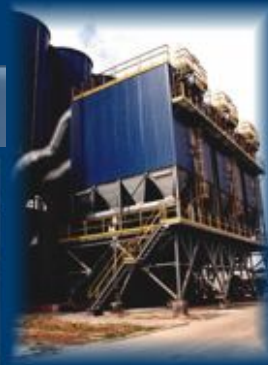


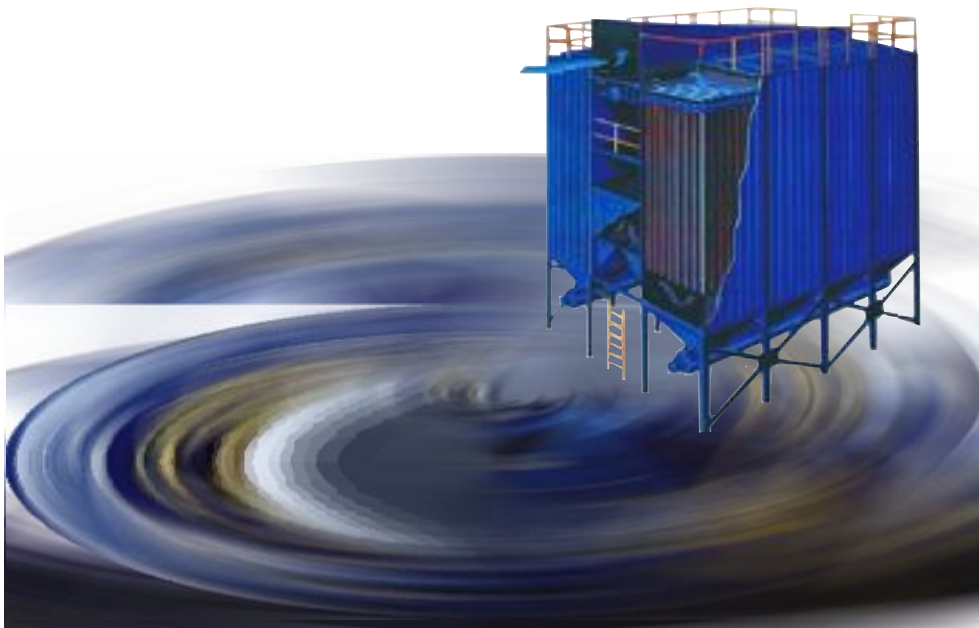
PF PULSE JET DUST COLLECTORS FAMILY

A CATALOGUE



CLEAN AIR - WE MAKE IT HAPPEN

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The PF family comprises a range of new generation pulse-jet dust collectors used for state-of-the-art dry separation of non-sticking dust in a variety of industrial settings.

PF dust collectors may both provide cost-effective solutions for typical applications and also be used in solving the most difficult industrial air pollution problems. Technically advanced filter media allow treatment of gas streams with inlet temperature up to 260°C.

Sizes of modular construction cover gas flow range from small to very large.

Standard PF units are used for handling gas streams not holding explosive or flammable properties. For dust collection from explosive environment the EX version was designed and extensively tested. It features special construction and equipment to minimize explosion hazards and protect the unit against the effects of potential explosion.

Typical applications include cement and lime, steel and non ferrous metals, power generation and other industries.

All dust collectors covered by this catalogue are designed to operate in the negative pressure part of the installation (upstream of the ID fan).

To provide high efficiency of gas cleaning and ensure maximum service life of the filter bags each application is carefully analyzed. Needlefelt is matched to the operating conditions taking into account physical and chemical properties of both gas and dust.

Wealth of experience allows our highly qualified engineers to select the most appropriate and cost-effective filter media for each application.

The PF family incorporated three general types of filter design:

- **PFM, PFS** and **PFD** - type vertical, tubular bags collectors
- **PFN** - type pleated cartridge collectors
- **PFP** - type horizontal tubular bags collectors.

General features of PF dust collectors

Construction

- Modular construction
- Substantial number of factory-made, unified elements
- Fast and convenient filter assembly with eliminated field welds while retaining sufficient tightness
- Trouble free service requiring only minimum maintenance
- Convenient and fast filter bags installation and removal without entering dust collecting chamber
- Advantageous ratio of filter area to housing volume

Operation

- Continuous high efficiency at 99+%
- Outlet dust concentration from 1mg/m³ to 20 mg/m³ depending on requirements
- Wide range of filtration area (from 11m² to 12720 m²)
- Proven, effective long-bags (up to 8 m) technology allowing for installation where only limited footprint is available (most retrofit situations)
- Proprietary, patented cleaning system design including two-stage secondary air ejection and compressed air reservoirs integrated with membrane valves
- Energy efficient design (stunningly low compressed air consumption)
- Advanced PLC and instrumentation based control and diagnostics eliminating concerns about periodical overloading and blinding of filter bags
- Efficient integrated pre-collection chamber allows PFS and PFD type dust collectors to handle heavy (up to 1000g/m³) dust concentration at the filter inlet
- Each section of PFD collector can be shut-off for inspection or maintenance without interruption of the unit's operation.

Patent protection

The PF dust collectors family utilizes a number of innovative ideas including solutions protected by the following patents:

- Cylindrical bag filter No 166026
- Bag filter No 166700
- Primary dust collecting chamber in pulse-jet filter No 56709
- Bag filter regeneration system No 58049
- System determining the lower position of filter bags No 57892

Design

PFM, PFS and PFD collectors feature modular construction. Since each unit is constructed from a combination of these modules there is almost no limit to the size of the collector while their modular construction reduces shipping cost and facilitates field assembly at the site.

Each dust collector comprises the following main assemblies: raw gas plenum, clean gas plenum, hoppers with dust evacuation system, bags cleaning system and electrical installation.

Each plenum is divided into two sections. The inlet section is not furnished with filter bags and acts as pre-collecting dropout area, next sections contain the filter bag assemblies. Inlet gas stream enters chambers and/or hoppers against high-strength inlet baffles which protect bags from impact wear caused by high inertia dust particles.

Flanged hopper outlets are connected to screw conveyers supplied along with double flap valve or sluice gate. To ensure reliability of operation we use screw conveyers without central bearings. Extensive experience made it possible to design and successfully implement conveyers up to 7 m in length. In dust collectors furnished with longer hoppers the dislodged dust is evacuated by screw conveyers connected in cascade. Typically, our filters are supplied with double flap valves due to their longer service life compared with rotary airlocks (especially in case of corrosive dusts).

Depending on the plant location, availability of space or footprint, we offer customized designs of supporting structure, maintenance access (ladders, stairs, platforms), roof, thermal insulation, and hopper heating.

Thermal insulation and cladding are usually made after filter assembly at the location site. A hinged inspection/access hatch is included with the standard hopper, which is convenient also when removing the filter bags during a check-up. Bags replacement is performed from the clean chamber side.

Dust laden gas enters the collector through distribution chamber where after decompression its stream is divided between the upper part of the raw gas plenum and the hopper. Introduction of certain amount of coarser particles onto the surface of upper part of the bags facilitates dislodging of the cake in the felt reconditioning process. High strength, wear resistant inlet baffles are located against the inlets of filtration chamber and hopper. The baffles (inlet deflectors) induce fall of coarser particles directly to the hoppers. Further cleaning process continues on filter bags surface. Dust laden gas is drawn through the micro pores in the needlefelt of the bags while dust is collected on their outer surface. Cleaned gas flows from the bags to the clean gas plenum and is discharged. The collected dust forms cake which enhances filtering efficiency. Filter bags are periodically reconditioned with pulses of compressed air. This pulse of low volume, high pressure air is directed from the compressed air reservoir through the blow pipes located above the bags. As the burst of air passes through the venturi located above upper end of the bag, it induces an additional large volume of clean air into the bag, expanding the bag and breaking the dust filter cake loose. The dislodged dust falls to the hopper below and is next discharged by screw conveyer and double flap valve. The cleaning sequence is initiated by a microprocessor controller based either on timer or on differential pressure across the dust-collector reaching preset level. Pressure drop, which measures collector performance, is indicated by a manometer connected at one end to the filter bag section and to clean gas plenum at the other end. Δp mode practically eliminates the risk of felt blinding, extends bags durability and maximizes collector's performance while reducing compressed air consumption.

In PFS and PFD - type collectors solenoid valves are integrated with compressed air reservoirs, a solution pioneered by AMK Krakow, which significantly reduces compressed air consumption for bags cleaning.

Due to the fact that pulse-jet cleaning provides effective on-line reconditioning of the felt without interrupting the airflow through the collector, the basic mode of operation is the cost-effective ON-LINE cleaning.

However, for more sophisticated applications (e.g. with large concentrations of easily re-entrained, light dust) PFS and PFD- type collectors are offered with OFF-LINE cleaning system. In this mode the compartment in which the cleaning is performed is automatically shut-off.

Model identification

A symbol representing collector's model consists of four parts:

Example

PFD - 2x40x16 - 7,5 - EX

PFD - type of dust collector

2x40x16 - first digit denotes number of rows in which compartments are arranged. It can be (1) or (2)

40 is the number of solenoid valves (rows of bags) in one compartment

16 is the number of filter bags in one row

7.5 - is the length of filter bag in meters

EX - represents anti-explosion design

PFC - type dust collector (cylindrical)

Standard PFC - type dust collectors are designed for separation of dust from gases, which do not form explosive mixtures. Version EX is destined for explosive environments.

Design

PFC - type dust collectors feature single chamber, cylindrical construction. Pre-collection takes place in cyclonic space placed under the filtration chamber. The lowermost part of the collector, a conical hopper is closed with double flap valve. Filtration chamber is closed with cell plate and furnished with filter bags assembly. Clean gas plenum occupies the upper part of the collector above the cell plate. Units for outdoor application may include optional penthouse.

Principle of operation

Dust laden gas is drawn tangentially to cyclonic gas inlet. Heavier dust particles are separated from the gas stream by centrifugal action and slide down the hopper walls towards double flap valve. Finer particles, not separated in the cyclone, are distributed over the filter bags surface. Subsequently, the cleaning process follows the general principle: gas is drawn through the felt with dust being collected on the outside of the bags, clean air is discharged from the bags to the clean gas plenum, the filter bags are reconditioned with pulses of low volume, high pressure air. Reconditioning of the felt is performed in ON-LINE mode, without interrupting the airflow through the collector.

Application recommendations

Cylindrical dust collectors are used for moderate inlet dust concentrations, also of abrasive dust. The field of application includes: food processing, woodworking, chemical and plastic, lime and cement, foundries and other industries.

A symbol representing collector's model consists of four parts:

Example

PFC - 1800 - 3,0 - EX

PFC - type of dust collector (cylindrical)

1800 - chamber diameter in millimeters

3,0 - filter bag length in meters

EX - represents anti-explosion design

Distinguishing features of PFC-type dust collectors:

- Incorporated cyclone pre-collector provides highly effective cleaning of gas streams with heavy dust concentrations at the inlet
- Facilitates application in installations requiring high negative pressure
- Cylindrical construction of filter chamber allows for total flexibility in the location of outlet relative to inlet of the gases

PFN - type dust collector (pleated cartridge)

The basic difference between PFN and other types of collectors covered by this catalogue lies in employing a different kind of filtering element. Unlike other types, using tubular bags, PFN - type utilizes pleated cartridges. The most common applications of these compact-size collectors are: separation of non-sticking dust generated in belt conveyors transfer points and bin venting.

Design

A cartridge dust collector consists of the following assemblies: clean gas chamber, pleated cartridges, compressed air reservoir with membrane valves and electrical installation.

Principle of operation

Dust laden gas is drawn into the collector and forced to flow through vertical pleated cartridges from their outside to the inside. Particulate matter is deposited on the outer surface of the high efficiency filter media. Clean air flows through clean gas chamber to the dust collector outlet. Cartridges are cleaned with compressed air pulses. The pulsing energy introduces secondary air from the clean gas chamber inside the cartridges, consequently causing 'bulging' of their surface and dislodging of deposited dust cake onto the conveyor's belt.

Reconditioning of felt is PLC controlled and may be based on pre-set time intervals or operate in pressure demand control (Δp) mode, with a pulse only initiated when pressure drop across the collector reaches preset level Δp mode eliminates the risk of periodical overloading of cartridges and increases their service time.

Dust collectors PFP - type (horizontal)

The main feature distinguishing PFP - type collectors from other families is horizontal orientation of the filter bags resulting in lower height of the unit. It allows for their installation in low halls and other restricted indoor areas. In practice, the PFP - unique design is addressed to customers who have limited available space and application of a conventional dust collector with vertical filter bags is problematic.

Design

A PFP - type dust collector consists of the following assemblies: raw gas plenum, clean gas plenum, hopper, bags cleaning system and electrical installation.

Filter bags are arranged horizontally in the row gas plenum. In case of separation of abrasive dust thin deflectors are mounted above bags to protect felt from excessive wear caused by falling down displaced cake.

PFP - type collectors are supplied with high-strength, abrasion resistant inlet baffle. In customized versions PFP - type collectors are furnished with supporting structure, ladders, walkways and stairs, thermal insulation and cladding and electric heaters. Cladding and thermal insulation are made at the location site.

Convenient and fast filter bags installation and removal is performed from the clean gas chamber side.

Principle of operation

Inlet to the collector's housing is located in its hopper. Dust laden air is drawn against the inlet baffle which induces fall of coarser dust particles directly into the hopper. Application of the inlet baffle facilitates decompression in the filtration chamber. It results in both better gas distribution over a wide portion of the felt surface and additional effect of inertial separation protecting the bags from excessive impact wear. The pre-cleaned air flows upwards to filtration chamber fitted with filter bags where analogous to other types of collectors further cleaning process takes place.

Model identification

A symbol representing collector's model consists of four parts:

Example

PFP - **6x8** - **2,5** - **EX**

PFP - type of dust collector (horizontal)

6x8 - 6 number of solenoid valves (number of filter bags rows)

- 8 number of filter bags in one row

2,5 - filter bag length in meters

EX - represents anti-explosion design

Data for particular dust collector type	PFM	PFP	PFN	PFC	PFS	PFD
Filtration area [m ²]	11 ÷ 317	12 ÷ 147	80	13 ÷ 74	376 ÷ 2262	1272 ÷ 12720
Dust concentration at the inlet [g/m ³]	max 50	max 50	max 50	max 300	max 1000	max 1000
Filter bag length [m]	1,5 ÷ 3,5	2,5	1,4	1,5 ÷ 3	5	7,5
Compressed air pressure [MPa]	0,4 ÷ 0,5	0,4 ÷ 0,5	0,4 ÷ 0,5	0,4 ÷ 0,5	0,4 ÷ 0,45	0,4 ÷ 0,45
Maximum negative pressure at the inlet [Pa]	4 000	4 000	3 000	50 000	8 000	8 000
Capacity [m ³ /h] at recommended ACR: 0,017 [m/s] and 0,025 [m/s]	673 ÷ 19400 990 ÷ 28530	734 ÷ 8996 1080 ÷ 13230	4896 -	796 ÷ 4529 1170 ÷ 6660	23011 ÷ 138434 33840 ÷ 203580	77846 ÷ 778464 114480 ÷ 1144800

PFM - type dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFM - 4 x 4 - 1,5	16	11	1430
2	PFM - 4 x 4 - 2,0	16	15	1535
3	PFM - 4 x 4 - 2,5	16	19	1 640
4	PFM - 4 x 6 - 2,0	24	23	1 740
5	PFM - 4 x 6 - 2,5	24	28	1 870
6	PFM - 6 x 6 - 2,0	36	34	2 090
7	PFM - 6 x 6 - 2,5	36	42	2 250
8	PFM - 6 x 8 - 2,0	48	45	2 400
9	PFM - 6 x 8 - 2,5	48	56	2 580
10	PFM - 6 x 8 - 3,0	48	68	2 760
11	PFM - 8 x 8 - 2,5	64	75	3 270
12	PFM - 8 x 8 - 3,0	64	90	3 510
13	PFM - 12 x 8 - 3,0	96	136	5 670
14	PFM - 12 x 8 - 3,5	96	158	5 940
15	PFM - 18 x 8 - 3,0	144	203	7 740
16	PFM - 18 x 8 - 3,5	144	237	8 170
17	PFM - 24 x 8 - 3,0	192	271	9 810
18	PFM - 24 x 8 - 3,5	192	317	10 400

PFP - type dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFP – 3 x 6 – 2,5	18	12	1 780
2	PFP - 4 x 6 – 2,5	24	16	1 880
3	PFP – 5 x 6 – 2,5	30	20	1 980
4	PFP - 5 x 8 – 2,5	40	26	2 260
5	PFP - 6 x 8 – 2,5	48	32	2 370
6	PFP - 6 x 10 – 2,5	60	39	2 800
7	PFP - 8 x 10 – 2,5	80	53	3 050
8	PFP - 10 x 10 – 2,5	100	66	3 300
9	PFP - 12 x 10 – 2,5	120	79	3 550
10	PFP - 10 x 14 – 2,5	140	92	4 150
11	PFP - 12 x 14 – 2,5	168	111	4 500
12	PFP - 14 x 14 – 2,5	196	129	4 850
13	PFP - 16 x 14 – 2,5	224	147	5 200

PFC - type (cylindrical) dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFC – 1100 - 1,5	18	13	1 420
2	PFC – 1100 - 2,0	18	17	1 510
3	PFC – 1100 - 2,5	18	21	1 590
4	PFC – 1500 - 2,0	34	32	2 030
5	PFC – 1500 - 2,5	34	40	2 130
6	PFC – 1800 - 2,0	52	49	2 560
7	PFC – 1800 - 2,5	52	61	2 670
8	PFC – 1800 - 3,0	52	74	2 810

PFN - type (pleated cartridge) dust collector

Item no.	Filter model	Number of cartridges	Total filtration area (m ²)	Weight [kg]
1	PFN – 4 x 4 – 1,4	16	80	241

PFS - type dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFS - 1 x 16 x 10 – 5,0	160	376	22 100
2	PFS - 1 x 24 x 10 – 5,0	240	564	30 600
3	PFS - 1 x 32 x 10 – 5,0	320	752	39 100
4	PFS – 1 x 40 x 10 – 5,0	400	942	47 900
5	PFS – 1 x 48 x 10 – 5,0	480	1 130	56 500

PFS - type twin dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFS – 2 x 24 x 10 – 5,0	480	1 130	57 400
2	PFS – 2 x 32 x 10 – 5,0	640	1 507	72 600
3	PFS – 2 x 40 x 10 – 5,0	800	1 884	87 800
4	PFS – 2 x 48 x 10 – 5,0	960	2 262	103 000

PFD - type dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFD – 1 x 20 x 18 – 7,5	360	1 272	39 000
2	PFD – 1 x 40 x 18 – 7,5	720	2 544	75 000
3	PFD - 1 x 60 x 18 – 7,5	1 080	3 816	114 000
4	PFD - 1 x 80 x 18 – 7,5	1 440	5 088	155 000

PFD - type twin dust collector

Item no.	Filter model	Number of filter bags	Total filtration area (m ²)	Weight [kg]
1	PFD - 2 x 20 x 18 – 7,5	720	2 544	74 000
2	PFD - 2 x 40 x 18 – 7,5	1 440	5 088	144 000
3	PFD - 2 x 60 x 18 – 7,5	2 160	7 632	222 000
4	PFD - 2 x 80 x 18 – 7,5	2 880	10 176	310 000
5	PFD - 2 x 100 x 18 – 7,5	3 600	12 720	380 000

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