

ETM – Bag filter



„We care about air“

ETM – Bag filter

as single row or double row filters

Characteristics

The ETM-Bag filter is realized as single row or double row version. Both versions allow a high flexibility in filter area because the length, the diameter and the number of the bags are variable.

For the single row version the clean gas chamber is also the collecting duct for the clean gas. The flue gas enters through the entry opening on the side of the filter. Guiding and distribution plates are installed in this area to ensure an even distribution of the flue gas in the filter.

The double row version has separate ducts for the flue gas entry and the clean gas exit. These ducts are located in the middle of the filter rows.

The ETM-double-row-bag filter is designed in a chamber-type construction. Each chamber can be disconnected from the gas stream by using the pneumatic powered shut-off flaps located in the flue gas and clean gas duct. So maintenance and repairs are possible without the shut-down of the whole plant.

The filters are equipped with a Puls-Jet-Cleaning which is controlled either depending on the pressure or the time.

Depending on the mode of operation and the bag material a clean gas dust content $< 5 \text{ mg/Nm}^3$ can be reached.

Standard filter bags are used for raw gas temperatures of max. 260°C . For temperatures above 260°C special filter fabrics/materials have to be chosen.

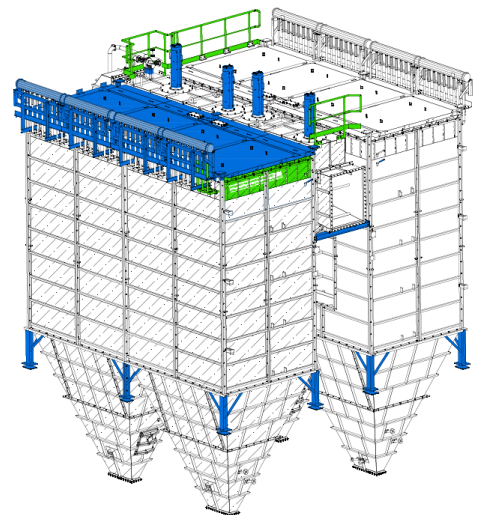
Functional principle

The flue gas enters the filter and streams vertically through the filter bags into the clean gas room.

During the flow through the dust is separated from the gas stream. The dust remains on the outside of the filter bags and the cleaned gas is released through the clean gas chamber respectively the clean gas duct.

The filter bags are cleaned by using the Puls-Jet-Cleaning system. The filter bags are cleaned with compressed air inserted from the top. The air impulse loosens the particles from the bag and so they fall into the hopper. Underneath the hopper is the dust discharge system located.

The cleaning cycle is controlled either depending on the differential pressure or the time.



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for special applications

Bag filters – pressure shock proof and pressure resistant design for flammable and explosive kind of dusts (ATEX)

All flammable kinds of dust can also be explosive. This endangers the functionality of the plant as well as human life. To prevent this danger, the ETM – Bag filters can be equipped with special components and features according to the ATEX requirements.

Pressure shock proof bag filters with constructional protection against explosion

- Equipped with pressure relief devices, bursting discs, nitrogen inert system, foam extinguishing system, explosion vents, Q-pipe etc.

Pressure resistant filters designed for the maximum explosion pressure

- The ETM – Round Bag filter has optimal characteristics for this application. But also the ETM- Row Bag filters can be strengthened to withstand high pressures.

Bag filters – for explosive gases (syngas filters)

Another special application is the filtration of flammable and self-igniting gases, often used in biomass gasification plants. All flange connections must have a technically tight sealing, which ensures this tightness even at high temperatures. So designed no gas can pass the joints and possible explosions are prevented.

Furthermore all measurement devices and control units that could get in contact with the gas stream have to be designed according to the ATEX requirements.

Used in a biomass gasification plant these filters are cleaning the burner gas, which is needed for the power generation. The cleaning of the gas is very important because it enhances the efficiency of the burning and also reduces the contamination of the burner components.

The ETM has gained vast experiences in the design and manufacturing of syngas filters, especially in the field of biomass gasification. With this special knowledge we have designed and erected syngas filters in several countries around the world.



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Round Bag filter

Characteristics

Because of its simple round design the ETM-Round Bag filter is particularly affordable.

The flue gas can enter the filter directly or tangentially. Entering tangentially the dust particles will not only be separated from the gas stream through the filter bags but additionally using the centrifugal separation.

The filters are equipped with a Puls-Jet-Cleaning system that can be controlled either depending on the differential pressure or the time.

The discharge of the dust is commonly performed by a rotary valve into provided collection bags or containers.

Because of its compact design the ETM-Round Bag filter is mainly delivered as completed unit and therefore especially suitable for overseas shipment.

As an option the ETM-Round Bag filter can be designed pressure resistant and equipped with pressure shock proofed components.

Depending on the mode of operation and the bag material a clean gas dust content $<5\text{mg}/\text{Nm}^3$ can be reached.

Standard filter bags are used for raw gas temperatures of max. 260°C . For temperatures above 260°C special filter fabrics/materials have to be chosen.

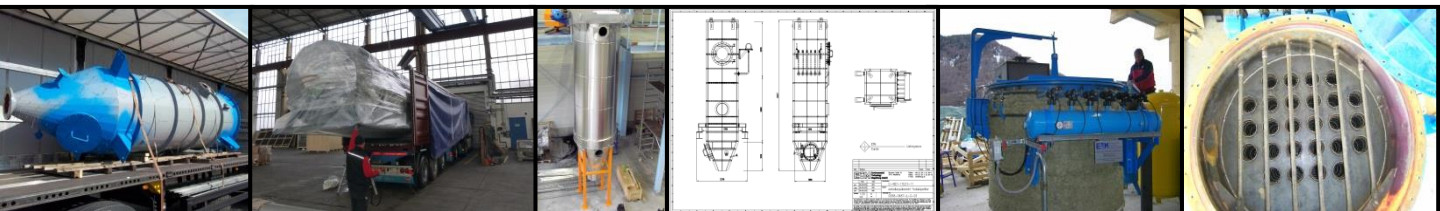
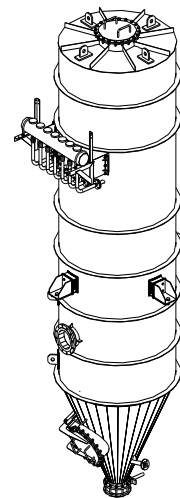
Functional principle

The functioning of a Round Bag filter is in principle similar to the row filter.

By passing through the vertical installed filter bags the dust particles are getting separated from the gas stream. The filter bags are getting cleaned from the sticking dust by usage of pressured gas. Consequently the detaching dust falls in the conical hopper. From there it's getting removed by different dust discharge systems.

The cleaning is getting controlled by electrical impulses, which cause an short opening of the membrane valves and hence cause the necessary impulse jets.

The clean gas is getting released via the clean gas chamber.



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Accessoires and Spare parts

- **Filter bags and supporting cages**
- **Pressured gas technics for the Pulse-Jet-Cleaning**
 - Pressured gas tank
 - Pilot valves
- **Electrical instruments and control units**
 - Controller for cleaning
 - Differential pressure measurement
 - Level indicator
- **Heat Tracing**
- **(Dust-) Discharge System**
 - Chain- and Screw Conveyer
 - Rotary feeder
- **Fans and silencer**



EUM – Bag filter

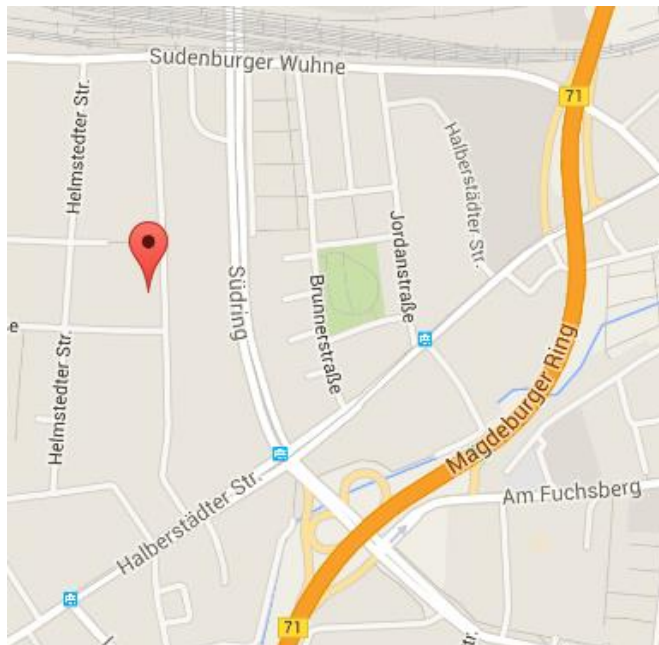
Reference list – short version*

Project	Type of filter	Volumeflow
2015 Biomass gasification (Thailand)	Syngas filter as gastight Round Bag Filter	2.000 Nm ³ /h
2014 Waste incineration Krakow (Polen)	2 Pcs 4-chamber-bag filter	2 x 79.000 Nm ³ /h
2012-2013 Ash loading Power plant Boxberg	Optimization of ash loading for railway	reducing by 50 % to 125.000 Nm ³ /h
2010-2011 Waste incineration Linz (Austria)	6-chamber-bag filter	200.000 Nm ³ /h
2010-2011 Biomass gasification Senden (Germany)	Syngas- and flues gas filter	4.000-6.500 Nm ³ /h
2008-2011 Coal-bunker-dedusting Power plant Boxberg	2 bag filters incl. ducts	2 x 60.000 Nm ³ /h

*the detailed list is available upon request



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