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# The Filtration Group



## Dantherm Filtration Group

is a leading supplier of air cleaning systems for a wide range of industries all over the world.

Dantherm Filtration focuses on individual solutions for individual customer needs. Dantherm Filtration combines the experience and expertise of four internationally recognised suppliers - Airmaster, Garant, Cattinair, Nordfab and Ventilatorenverken - to provide its customers with high efficiency, unbeatable reliability, low energy consumption, and full compliance with all mandatory requirements.



Dantherm Filtration has the expertise, experience, organisation and commitment to deliver an efficient clean air solution completed to specification, on budget, and on time.

As of 1 January 2005, Dantherm Filtration is part of the Danish Dantherm Group.

The purchase refers to the nine Dantherm Filtration companies in Denmark, Norway, Finland, France, Germany, Poland, England, the USA and Thailand.

Dantherm Holding is listed at the stock exchange in Copenhagen and is the parent company of the Dantherm Group. The new Group has an annual turnover of approx. 400 million with a workforce of about 2,750 employees.

Dantherm Holding is the mother company of a number of businesses involved in the development, production, sale and installation of systems for industrial ventilation technology.

The various companies operate on a local and global basis with production facilities and sales branches in several European countries, in the USA and in China. Up to now, activities have concentrated primarily on air treatment (cooling) and air ventilation (comfort). The acquisition of Dantherm Filtration corresponds to the strategic objective of becoming one of Europe's largest companies for industrial ventilation technology and air cleaning systems.



# Intelligent Air



## There is something in the air

### Good air, good image

The modern world cannot live without industry or without a clean and healthy environment. Reconciling these two requirements is the big challenge facing us at the beginning of the new millennium. We are working on the problem.

We have built dedusting plants to reduce or eliminate atmospheric pollution since the early 1960s.

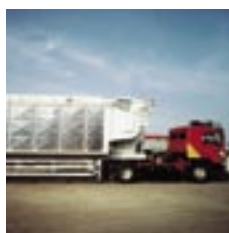
Environmental protection has become a major topic for our society. The public takes a distinctly more positive view of those companies that actively take steps to protect the environment. For this reason, a company's efforts to reduce air pollution also vastly improve its image and acceptance by the general public.

### Intelligent answers to control pollution

Anyone who wishes to boost their image and at the same time meet stringent statutory requirements with a system that is both cost-efficient and also tailored to their particular needs will find that we are exactly the right partners.

Dantherm Filtration GmbH build flat bag filters, which are used wherever high filter efficiency is required to collect dust and ensure clean air. Our flat bag coolers are used to reduce the exhaust-gas temperature to the maximum permissible filter inlet temperature. The individual engineering and modular design of our filters and cooling units have proved their value in practice.

Our answers are tailored to the customer's specific requirements, compact and cost-efficient. And we attach great importance to good design.



# Flat bag filter



## Flat bag filter with reverse air cleaning, type FS

### Dust and pollutant filtration

The problem of polluted air is not specific to any one branch of industry. Dust and other pollutants are found everywhere, be it in foundries, when mixing asphalt or when melting metal. And statutory regulations follow post-haste. Increasingly stringent requirements have to be met with regard to the various types of dust and gaseous pollutants. Dantherm Filtration can offer a solution meeting present and future requirements: modular flat bag filters.

### Efficient modules

The flat bag filters produced by Dantherm Filtration achieve exceedingly low residual dust values and are highly reliable. High-quality production and the use of high-grade materials have proved their value. Our filters and cooling units have an exceptionally long service life and guarantee high availability.

All parts are welded instead of being screwed or bolted, thus guaranteeing a reliable sealing, particularly between the dirty and clean gas compartments.

### Customised filter sizes

Due to the small space required and the horizontal arrangement of the filter

elements, our filters can easily be integrated into existing plants or buildings. We can design and build both small, compact filter units and large turnkey installations.

### Saves energy

The flat bag filter with reverse air cleaning from Dantherm Filtration GmbH is an economical around „self-sufficient“ filter. A cleaning fan generates the cleaning air. An additional compressed-air unit is not required.





### **Easy to service**

The FS filter is easy to service. The filter bags can be changed by one person without requiring special tools. You can also conclude a service agreement with us.

In accordance with the agreement, we will inspect your system at regular intervals and present a detailed inspection report.

### **Advanced principle**

The functional unit of an FS flat bag filter comprises the hood for dust-laden gas, the

filter casing, the dust collecting hopper with support structure and discharge unit.

The filter casing as such comprises a chamber with filter bags for dirty dust-laden gas and a clean-gas chamber with filter-cleaning device.

The filter bags are arranged horizontally in the dirty-gas chamber and the connection with the slotted wall by a clamping frame with leg springs is air-tight.

The slotted wall separates the dirty and clean-gas sides.

The dust-laden gas enters the dirty-gas side from above via the dirty gashood. It then flows down through the filter bags into the clean-gas chamber.

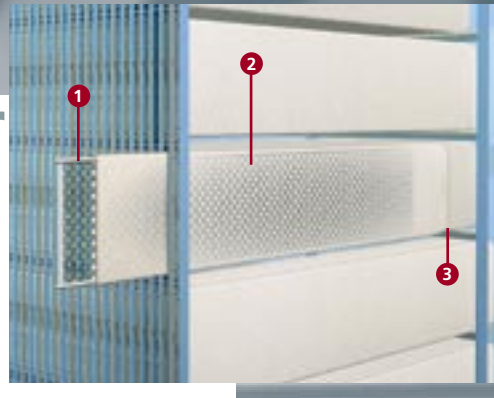
The filter cleaning cycle starts when the specified differential pressure is reached in the filter or when a pre-set time has expired. The dust adhering to the filter is removed by reverse cleaning air.

The dust drops into the dust collecting hopper and is discharged into big bags or containers.



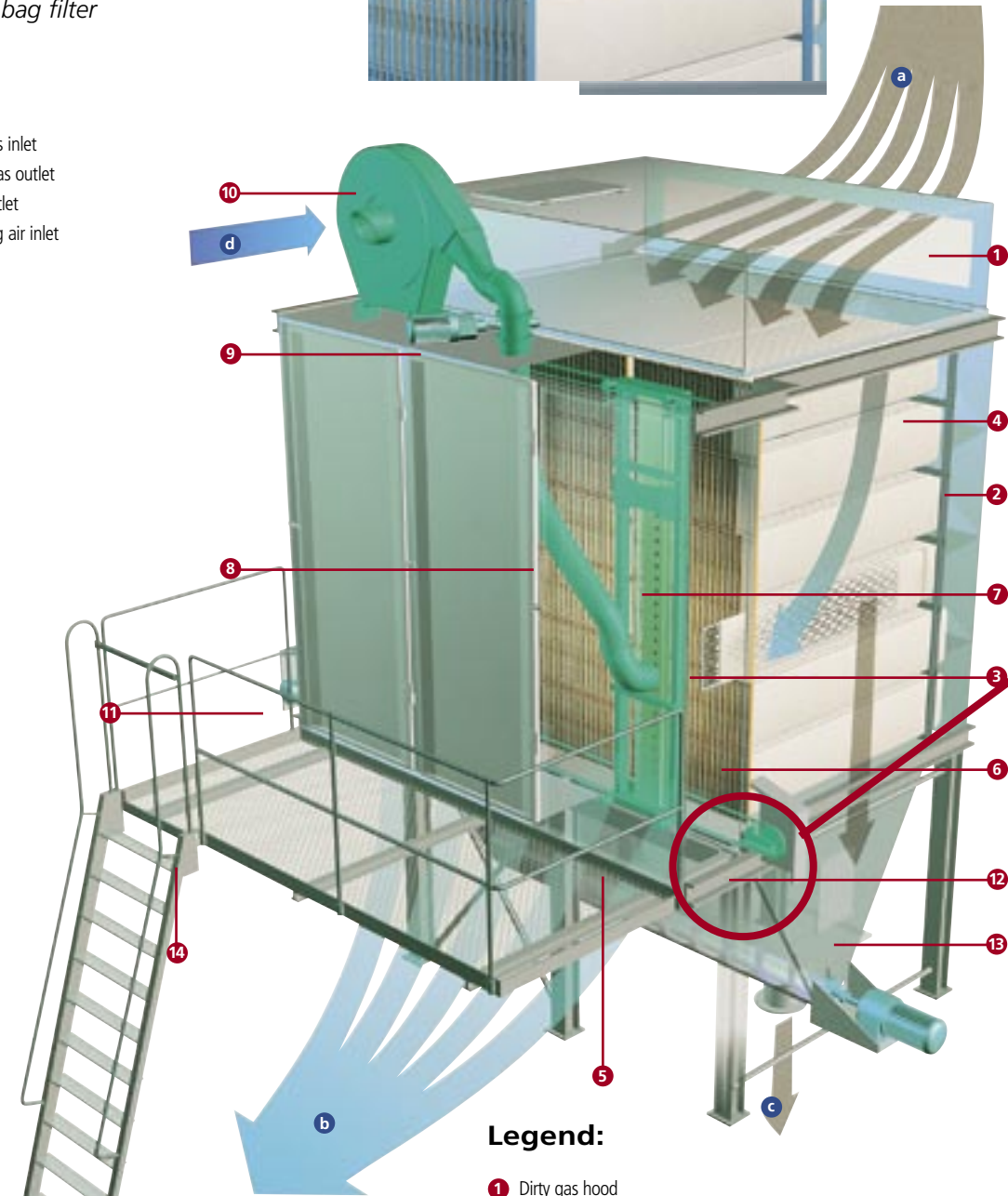
# Cassette filter

FS - Flat bag filter



- 1 Spacer mat
- 2 Filter bag
- 3 Bag support

- a Dirty gas inlet
- b Clean gas outlet
- c Dust outlet
- d Cleaning air inlet



## Legend:

- 1 Dirty gas hood
- 2 Filter - dirty gas compartment
- 3 Filter bag with spacer mats
- 4 Filter bag support
- 5 Filter clean gas compartment
- 6 Slotted wall with clamping frame
- 7 Cleaning carriage with nozzle
- 8 Cleaning air hose
- 9 Cleaning air valve
- 10 Cleaning air fan
- 11 Driving station for cleaning carriage
- 12 Deflecting station with indexing mechanism
- 13 Support structure with dust collecting hopper and evacuation screw
- 14 Access and maintenance platform with ladder

# Indexing disc

*Top carriage rail with extension compensation*

## Cleaning air system

The cleaning-air fan (medium-pressure system) and valve are located outside the filter. The cleaning-air valve is connected to the mobile cleaning nozzle via a flexible hose. The cleaning nozzle is driven by a maintenance-free rope-and-chain drive. It is positioned through via the indexing mechanism.

Use of the medium-pressure system effectively eliminates peak dust emissions during the cleaning cycle. Please find a detailed description of the flat bag filter in our data sheets.

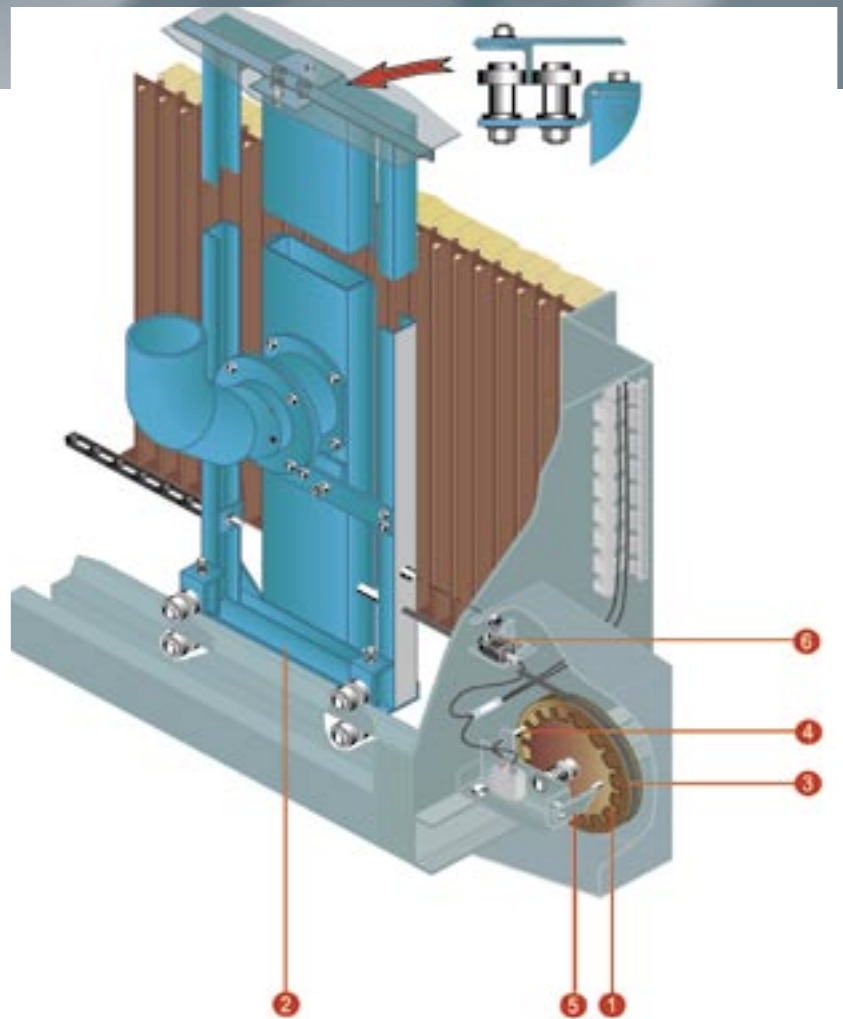
## Mechanical design

The mechanical element for the indexing mechanism is integrated into the deflecting station. The deflecting station is located outside the filter casing.

## Principle of operation

The deflecting station with indexing disc controls the cleaning nozzle.

When the cleaning car with cleaning nozzle advances, the indexing disc is entrained by the rope pulley through friction. As soon as one of the teeth on the timing wheel reaches the inductive proximity switch,

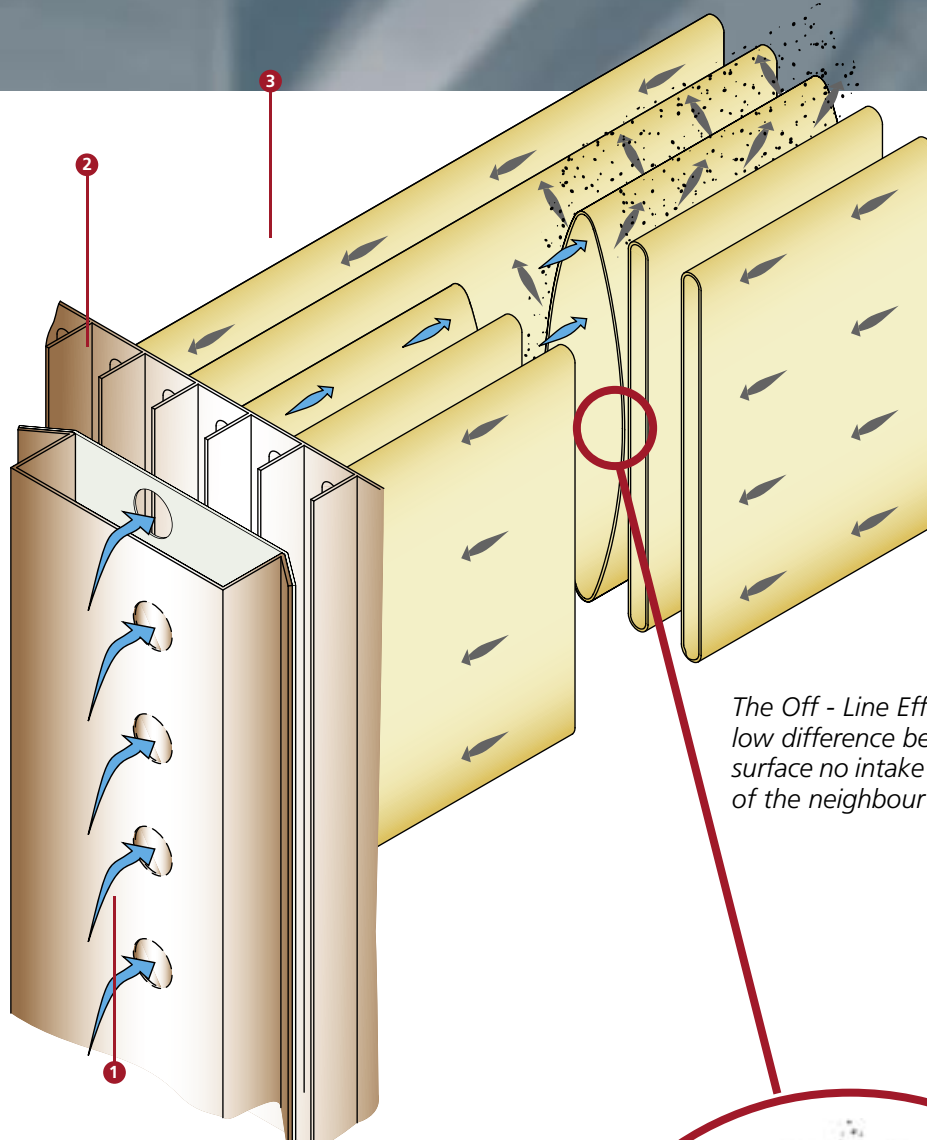


- 1 Indexing disk
- 2 Cleaning car
- 3 Rope roller
- 4 Initiator
- 5 Locking bar
- 6 Limit switch

the drive stops and the cleaning nozzle is exactly positioned in front of the relevant row of filter bags. For the return motion (continuous, without cycling), the indexing disc is locked by a catch after one revolution so that tooth no. 1 is located in front of the inductive proximity switch.

The cleaning nozzle is always positioned in front of the first row of bags whenever the cleaning car trips the limit switch on the deflecting side.

Even when the rope and chain have been changed, for example, the indexing mechanism automatically re-assumes the correct position after the first return motion.

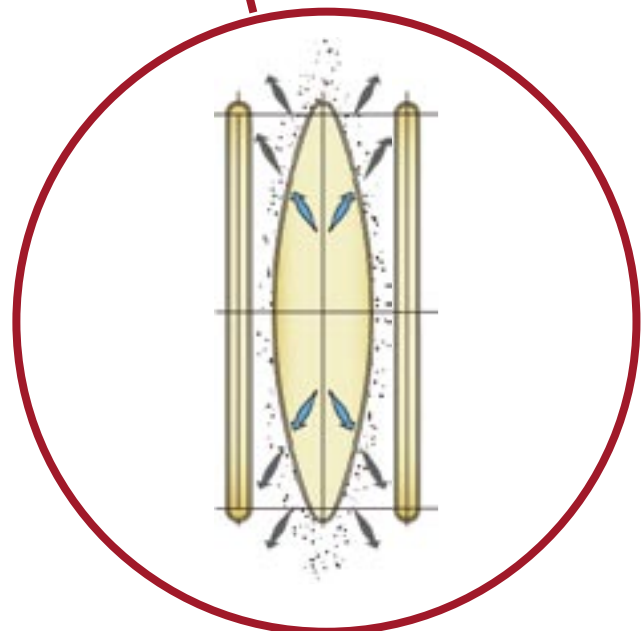


*The Off - Line Effect  
low difference between gross and net  
surface no intake of the unloaded dust  
of the neighbour bag*

- 1 Cleaning nozzle
- 2 Bag row
- 3 Filter bag

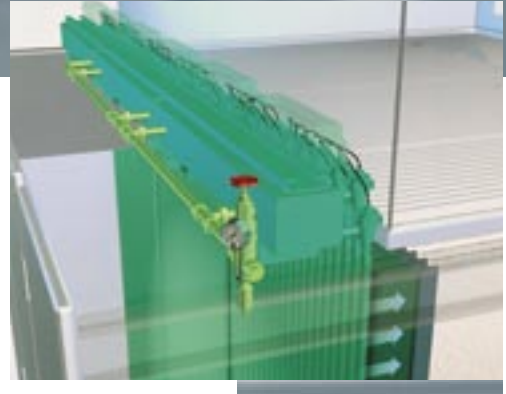
### **OFF - Line effect**

The vertically arranged cleaning nozzle always covers three adjacent rows of slots and the filter bags behind them, although the cleaning air can only flow freely into the middle row of slots. This OFF-LINE effect makes it impossible for detached dust to be drawn in from the adjacent filter bags during the cleaning cycle.



# Cassette filter

*FD - Flat bag filter  
with stationary compressed-air vessel flexible  
compressed-air hose and mobile nozzle*



## Flat bag filter with compressed air cleaning, type FD and FP

The use of a flat bag filter with compressed-air cleaning function may be more appropriate in special cases.

### **FD Filters**

In the case of type FD compressed-air filters, a blowpipe with injector nozzle is installed in front of each row of bags.

A stationary compressed-air vessel is installed on the filter casing with electrically actuated solenoid valves to clean the bags. The filter cleaning cycles are controlled via a control box with valve controller.

### **FP Filters**

At the FP filter the solenoid valve is connected to the mobile nozzle via a flexible compressed-air hose.

The compressed-air vessel and the corresponding solenoid valve are stationary arranged on the filter housing.

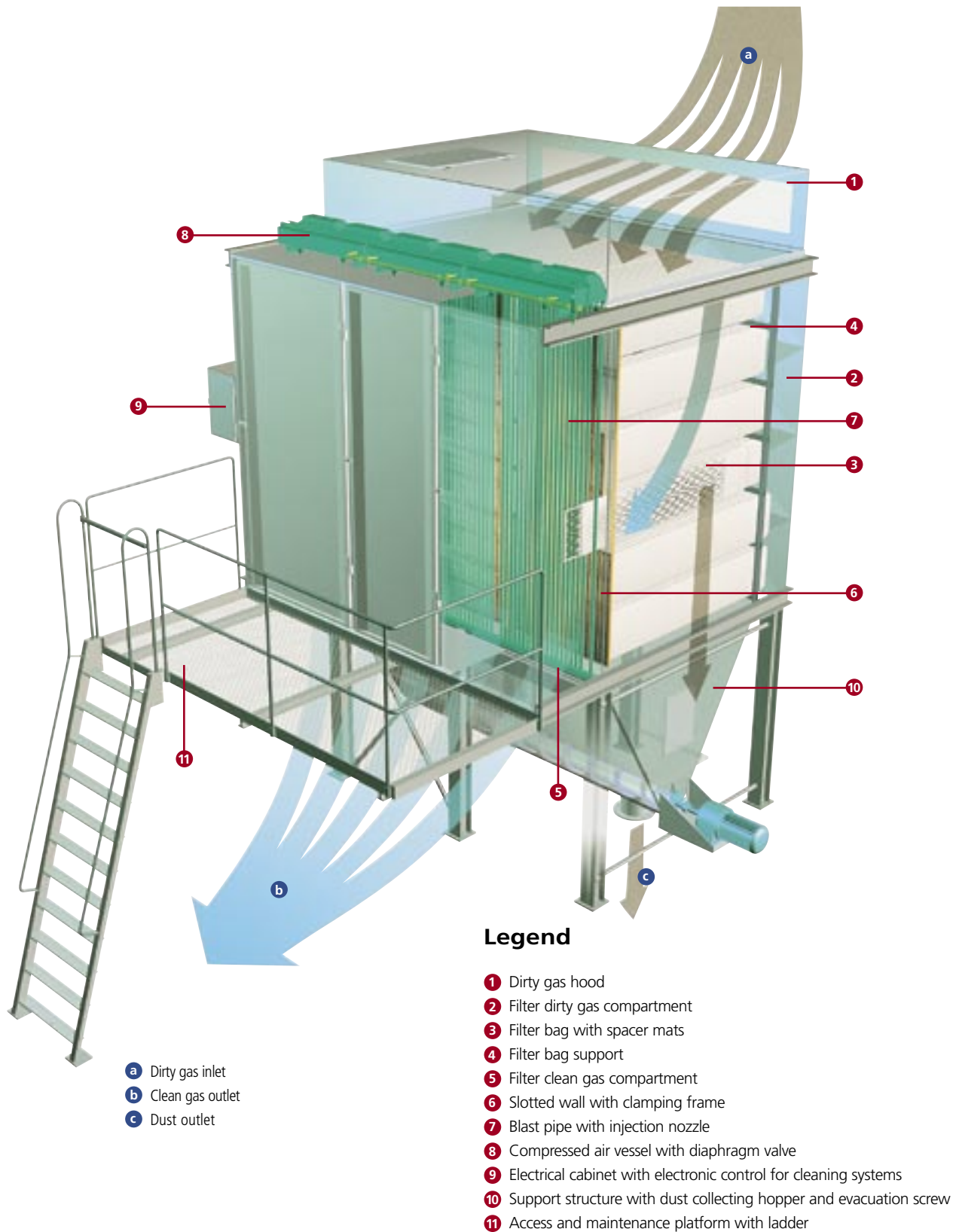
The mobile nozzle is driven and positioned as described for the cleaning car of the FS filter.

The compressed-air consumption for FP and FD filters depends on the type, volume and nature of the dust concerned. The pressure, cleaning pulse and pulse interval are variable and can be optimised at any time during operation.

Please find a detailed description of the flat bag filter in our data sheets.

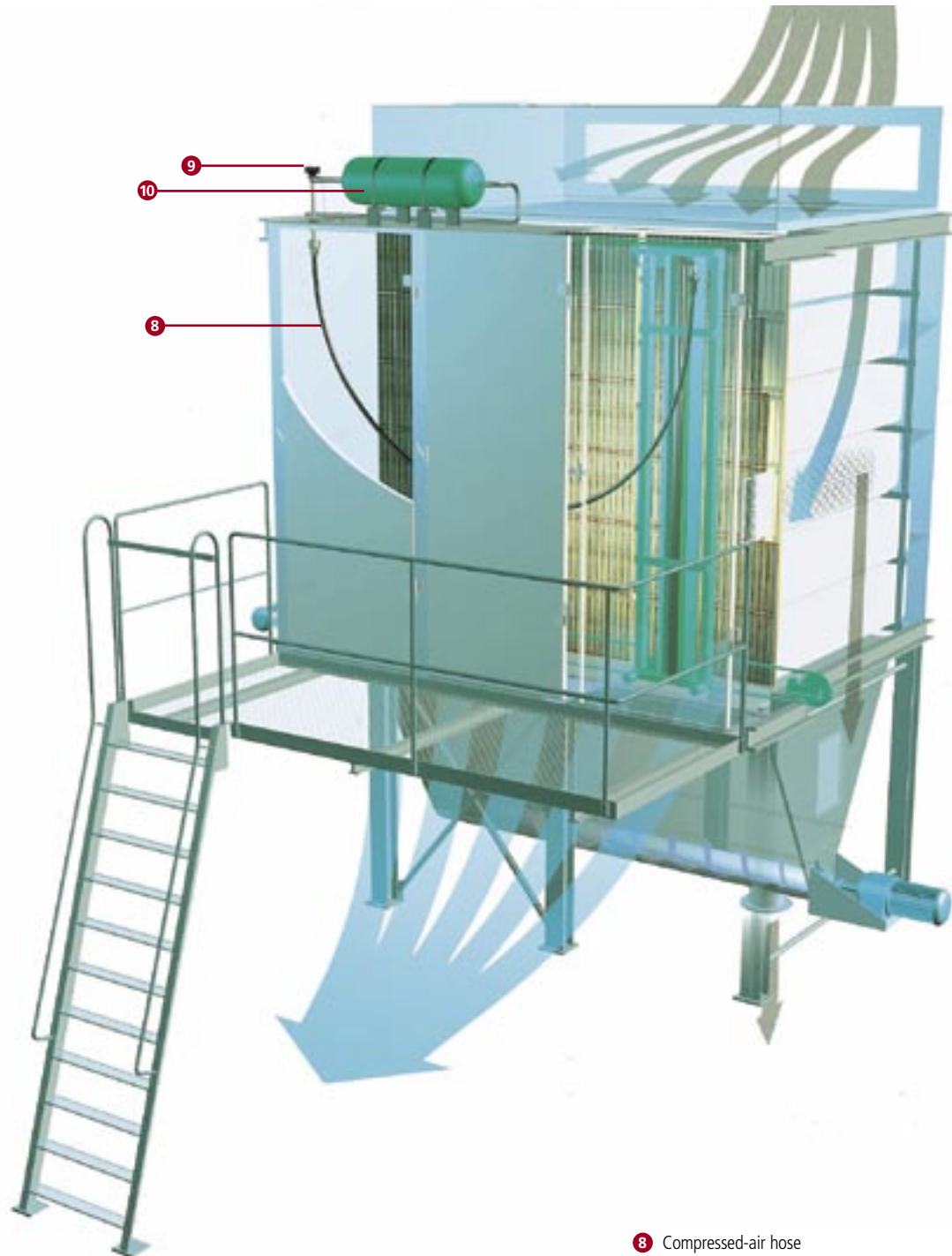
# Flat bag filter

*FD - Flat bag filter  
with stationary compressed-air vessel and electrically  
actuated solenoid valves and stationary nozzles.*



# Flat bag filter

*FP - Flat bag filter  
with stationary compressed-air vessel, flexible  
compressed-air hose and mobile nozzle*



- 8 Compressed-air hose
- 9 Solenoid valve (cleaning system)
- 10 Compressed-air vessel

# Flat bag cooler

## Flat bag cooler

Some process gases are quite simply too hot to be filtered. Even the best filter materials cannot cope with such gases. These gases must be cooled.

Dantherm Filtration has developed a cooling unit for this purpose. This cooling unit combines the function of a heat exchanger and pre-separator in a single unit.

They also offer a number of advantages: Low investment costs, low running costs and low maintenance costs.



## Optimum space requirement

Our flat bag coolers are of modular design. As a result, we can offer a cost-efficient solution in accordance with the customer's specific requirements and the space available. The modular design cuts costs for transport and installation. And series production guarantees the consistently high manufacturing quality.

Cooling units from Dantherm Filtration operate reliably and require little maintenance.

In addition, they can also be used to recover heat and save natural resources.

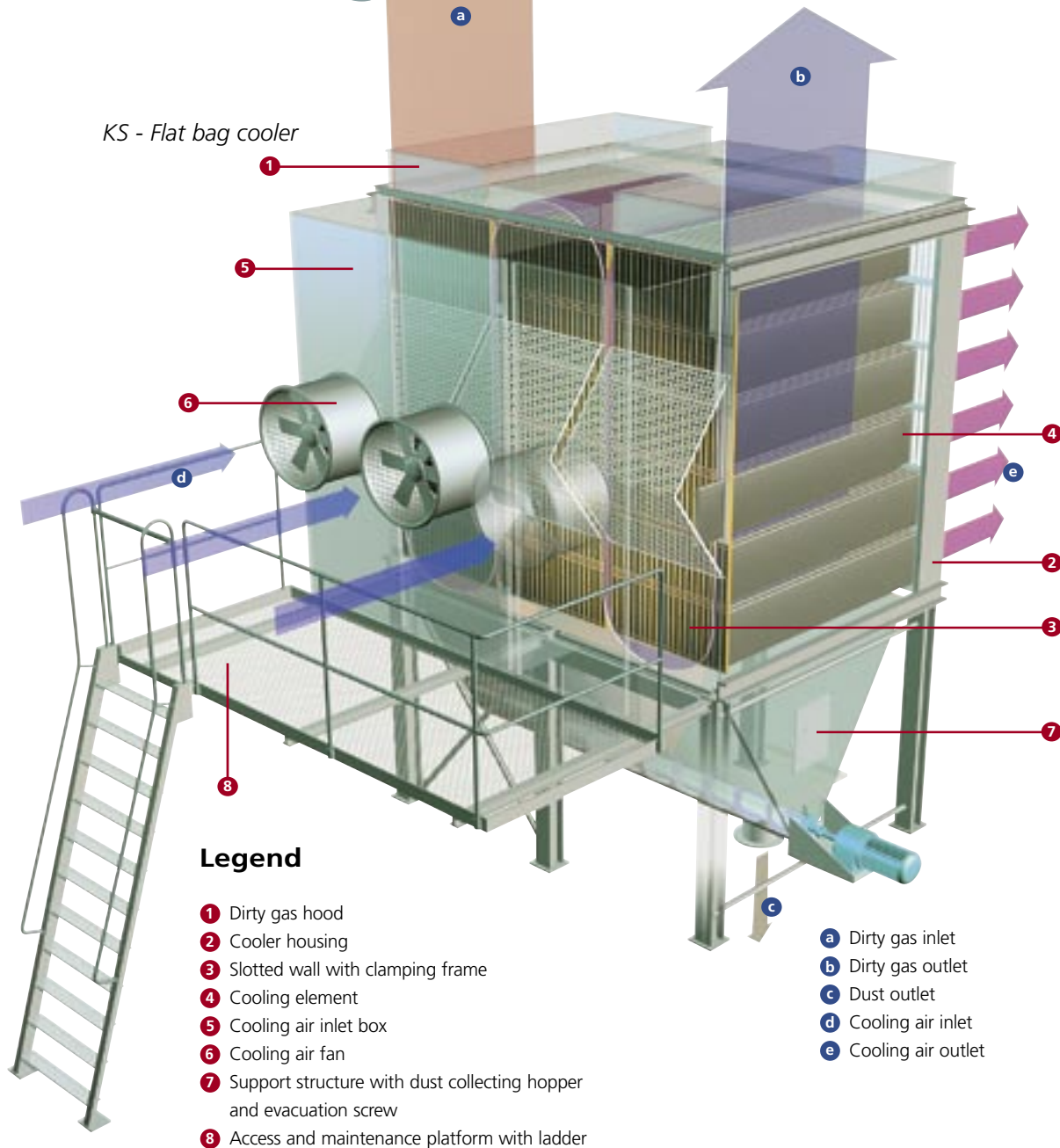
## Efficient and reliable

The functional unit of a flat bag cooling unit comprises the dirty gas hood, the cooling chamber, the dust collecting hopper with support structure and discharge unit.

The cooler comprises the cooling chamber with horizontal cooling elements which are hermetically connected with the slotted walls by a clamping frame with leg springs. The cooling air inlet boxes with cooling fans are located in front of the slotted wall.

As in the filter, all parts of the cooling unit are normally welded.

# Flat bag cooler



## Hot gas flow

The hot gases flow through the inlet duct for dust-laden gas and into the cooling unit, where they stream vertically down along the cooling elements. The gases are reversed through 180° in the dust-collecting hopper. The coarse dust is separated out here and the rate of flow slowed down. Cooling air fans draw in cooling air from the surroundings

and blow it through the cooling bags at right angles to the hot gas stream.

A temperature controller in accordance with the prevailing temperature switches on the required number of cooling-air fans. This ensures that the permissible gas discharge temperature is not exceeded.

Please find a detailed description of the flat bag cooler in our data sheets.

# Flat bag cooler



## Cleaning cycle

The geometry of the cooling elements in the Dantherm Filtration flat bag coolers and the distance between bags has been specially dimensioned to prevent the cooling unit becoming clogged with dust.

An automatic cleaning device is installed for tacky or adhesive dust.

Cleaning chains are fitted between the cooling elements in this case and remove the dust as they scrape over the surface of the cooling elements.

## Danger due to the acid dew point

The cooling air must be preheated if there is any risk of the temperature on the cooling elements dropping below the acid dew

point when cooling hot process gases.

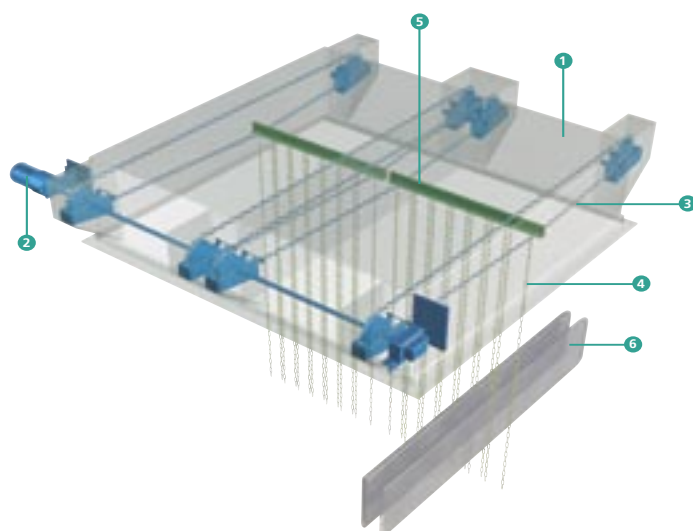
Dantherm Filtration has consequently developed the flat bag cooler KU specially for cooling such gases.

Unlike the cooler KS, the KU unit features an additional temperature controller for preheating the cooling air.

Part of the heated cooling air and fresh air is jointly drawn in by the cooling air fan and mixed.

The preset mixing temperature is adjusted by automatically opening or closing the fresh-air flap before the air stream enters the cooling elements.

Please find a detailed description of the flat bag cooler in our data sheets.



*Cooler - Cleaning system through cleaning chains*

- 1 Dirty gas hood
- 2 Driving station
- 3 Driving chain
- 4 Cleaning chain
- 5 Chain holder
- 6 Cooling element

# Flat bag cooler

*KU - Flat bag cooler  
with preheating of cooling air*



- a Dirty gas inlet
- b Dirty gas outlet
- c Dust outlet
- d Cooling air inlet
- e Preheated cooling air
- f Cooling air outlet

## Legend

- 1 Dirty gas hood
- 2 Cooler housing
- 3 Slotted wall with clamping frame
- 4 Cooling element
- 5 Cooling air injection box
- 6 Cooling air fan
- 7 Motorized butterfly valve
- 8 Manually activated butterfly valve
- 9 Cooling air exhaust box
- 10 Support structure with dust collecting hopper and evacuation screw
- 11 Access and maintenance platform with ladder

