loading filter materials. Surface loading greatly promotes filter cleaning. Better pulse cleaning lowers pressure drop and energy use.

Ultra-Web® Nanofibre Technology

600 X

10 Micron Particulate

Conventional Media

600 X

10 Micron Particulate

Changing Expectations

Replacing PowerCore® filter packs is as easy as 1-2-3. PowerCore filter packs are lightweight and accessed from the clean side of the collector. Easy. Fast. Clean. No tools or cages required!

No entry required!

PowerCore® CP Filter Pack Replacement

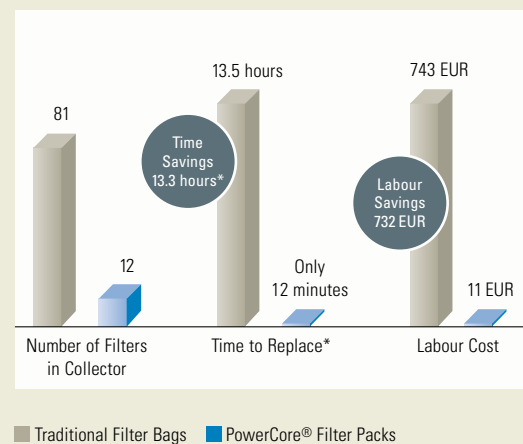Lift up filter access door. (Clean side of the system)

Lift up the filter retainer.

Lift out the filter pack for an easy replacement.

Count on significant Savings

Now you can significantly lower your costs of dust collection. An application requiring 81 filter bags (2.4 m) in the past now only needs 12 PowerCore® filter packs (178 mm). Fewer filters mean lower filter changeout costs and faster changeouts. And the smaller footprint can save costly factory floor space.

PowerCore® CP Filter Packs versus Traditional Filter Bags

81

13.5 hours

743 EUR

Time Savings 13.3 hours*

Labour Savings 732 EUR

12

Only 12 minutes

11 EUR

Number of Filters in Collector

Time to Replace*

Labour Cost

■ Traditional Filter Bags ■ PowerCore® Filter Packs

* Savings are based on one changeout. Calculations assume bags and PowerCore® filter packs show equal life time; one person replacing one traditional filter bag in 10 minutes; one person changing a PowerCore® filter pack in only 1 minute; labour rates equal 55 EUR/h.

Easy Maintenance

PowerCore® VH Series

The innovative design uses a monorail to align the PowerCore® filter packs. Therewith an incomparable easy filter exchange is enabled, only requiring one person. The filter packs are accessed from the clean air side of the collector and no special tools are required.

The system features an innovative dynamic seal around the filter pack in order to minimize the number of parts required to position and hold the filter pack. It also allows to reduce the exposure of the operator to dust by minimizing the openings for the filter change out.

PowerCore® VH Filter Pack Replacement

Open filter access doors. (Clean side of the system)

Slide out the monorail for filter access.

Hook in PowerCore® filter pack.

Space Savings
Up to 65 % smaller than traditional cartridge collectors.

Fewer Filters to Change
Fewer filters to change dramatically cuts filter changeout costs related to labour and downtime.

Easier Changeouts
Side entry doors and no confinend spaces make changing filter packs fast and easy.
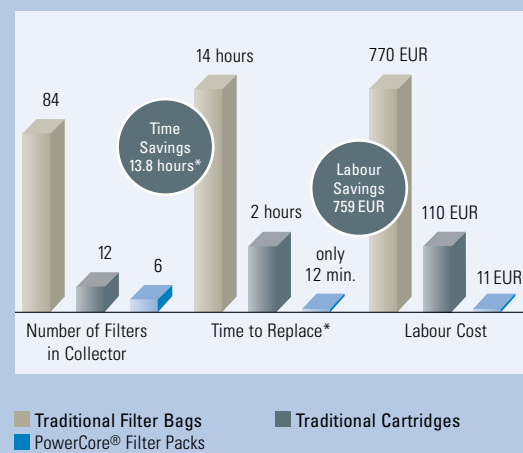
Lower Emissions
Up to 78 % fewer emissions than baghouses with traditional 540 g/m² polyester bag filters.

Reduced Shipping Costs
Its smaller size reduces shipping, installation and accessory costs.

PowerCore® VH Filter Packs versus Traditional Filter Bags and Cartridges

Number of Filters in Collector: 84, 12, 6
Time to Replace*: 14 hours, 2 hours, only 12 min. — Time Savings 13.8 hours*
Labour Cost: 770 EUR, 110 EUR, 11 EUR — Labour Savings 759 EUR

- Traditional Filter Bags
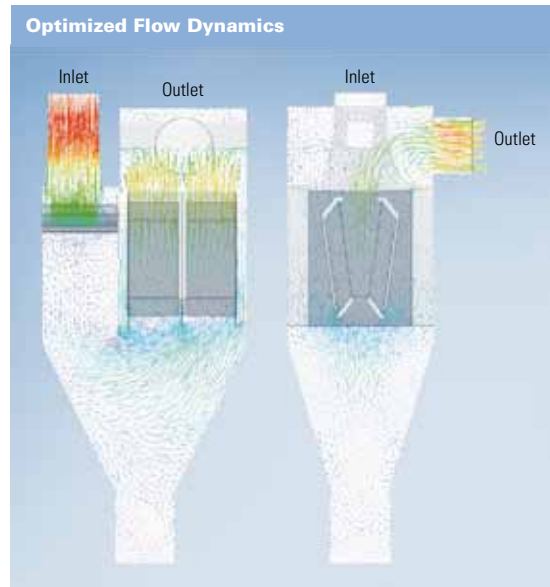- Traditional Cartridges
- PowerCore® Filter Packs

* Savings are based on one changeout. Calculations assume bags, cartridges and PowerCore® filter packs show equal life time; one person replacing one traditional filter bag or one cartridge in 10 minutes; one person changing a PowerCore® filter pack in only 2 minutes; labour rates equal 55 EUR/h.

Engineered to Perfection

The Right Airflow Management

The design of the PowerCore® collectors and pulse cleaning hardware is a result of Donaldson's commitment to technical research and development. FLUENT®* Airflow Modeling Software was extensively used to optimize the flow dynamics within the system in order to achieve the best combination of performance, airflow capacity and overall energy consumption. The inlet pattern and outlet connections have been designed and positioned to maximize the flow distribution around the filter pack surface.

*FLUENT® is a registered trademark of Fluent, Inc.

Optimized Flow Dynamics

Inlet Outlet Inlet Outlet

Effective Filter Cleaning

PowerCore® collectors include an innovative cleaning mechanism with pulse shaping technology to achieve the strongest cleaning energy and an effective dislodging of the dust from the fluted shape filter packs. The resulting pulse flow effectively covers the entire media pack, improving filter efficiency, keeping pressure drop low and increasing operational life. In the PowerCore® CP collectors the new pendulant manifold enables all maintenance activities, including servicing of the pulse cleaning valves, to be performed from the single frontal access panel.
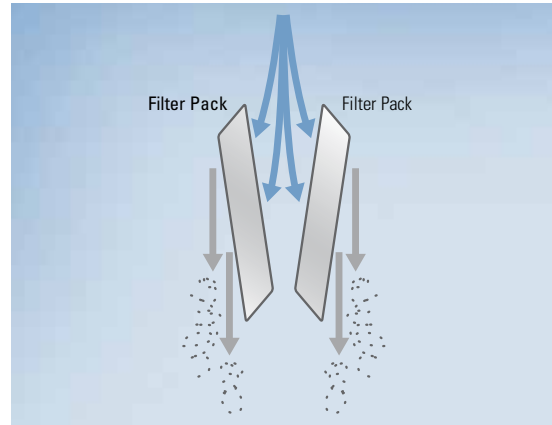

Innovative Pulse Cleaning

Operation Excellence
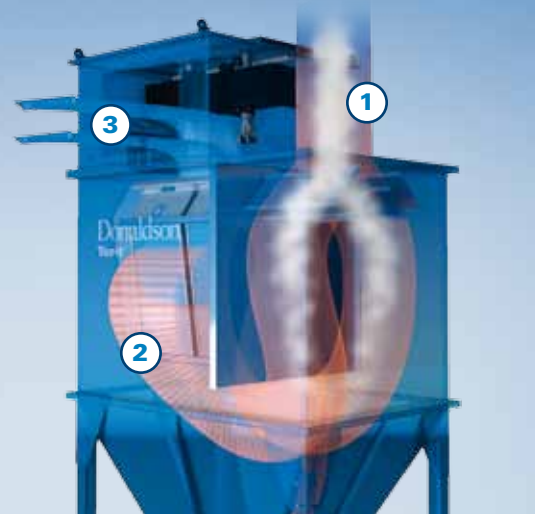
Zero-Turn Pulse Cleaning System

We call it Zero-Turn because the pulsed air is blown directly into the filter for maximum cleaning effectiveness. The V configuration of the PowerCore® filter packs aligns the flutes in a near vertical formation allowing the dust to be pulsed directly into the hopper, preventing pulsed dust from being re-entrained on adjacent filter packs. Other collectors don't feature this directional alignment.

Filter Pack   Filter Pack

Pulsed dust is shot directly into the hopper

Inside the PowerCore® VH

1 Dirty air enters through the pre-separator, which removes heavy dust particles

2 The dirty air is pulled through the PowerCore® filter pack with Ultra-Web® nanofibre filter media

3 Purified air exits the dust collector

Intelligent Hopper and Bin Design of the PowerCore® Series

The square shaped hopper and bin design are perfectly matched to the collector, and reduce the overall height of the system.
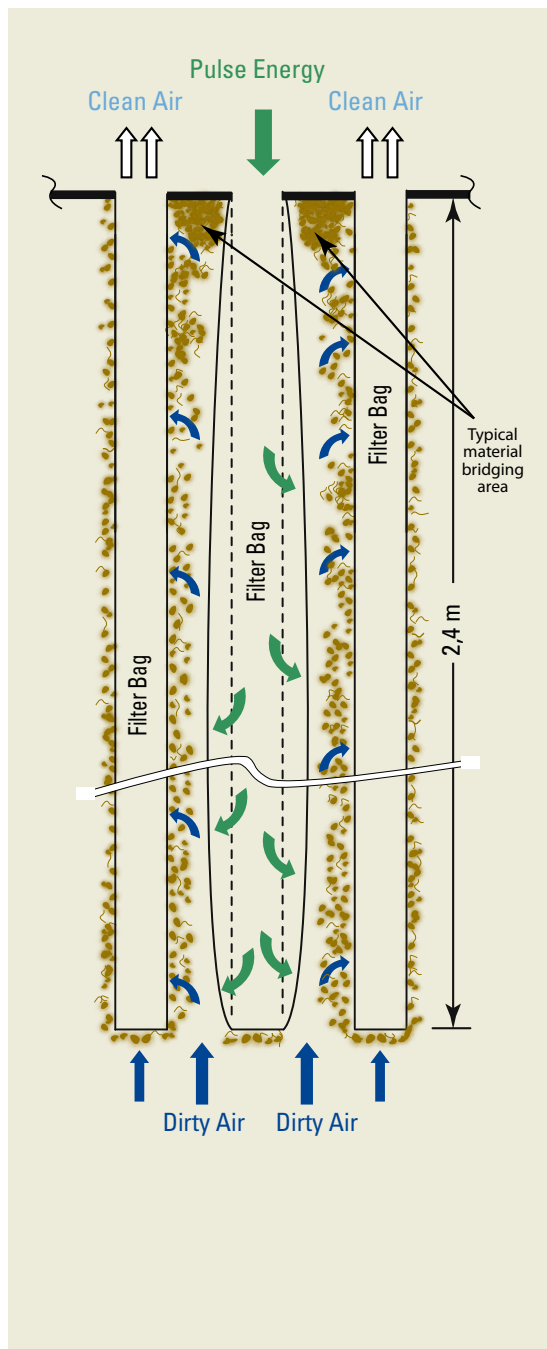
The air-tightness of the bin is achieved through an innovative dynamic seal that doesn't require the bin to be lifted. The system can accommodate slide gates and rotary airlocks.
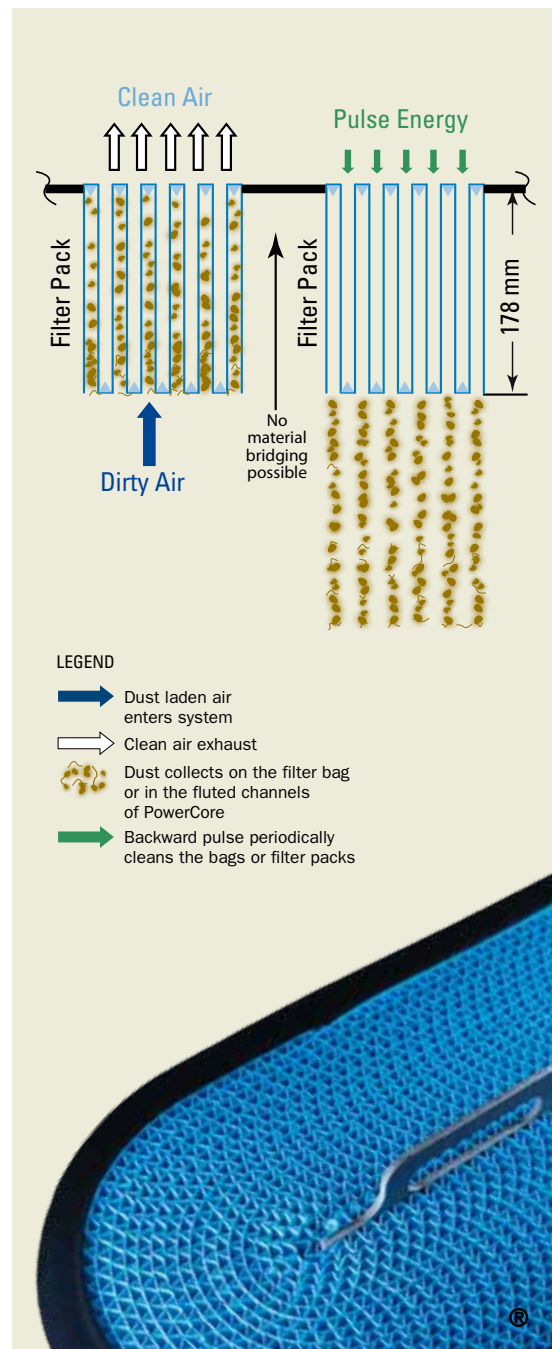
No more Bridging

In a typical Baghouse Collector

Bridging can start at the top of the filter bags, where they aren't cleaned very effectively. It continues to build until the entire collector is packed full of dust. Dust collected on the top of the bag may need to be pulsed multiple times before it leaves the filtration section.

In a PowerCore® Collector

Air flows in through the bottom face of the PowerCore filter packs, so that dust doesn't accumulate between them and bridging can't get started. Each flute in the 178 mm deep filter pack is effectively and fully cleaned with every pulse.

LEGEND

→ Dust laden air enters system

→ Clean air exhaust

Dust collects on the filter bag or in the fluted channels of PowerCore

→ Backward pulse periodically cleans the bags or filter packs

Standard Features and Options

PowerCore® CP Series

Housing	Standard	Optional
Carbon steel – painted	x	
Stainless steel (AISI 304 or 316)		x
EPDM gaskets	x	
Zinc plated hardware	x	
Stainless steel (A2 or A4) hardware		x
Straight round to square inlet collector*	x	
90° round to square inlet collector*		x
Easy filter access (Multi-scoop / no tools required)	x	
Temperature environment design -20 °C	x	
Cold temperature environment design -40 °C		x
Oblique power pulse cleaning system	x	
Silencing pack		x
PowerCore® with Ultra-Web®	x	
PowerCore® antistatic with Ultra-Web®		x

Controller	Standard	Optional
IPC dP	x	
IPC dP 4-20mA		x
Electrical pre-wired system: no on-site wiring	x	

Pneumatical	Standard	Optional
Low pressure regulator	x	
High pressure filter unit combo		x
Pneumatical pre-connected: no on-site connections	x	
Energy efficient pulse valves with integrated 24VDC solenoid	x	

Dust bin*		Standard	Optional
Bin clamp system		x	
Slide gate			x
240L dust bin		x	
Dust bin support	Fixed	x	
	Roll		x
	Roll & tilt		x

Paint	Standard	Optional
C1 (indoor)	x	
C2 (outdoor)		x
C3 (outdoor industrial)		x
C4 (outdoor moderate industrial)		x
C5-I (outdoor heavy industrial)		x
C5-M (outdoor marine)		x

* Only available for the PowerCore® CPC range

PowerCore® VH Series

Housing	Standard	Optional
Carbon steel – painted	x	
Stainless steel (AISI 304)		x
EPDM gaskets	x	
Zinc plated hardware	x	
Stainless steel (A2) hardware		x
Element clamp system	x	
Straight round to square inlet collector	x	
Temperature environment design -20°C	x	
Cold temperature environment design -40°C		x
ZERO-Turn power pulse cleaning system	x	
Silencing pack		x
PowerCore® FR (Flame-Retardant) with Ultra-Web®	x	

Controller	Standard	Optional
IPC	x	
IPC dP	x	
IPC dP 4-20mA		x
Electrical pre-wired system: no on-site wiring	x	

Pneumatical	Standard	Optional
Low pressure regulator	x	
High pressure filter unit combo		x
Pneumatical pre-connected: no on-site connections	x	
Energy efficient pulse valves withintegrated 24VDC solenoid	x	

Dust bin		Standard	Optional
Bin clamp system		x	
Slide gate			x
120L dust bin		x	
240L dust bin			x
Dust bin support	Fixed	x	
	Roll		x

Paint	Standard	Optional
C1 (indoor)	x	
C2 (outdoor)		x
C3 (outdoor industrial)		x
C4 (outdoor moderate industrial)		x
C5-I (outdoor heavy industrial)		x
C5-M (outdoor marine)		x

Always at your Disposal

Service with the highest Standards

Our service is always nearby. With our technical service and support network throughout Europe, we can routinely service your production systems as well as provide on-site support whenever needed.

With one of Donaldson's service centers you receive quick and cost-effective competent services for all filtration applications from one source.

Consulting

Total Filtration Service offers a range of services to help you determine current production efficiencies, identify areas for improvement and tailor a service program to your needs.

Inspection & Maintenance

Our service experts identify cost-effective measures for process optimisation, quality improvement and energy savings. They conduct emission measurements, leakage detection and comprehensive quality checks and not only carry out the replacement of your filter elements, but also determine the right point in time – we therefore contribute to the efficiency of your production.

Donaldson Torit® DCE®

Dust and Fume Removal · Oil Mist Separation

Donaldson FILTRATION SOLUTIONS

Total Filtration Management

Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

Total Filtration Service

A compressive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

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