

The SPÄNEX logo is located in the top right corner of the page. It consists of the word "SPÄNEX" in a white, bold, sans-serif font, set against a solid red rectangular background.

## Large filters by SPÄNEX

...efficient and economical filter technique for the industry!

safe ■ clean ■ efficient ■

# Efficient, economical and solid

## Exhaust systems with large filters by SPÄNEX

For more than 60 years SPÄNEX exhaust and filtration systems have been produced for various applications of industrial enterprises in many industries. Large filters are used for exhaust volume flows above 50,000 m<sup>3</sup>/h. Individual customer demands in this performance segment require optimally tailored plant technology for every application. Based on a thorough analysis of needs our sales staff develops plant concepts together with the customer.

## Different Systems

The large filter program consists of three series:

### ■ Battery filters

Battery filters are composed of the units of the compact filter program and are particularly interesting for tasks that require an exhaust volume flow between 50,000 and 100,000 m<sup>3</sup>/h.

### ■ Line filters

Line filters primarily offer the advantage of extensibility, i.e. the filter system can grow along with the production and an increased exhaust air quantity. The application range usually starts with exhaust volume flows of 80,000 m<sup>3</sup>/h. Exhaust systems with line filters for air quantities up to 200,000 m<sup>3</sup>/h are in use.

### ■ Filter houses

Filter houses are compact filter stations with a square base area and big container volume, so that the buffer function compensates fluctuations in material accumulation. The transport system doesn't have to operate permanently, but only intermittently which is energy-saving.

## Common Features

### ■ Energy-efficient plant concept

Large filters are installed near to the building resulting in short distances for the exhaust pipework system and for the return air system. This leads to less pressure losses and therefore less motor power for the exhaust fans.

### ■ Large quantities of material

Separated chips and dusts are taken into a hopper or container with a built-in discharging unit and are transferred via a rotary valve to screw conveyors with pneumatic transport system or another conveying device.

The conveying systems (chain conveyor, trough screw conveyor and rotary screw conveyor) can convey big quantities of material. When feeding material, for example via blow-in chambers, an even distribution is ensured.

### ■ Continuous operation

In general, industrial operations require multi-shift operation, so that also the filtration systems have to run continuously. This requirement can be met with cleaning systems by reverse-air (process air) or compressed air (jet-pulse-system). Both methods ensure effective and at the same time gentle cleaning of the filter bags, so that a long service life is achieved.

# Efficient, economical and solid

## Exhaust systems with large filters by SPÄNEX



Battery filter



Line filter



Filter house

### ■ Effective filter technology

The high degree of separation of the certified, high-quality filter material ensures, for example, in the wood industry a residual dust content of  $< 0.1 \text{ mg/m}^3$  in the return-air. We choose the quality and finishing of the filter material depending on the task.

### ■ Safe construction

The individual modules of the filter housings are designed as self-supporting constructions and are made of galvanized steel sheet. The folded corner supports and sheet steel profiles are screwed together so that pressure-shock-proof housings with smooth inner walls are created. These have the required stability in case of high wind and snow loads. The filter housings comply with the fire resistance class EW 90 so that they can be set up near the building.

### ■ Low pressure loss

The air flow through the filters has been optimised to reduce the internal resistance. The achieved low pressure loss between inlet and outlet openings leads to a power-saving operation.

### ■ Intelligent, energy-saving control technology

Thanks to control technology the greatest possible energy saving and a high operating comfort are reached. The determining elements are:

- speed control of the exhaust fans via frequency converter for continuous adjustment of the exhaust power to the exhausting volume demand,
- optimised operation of the conveyor systems by using the possible material buffering,
- automatic opening and closing of the slide valves in the connecting pipework to the machines,
- etc.

## Equipment variants:

- integrated or externally installed exhaust fans
- automatic start of the fans
- automatic slide control
- operation via frequency converter
- filling level monitoring
- maintenance platform with ladder
- enlarged clean-air chamber
- external sound- and heat protection

## Advantages:

- compact design, small footprints
- optimal adaptation to requirements
- high suction power
- energy-saving and quiet operation
- intelligent control technology
- multiple disposal variants
- pre-assembly in our factory
- short assembly times on the site

# Efficient, economical and solid

## Battery filters

### Specific features

#### ■ Range of application

Battery filters are predestined for the exhaust volume range between 50,000 and 100,000 m<sup>3</sup>/h.

#### ■ Structure

The filters consist of several modules and a shared hopper with a discharging device for the collection of the separated chips and dusts.

Each filter unit consists of 2 modules:

- sound-insulated fan cell with integrated radial fan and
- filter cell with filter bags and cleaning device.

As an alternative to the shared hopper each unit can be equipped with its own container for buffering the separated material.

#### ■ Compactness

With the radial fans installed in the fan cell as a standard, the battery filters represent complete exhausting centres, requiring small footprints at high performance.

#### ■ Variety

The modular system of the filter units based on several area raster grids allows an optimal adjustment to the customer's needs in combination with different filter bag diameters and lengths.

#### ■ Cleaning

By default the filter bags are cleaned by mechanical vibration. The compressed-air cleaning (jet-pulse-system) is used for continuous operation and for machining processes with very high dust content.

#### ■ Variants

Battery filters are designed as suction pressure systems with integrated exhaust fans as standard. If necessary the exhaust fans can also be arranged outside the filter units, either downstream (suction system) or upstream (overpressure system) the filter.

#### ■ Energy-efficient high-performance fans

Directly driven radial fans with efficiencies of more than 80% are installed in the fan cells, so that the power demand is minimised from the outset. In combination with the standard drive motors of efficiency class IE 3 (optional IE 4) a particularly high degree of efficiency is achieved.

#### ■ Quiet operation

By default the fan cells are lined with sound absorbing mats and equipped with a silencer, so that noise emissions are kept at a low level despite the high performance. Additional external silencers are not required usually.

#### ■ Several disposal variants

Chips and dusts, which are discharged out of the hopper or the containers, are transferred via one or more rotary valves to a pneumatic conveyor system, a transport screw conveyor or another conveying device.

#### ■ Pre-assembly at SPÄNEX

The individual modules and the containers or the shared hopper are pre-assembled at SPÄNEX, so that they only have to be compounded and screwed together on the construction site with the help of a crane. This leads to short assembly times.



# Examples of real-life solutions

## Battery filters



# Efficient, economical and solid

## Line filters

### Specific Features

#### ■ Range of application

Line filters are generally used for exhaust volume flows more than 80,000 m<sup>3</sup>/h. The filter system is particularly predestined for applications of the furniture industry as well as in window factories and moulding plants.

The design of the line filters primarily offers the advantage of extensibility, i.e. existing filtration systems can simply be extended by individual units and thus be adapted to changed requirements.

#### ■ Structure

The filters consist of several units. Each unit is made of 3 modules:

- clean air chamber with built-in cleaning device,
- filter cell fitted with the filter bags and
- hopper element for material collection with built-in discharge device (chain conveyor or screw conveyor).

The raw air is brought in via blow-in chambers, which are evenly distributed along the length of the filter unit. The clean air chamber can be executed as a heightened version for easier maintenance.

#### ■ Variety

The construction of the line filter program allows filter units of any size by concatenating several units. In addition, the filter bag diameters and lengths are available in several sizes, so that an optimum adaptation to the customer's requirements is possible.

#### ■ Cleaning

Line filters are primarily supplied with reverse-air cleaning as it provides tangible advantages in terms of operational safety and operating costs:

- only process air is used for cleaning
- no conditioned compressed air is required

For the reverse-air cleaning a radial fan is mounted on a carriage in the clean gas chamber. The fan runs from one bag row to the next and the filter bags are cleaned gently and effectively with the sucked clean air.

The compressed air cleaning (jet-pulse-system) is only used in special cases.

#### ■ Variants

Line filters are usually designed as underpressure systems. The exhaust fans are arranged downstream the filter unit. In special cases it may be advisable to place the exhaust fans upstream the filter unit (overpressure system). Often the exhaust fans are equipped with a noise insulation and silencers are integrated in the return-air ducts, so that noise emissions are hardly perceptible.

#### ■ Several disposal variants

Chips and dusts, which are discharged out of the hopper or the containers, are transferred via one or more rotary valves to a pneumatic conveyor system, a transport screw conveyor or another conveying device.

#### ■ Pre-assembly at SPÄNEX

The hopper with the discharging unit (chain conveyor or screw conveyor) and the profile steel base frame is pre-assembled at SPÄNEX in sizes ready-for-transport. For transport reasons the filters, blow-in units and clean-air units are supplied as single components.



# Examples of real-life solutions

## Line filters



# Efficient, economical and solid

## Filter house

### Specific Features

#### ■ Range of application

Filter houses are preferably used, if a big filter capacity is required at small footprints. Another advantage is the large volume of the hopper for buffering the separated chips and dusts in order to compensate fluctuations in the material flow. Therefore the transport system has to run only intermittently and can save energy.

#### ■ Structure

For a filter house several filter units of the line filter program (clean-air chamber and filter cell) are arranged with each one individual blow-in chamber in double rows, so that an almost square basic measure is formed. The container arranged below with a built-in discharging device (rotating screw with forced feed) can take a chip volume of up to 30 m<sup>3</sup>. The entire filter unit is mounted on a galvanized steel frame. The clean-air chambers can be raised for easier maintenance.

#### ■ Variety

Filter bags are variable in diameter and length, so that it is possible to adapt the filter units to customer needs.

#### ■ Cleaning

Filter houses as well as line filters are supplied primarily with reverse-air cleaning as it shows the aforementioned advantages in terms of operational safety and operating costs:

- only process air is used for cleaning
- no conditioned compressed air is required

For the reverse-air cleaning a radial fan is mounted on each carriage in the two clean gas chambers, moving from row bag row to the next and cleans the filter bags gently and effectively with the sucked clean air.

The compressed air cleaning (jet pulse system) is only used in special cases.

#### ■ Variants

Filter houses are usually designed as underpressure systems, whereby the exhaust fans are arranged downstream the filter unit. In special cases it may be useful to place the exhaust fans upstream the filter unit (overpressure system). Often the exhaust fans are equipped with a noise insulation and silencers are integrated in the return-air ducts, so that noise emissions are hardly perceptible.

#### ■ Several disposal variants

Chips and dusts, which are discharged out of the hopper are transferred via one or more rotary valves to a pneumatic conveyor system, a transport screw conveyor or another conveying device.

#### ■ Delivery

For transport reasons the filter houses are supplied as single components and have to be assembled on the construction site.



# Examples of real-life solutions

## Filter house



## Examples of real-life solutions





# Examples of real-life solutions





# SPÄNEX Your Partner

## Perfect in every detail

### ■ Own sheet metal working, own circuitry construction

The components of the large filters are manufactured on state-of-the-art machines. Due to the depth of production the high quality standards of our customers and ourselves can be kept. The electric circuits and the control technology are also developed by SPÄNEX and are manufactured by us.

### ■ Accessories

We use only accessories (vibration motors and gear motors, pneumatic parts, etc.) of leading manufacturers which meet our quality requirements. The experience gained from the delivery of several hundred large filters has proven the correctness of this concept.



## Advice and Service

It's a long way from planning to the erected plant. In all phases SPÄNEX is at your side with the expertise and experience gained from the realization of several thousand projects. The systems are set up by SPÄNEX fitters and put into operation by our customer service technicians. Our service (maintenance contracts on request) ensures the long lifespan and reliable operation of the filter units.



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