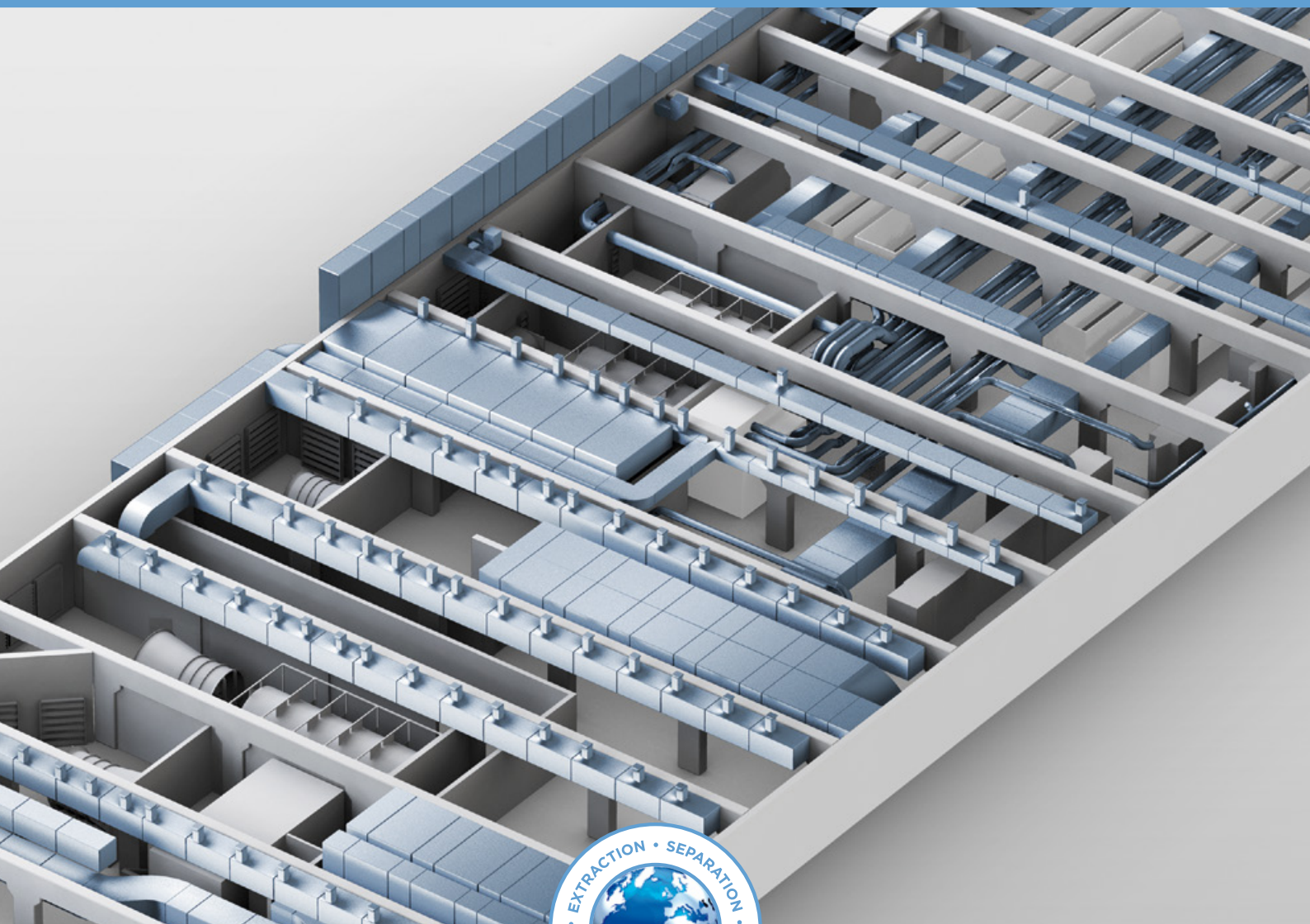


# R&R BETH FILTRATION

FILTRATION & HUMIDIFICATION  
TEXTILE & APPAREL INDUSTRY



**R&R GROUP**  
YOUR GLOBAL SYSTEM PARTNER



R&R BETH Filtration, an international company, specializes in filter and extraction technology, sorting and separating technology, and explosion and fire prevention systems. We develop, fabricate and install both individual subassemblies and entire turnkey plants.

- Filtration Systems
- Sorting & Separating Technology
- High-Temperature Dedusting
- Paint Fog Extraction Systems
- Tar & Oil Mist Separation
- Explosion & Fire Prevention
- Paint Fog Extraction Systems
- Components for Air Filtration
- Filters & Separators
- High Performance Centrifugal Separators
- Electrostatic Precipitators (Dry & Wet)
- Bag Filters & • Cartridge Filters
- Ceiling- & Top-Mounted Filters
- Filter Housings
- Compactors
- Chimneys & Pipe Systems



Dust removal technology  
and filtration systems  
since 1887

**Industries we serve**



Textile Industry



Non-Woven / Hygiene



Paper & Cellulose



Glass & Ceramics



Gravel & Earth



Plastics & Rubber



Chemicals



Wood & Wood Products



Energy



Food Products



Paints



Iron & other Metals



Automotive



Recycling



Electrotechnology



Aviation & Railways



**Ease of maintenance and proven operational reliability**

Equipped with the appropriate filter media, R&R Products can lower the dust concentration of clean gas to levels that stay comfortably below current and prospective emission limits. Their advantages compared to conventional filter systems are their superior energy efficiency, low maintenance requirements, and especially their low investment costs.



**Fiber Filters**



Drum Filter TFB



PreFilter TVM



PreFilter VFA



VersaDrum Filter

**Separators & Compactors**



Cyclone



Fiber Compactor



Compacting Power Screw



Baling Press

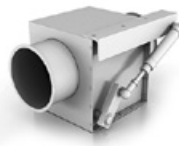
**Separators & Humidifying Equipment**



Dust Separator AAS R6



Humidifier & Washer

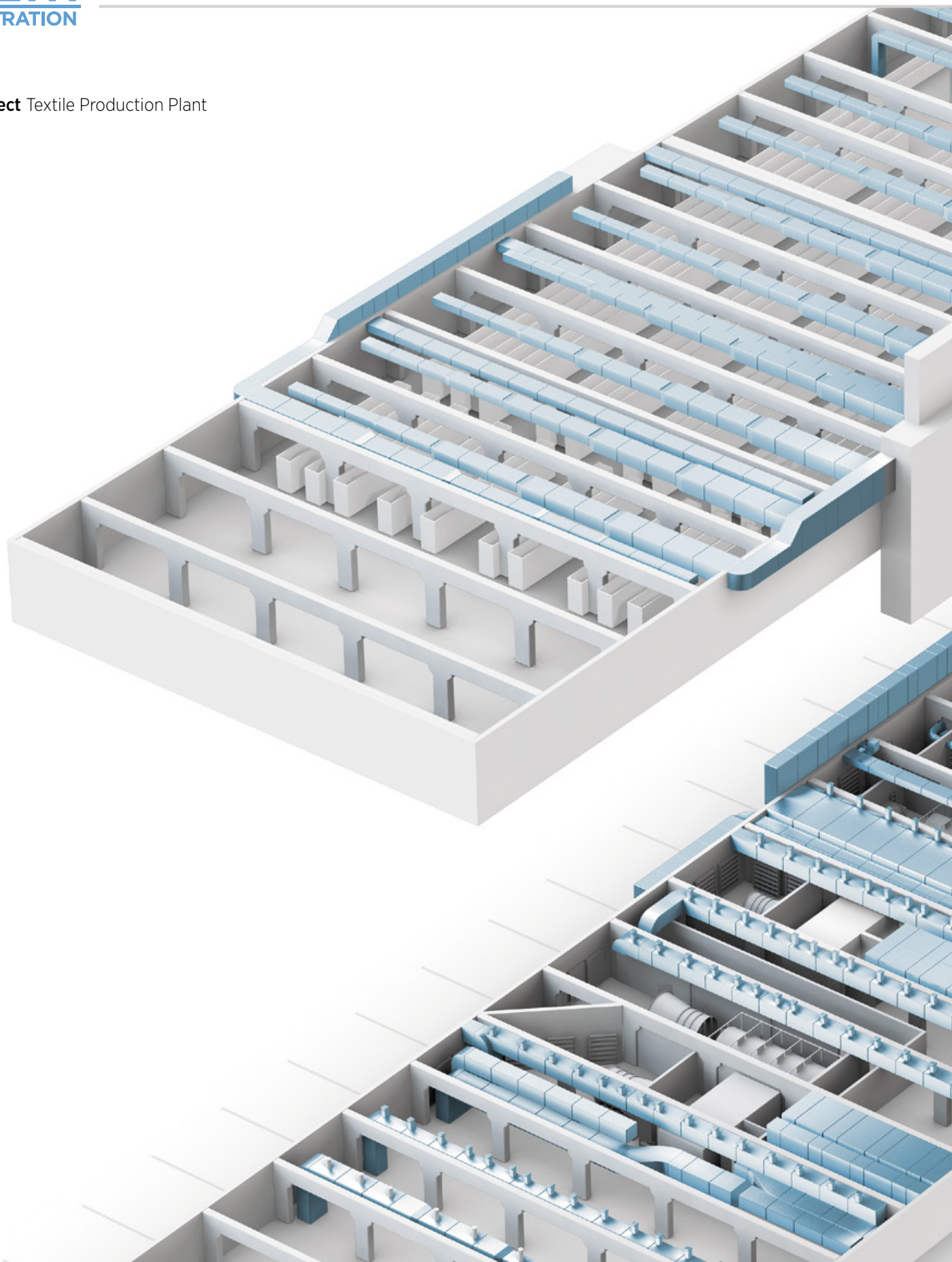


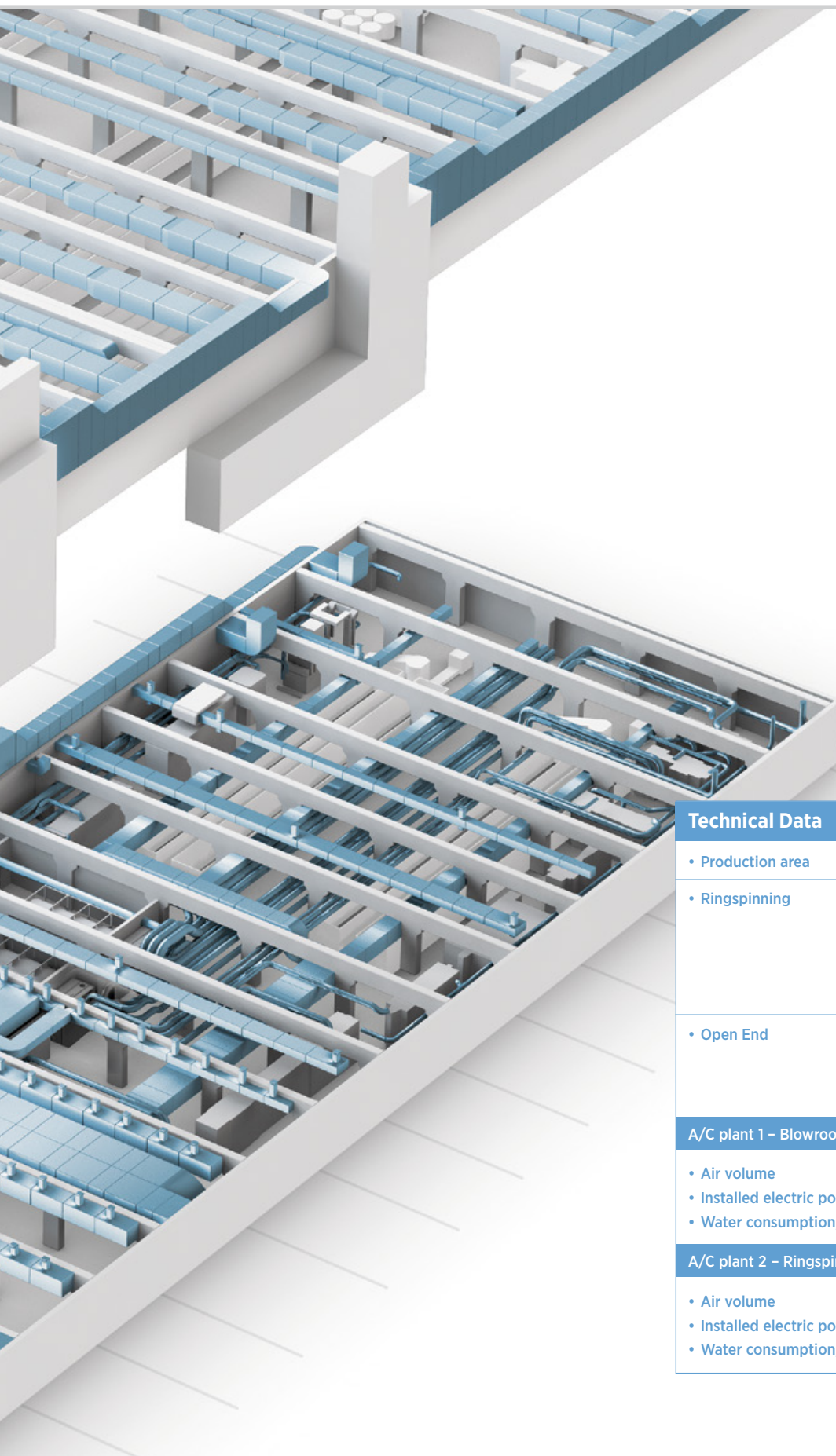
Damper PKA



Ventilator / Fan

**Project** Textile Production Plant





### Technical Data

• Production area	10,250 m <sup>2</sup> (110,330 sf)
• Ringspinning	Blowroom 8 Cards 4 Draw frames 4 Roving frames 10 Ringspinning frames, 912 spindle 10 Winders
• Open End	Blowroom 10 Cards 4 Draw frames 6 Autocoro 216

#### A/C plant 1 – Blowroom, Cards, Draw Frames and Roving

• Air volume	195,000 m <sup>3</sup> /h (114,800 cu.ft./min)
• Installed electric power	270 kW
• Water consumption, max.	2.8 m <sup>3</sup> /h (ca. 12.3 U.S. gal/min)

#### A/C plant 2 – Ringspinning, Winding and Open End

• Air volume	245,000 m <sup>3</sup> /h (144,200 cu.ft./min)
• Installed electric power	178 kW
• Water consumption, max.	3.5 m <sup>3</sup> /h (15.4 U.S. gal/min)



Automatic drum filters are suitable for extracting dust from large air volumes. The essential requirements in everyday operation are:

- **High filtration capacity**
- **High air permeability**
- **Exact adaptation to the application at hand, e.g. through modular design**
- **Low-maintenance operation**

These criteria are fully met by **Drum Filters type TFB and TFC**. They are internally loaded, cleaned continuously and can cope with an extremely high air volume range between 20,000 and 270,000 m<sup>3</sup>/h (12,000 and 160,000 cu.ft./min).

These low-maintenance fine filter units have been operating successfully for many years in a wide variety of industries.

Time-tested technology and robust construction guarantee the highest degree of safety, reliability, and availability.

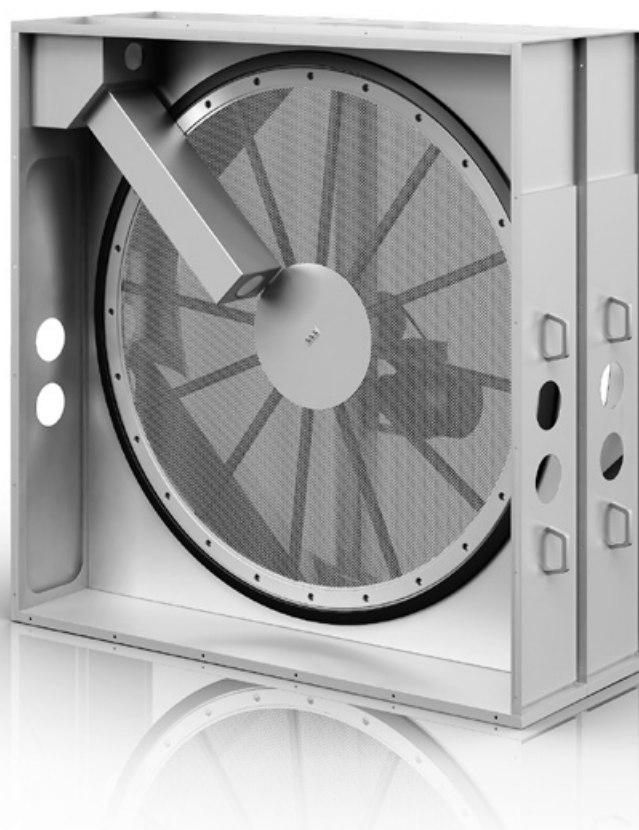
The design of the Drumfilters completely departs from that of most previously filter systems. The filter drum is stationary and can be bolted directly to a wall opening. The incoming air flows from the inside to the outside, leaving the drum through the whole filter surface. This means that the air inside the filter chamber is clean. Rotating and changing suction nozzles on the inside of the drum continuously vacuum off any dust and waste from the filter media. Only very little air is required to clean the filter medium as the suction nozzles are very small.

The nozzles are fluidic optimized and touch the filter media, which guarantees high and efficient cleaning. The drumfilter combination TFC features an additional coarse particle filter in form of a prefilter disc that is installed at the air intake side of the drumfilter. Coarse particles will adhere on the rotating disc while the fine dust passes through it into the drum. A stationary suction nozzle cleans the prefilter disc. The suction nozzles inside the filter drum and the prefilter disc can be driven by the same motor.

### Advantages

- Clean filter chamber due to inside-out air flow
- Motor easily accessible on the clean gas side
- Regenerative filter unit
- Continuous cleaning, therefore no pressure fluctuations within the system
- Precise adaptation to the total air volume due to the modular design
- No dust build-up between prefilter and filter drum with TFC filter combination
- Energy-efficient operation due to low pressure loss
- Filter chamber accessible for inspection during operation, no shut-down required

**Application in various industrial sectors:**  
Textile • Non-Woven • Wood • Paper  
Cellulose • Tobacco • Fiberglass  
Hygienic • Automotive Industry



The best way to extract coarse particles from large air streams, is to use an appropriate prefilter screen fabric. Its characteristics are:

- **High air permeability**
- **Exact adaptation to the application and materials at hand by using different mesh sizes**
- **Good separation of various size particles**
- **Low maintenance operation**

The R&R Prefilter type TVM is a rotating, continuously cleaned filter disc. It can be used within an extremely large air volume range of 15,000–135,000 m<sup>3</sup>/h (9,000 - 80,000 cu.ft./min).

#### Functional description

The Prefilter consists of an housing which is separated by a dividing wall in which the rotating filter disc is mounted.

The raw gas side is sealed off from the clean gas side by a special felt strip around the filter disc. The filter disc is cleaned continuously

by negative pressure through a stationary slot nozzle (type TVM) or by a traversing round nozzle (type TVN). The nozzle does not touch the filter screen during cleaning.

The filter screen and nozzle are powered by a drive motor with belt drive mounted to the filter disc on the clean gas side.

#### Applications

The R&R Prefilter type TVM is most effective for **exhaust air streams with a high content of fibers and particles of varying materials**, sizes and shapes.

This filter model is especially useful with heavy loads of individual fibers and particles.

**The compact and robust design offers the highest degree of reliability and safety.**

#### Advantages

- Regenerative filter unit
- No pressure fluctuations in the extraction system due to continuous cleaning
- Space saving installation due to the disc shape and the compact design
- Optimum flow velocity achieved by exact adaptation to the total air quantity
- No fiber contamination of drive elements and easy access by installation behind the prefilter screen - easy filter media change
- Pressure drop is minimized by optimal airflow design

**Application in various industrial sectors:**  
Textile • Non-Woven • Wood • Cellulose Paper • Tobacco • Fiberglass Industry

The best way to filter out coarse particles from large air volumes is to use an appropriate prefilter screen. Its characteristics are:

- **high air permeability**
- **exact adaptation to the particulate matter by using different mesh sizes**
- **good separation of variously sized particles**
- **low maintenance**

The R&R Prefilters Type VFA and VFB are static, self-cleaning screens with a tangential air inlet at the top. They can be used within an air volume range of 5,000 - 50,000 m<sup>3</sup>/h (3,000 - 30,000 cu.ft./min). Their robust design offers the highest degree of reliability and safety.

**Type VFA** comes without a frame while **Type VFB** has its own housing.

#### Application

R&R Prefilters Type VFA and VFB are most effective for the **extraction of air streams with a high content of fibers and particles of varying materials**, sizes and shapes.

R&R Prefilter types VFA and VFB are particularly effective in combination with an **R&R fine filter**.

#### Functional description

R&R Prefilters Type VFA and VFB basically consist of an upper and a lower housing section. The space in between is sealed off from the outside by a cylindrical filter screen. The air enters tangentially through the upper section of the housing.

A rotating airflow carries the fibers to the bottom on the inside of the filter screen. Dust particles in the air stream exit through the filter screen from the inside to the outside at the bottom of the filter.

The separated particles are discharged with a suction connection either continuously or intermittently.



#### No moving parts

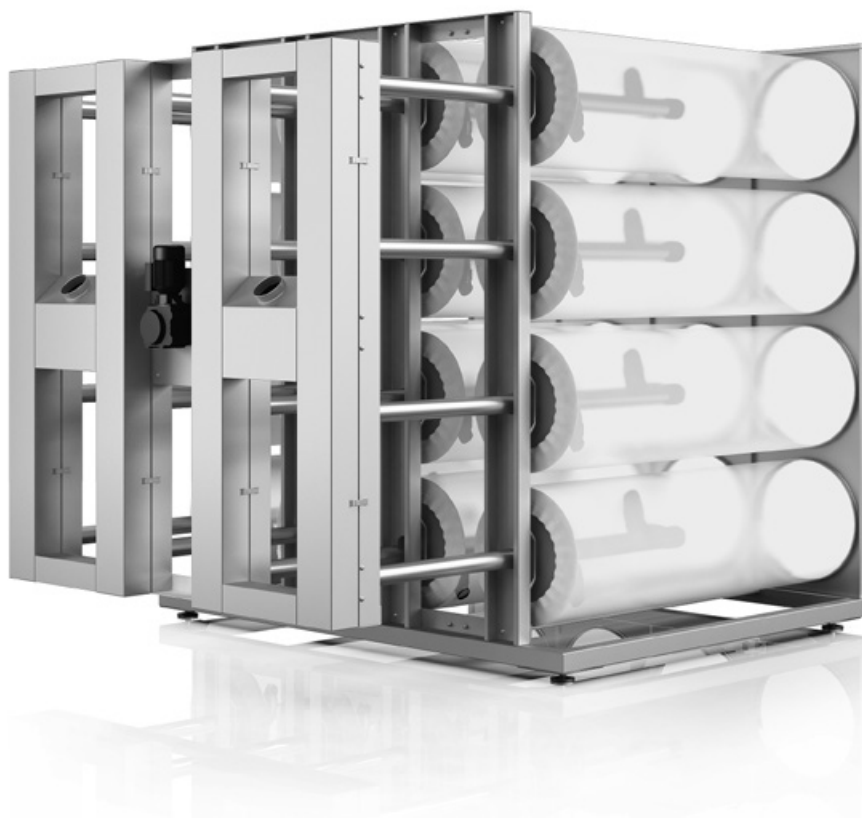
R&R Prefilters VFA and VFB have no moving parts. The cleaning mechanism uses only the dynamic forces of the moving air.

#### Application in various industrial sectors:

**Textile • Non-Woven • Wood • Paper  
Cellulose • Tobacco industry**

#### Advantages

- Regenerative filter unit & compact design
- Continuous /intermittent suction choice
- No pressure fluctuations in the suction system in continuous cleaning mode
- Optimum velocity through exact adaptation to total air quantity
- No moving parts, therefore practically no cleaning or maintenance required
- Easy replacement of filter media
- Connection to vacuum system possible



Filter systems should meet the following criteria:

- **High filtration capacity**
- **High air permeability**
- **Compact design**
- **Low-maintenance operation**

R&R meets these requirements with the internally-loaded **VersaDrum Filter™ VDF-16** (the word is derived from »versatile«). The customer receives a completely assembled and tested filter unit that provides the highest degree of dependability, safety and availability.

#### Functional description

The VersaDrum Filter™ VDF-16 is an internally-loaded filter with 16 individual filter drums that can be operated under positive or negative pressure. The individual filter drums are cleaned by rotating suction nozzles – two per drum – that also move in a superordinate horizontal direction.

Cleaning is performed at intervals of two drums at a time to ensure a high filter capacity with a minimum of suction power. The intervals are switched using a simple and pneumatically controlled open/close valve system. The nozzles are touching the filter media only during cleaning. This increases the filter efficiency due to the defined filter cake structure.

All drive elements, the chain drive for the rotation movement, the cross-groove shaft for the axial movement and the pneumatic cylinder for valve control are located on the clean air side.

#### Application in various industrial sectors:

**Textile • Non-Woven • Wood • Paper & Packaging • Cellulose & Personal Care • Tobacco • Pharmaceutical industry**

#### Advantages

- Fully contained modular construction
- Quick installation of system upon delivery
- Internally-loaded filter drums without support element
- High filter capacity with a defined filter cake
- Continuous cleaning controlled with selective intervals
- Long service life of filter media
- Very compact design
- 3,1 m<sup>2</sup> filter area / m<sup>3</sup> enclosed space
- All drive elements on the clean air side
- Partially assembled filter modules
- Easy changing of the filter media

#### Supply:

- as a partially assembled module
- as a complete filter unit with sheet metal housing in container size

Centrifugal separators are extremely useful for extracting fine dust from the air stream. Their characteristics are:

- **High efficiency**
- **Very exact separation possible**
- **Large air volume range**
- **Low-maintenance operation**

The R&R Centrifugal Separators type ZSA, ZSB and ZSC operate within an air volume range of 100 - 5,500 m<sup>3</sup>/h (60 - 3,250 cu.ft./min).

Their **robust design** and **protective interior lining** ensure a long service life and the highest degree of reliability, safety and availability.

#### Functional description

The particle-laden air stream enters the separator tangentially at the top, creating a rotating airflow (vortex).

By centrifugal force the dust particles are moved along the outside wall where they are separated and, in spiral motion, slide into a collection device (plastic bag).

It is also possible to mount an R&R dust compactor below the separator. In the lower part of the housing, the air stream is forced to reverse and flows upwards through the immersion tube (cyclone turbulence).

The centrifugal separators ZSA, ZSB and ZSC are particularly suitable for the separation of dust particles with a low percentage of fibers and granules.

Cyclone type ZSA operates with low pressure loss. Cyclone type ZSB achieves higher separation rates than type ZSA.

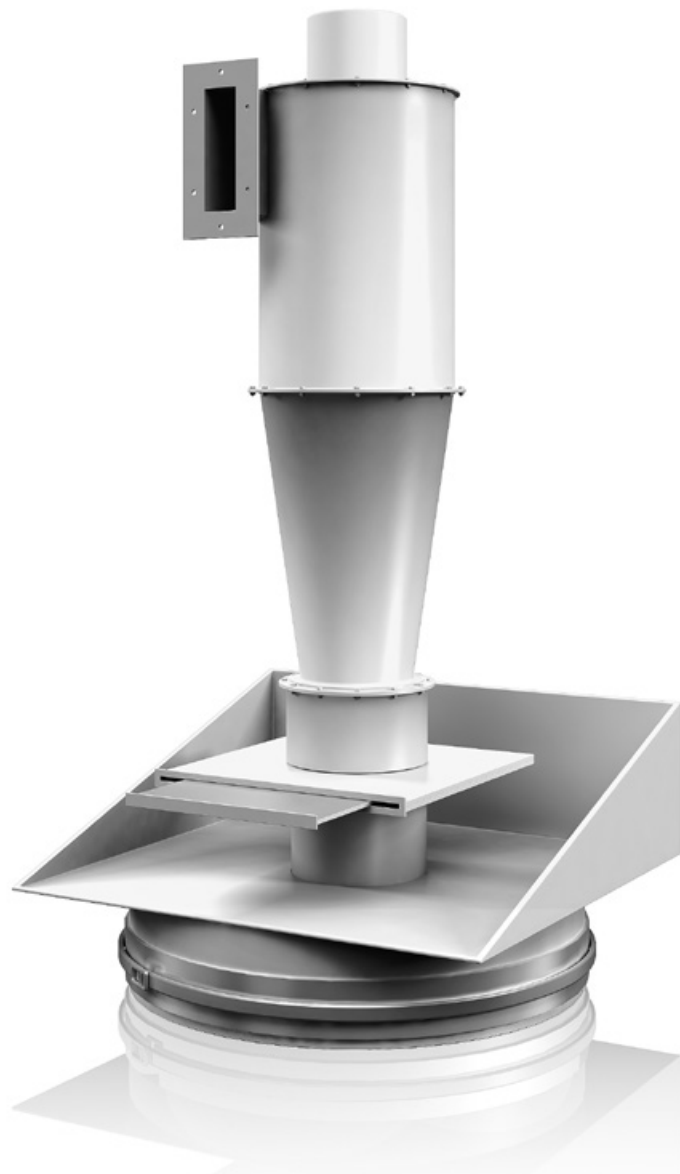
Type ZSB with return air plenum combines excellent separation rates with low pressure loss by employing a pressure regain plate inside the plenum. Type ZSC is used for larger air volumes.

#### Application in various industrial sectors:

**Textile • Non-Woven • Surface Coating  
Paper & Packaging • Cellulose • Tobacco  
Woodworking • Powder Manufacturing**

#### Advantages

- No rotating or moving parts, ensuring maintenance free operation
- Easy & high efficient separation of fine & finest particles
- Continuous operation
- Can be operated with positive or negative pressure
- Reduction of pressure loss through a pressure regain piece in the top portion (ZSB feature with return air plenum only)
- Exact adaptation to any air volume due to an extensive variety of available sizes



## Fiber Compactor Type FKA

The R&R separating and compacting units are perfect for processing many types of fibers. The solid particles are extracted from the production process by suction, separated from the air stream and deposited in bags, containers or silos.

### Functional description

The particle-laden air stream enters at the top of the housing through the tangential inlet, flows through the perforated cone and is discharged through the outlet. The collected material and waste is deposited on the inside of the perforated cone.

From there the material is continuously scraped off and compacted by a plug screw. The pre-compacted material is pressed against a diaphragm at the bottom outlet opening. This continuous process compacts the material and pushes the diaphragm open. The material is discharged into a suitable container or bag. This continuous operation of the R&R units prevents fluctuations in the extraction system.

**Application in various industrial sectors:**  
Textile • Paper & Plastic Waste

### Advantages

- Separator and compactor in one unit
- Continuous operation
- High material and air throughput capacity
- Sturdy construction
- Pressure-free discharge
- No fluctuations in the extraction system





The R&R Compacting Power Screw type CPS is used as discharge unit for dust and fibers in connection with separators such as cyclones, dust separators, jet filters and hose filter systems and fine filter systems.

It permits the removal of fine dust and material with short fibers without letting those substances contaminate the surrounding area.

#### Functional description

The separated material drops into the feeding hopper of the CPS and is then picked up by a horizontally aligned compacting screw. The compacting screw, which is powered by a gear motor, presses the material through a spring-loaded diaphragm, thereby compacting it.

To ensure that the unit is sealed off to the outside the screw must always be filled with waste. The Compacting Power Screw type CPS is delivered ready for installation and including all components and connection parts necessary for installation and plug-in.

#### Various types of discharge can be either:

**1) Discharge into container: Containers are used to collect compacted material.**

**2) Discharge into bags: The compacted material is either discharged into plastic bags or Big Bags. In the case of overflow the waste is discharged to the front.**

#### Advantages

- Large material capacity
- Robust design
- Dust-free material discharge with compacting ratio of 2-3
- Dust-free material discharge for pressure differences up to 20" wg. (5,000 Pa)
- Continuous operation  
- no fluctuation of pressure in the system

## Door-Typing Baling Press Type KBA

The R&R Baling Press KBP 20 is used to compress large quantities of textile waste from various stages of industrial processing into bales.

The advantage of using a hydraulic bale press is that **the overall waste volume is reduced considerably**, thus cutting down on the need for storage space, transport capacity and personnel.

Due to its compact construction the bale press does not take up much space; no foundation or pit is needed. The material is fed through feed rollers located in the feeding funnel, thereby ensuring high product density and uniformly shaped bales.

The bales are tied up with four steel bands and can be stacked easily because of their consistent shape and high density. The bale weight can be adjusted via the hydraulic aggregate.

The press can be operated **either as an individual unit or as a component** in a waste disposal system for baling all kinds of textile waste. Depending on the material volume at hand, the press will start and stop operating automatically, thus keeping operation costs to a minimum.

### Application in various industrial sectors:

Textile • Non-Woven • Woodworking  
Paper and Packaging • Cellulose • Tobacco  
Manufacture of Powders • Surface Coating

### Technical details

- **Bale size:**
  - Width: 800 mm (31.5 inch)
  - Height: 550 mm (21.65 inch)
  - Length: 1,000 mm (39.37 inch)
- **Press force: 20 ton**
- **Motor: 7.5 kW**
- **Output: 300 kg/h (662 lbs./h)**



### Advantages

Considerable reduction of waste volume: Less storage space needed, Less transport capacity needed, Reduction of personnel requirements • Large range of operation, also well suited for smaller volumes • Compact, robust design • Can be operated as individual unit or as a component in a waste disposal system • Low maintenance operation

The R&R Dust Separator »AERSTAR AAS-R-6« is a bag filter with a fully automated compressed air filter mechanism. It won't throw dust in your eyes with vague promises, but instead will extract it reliably – with clear-cut benefits for you:

#### Compact design

The filter elements are arranged side by side.

#### Fibrous types of dust are easily extracted

The filter bags are spaced at particularly large intervals, thereby avoiding build-up and cross-over effects. This way, even fibrous dust types are separated reliably.

#### Easy access

The filter bags are fixed securely to the top plate with easily removable tensioning elements. They can be inserted and removed comfortably by a single person via the large maintenance door of the clean gas space.

The diaphragm valves and compressed air tank are also easily accessible. As an additional option we offer a quick-change system for filter bags that can reduce replacement time by up to 80%.

We offer various types of filter bags. The standard version is fitted with polyester needle felt that is also available in an antistatic version.

#### Extremely robust design, tailored to customer requirements

Our standard units are made from carbon steel. On request, stainless steel can be used for either the complete unit or for contact parts only. The paintwork is at least 70 my strong and hardened in drying ovens. We can also offer customized paintwork.

#### Pre-assembled on delivery

All AERSTAR AAS-R-6 separator units and plants are delivered pre-assembled, depending on the model. This keeps installation costs to a minimum.

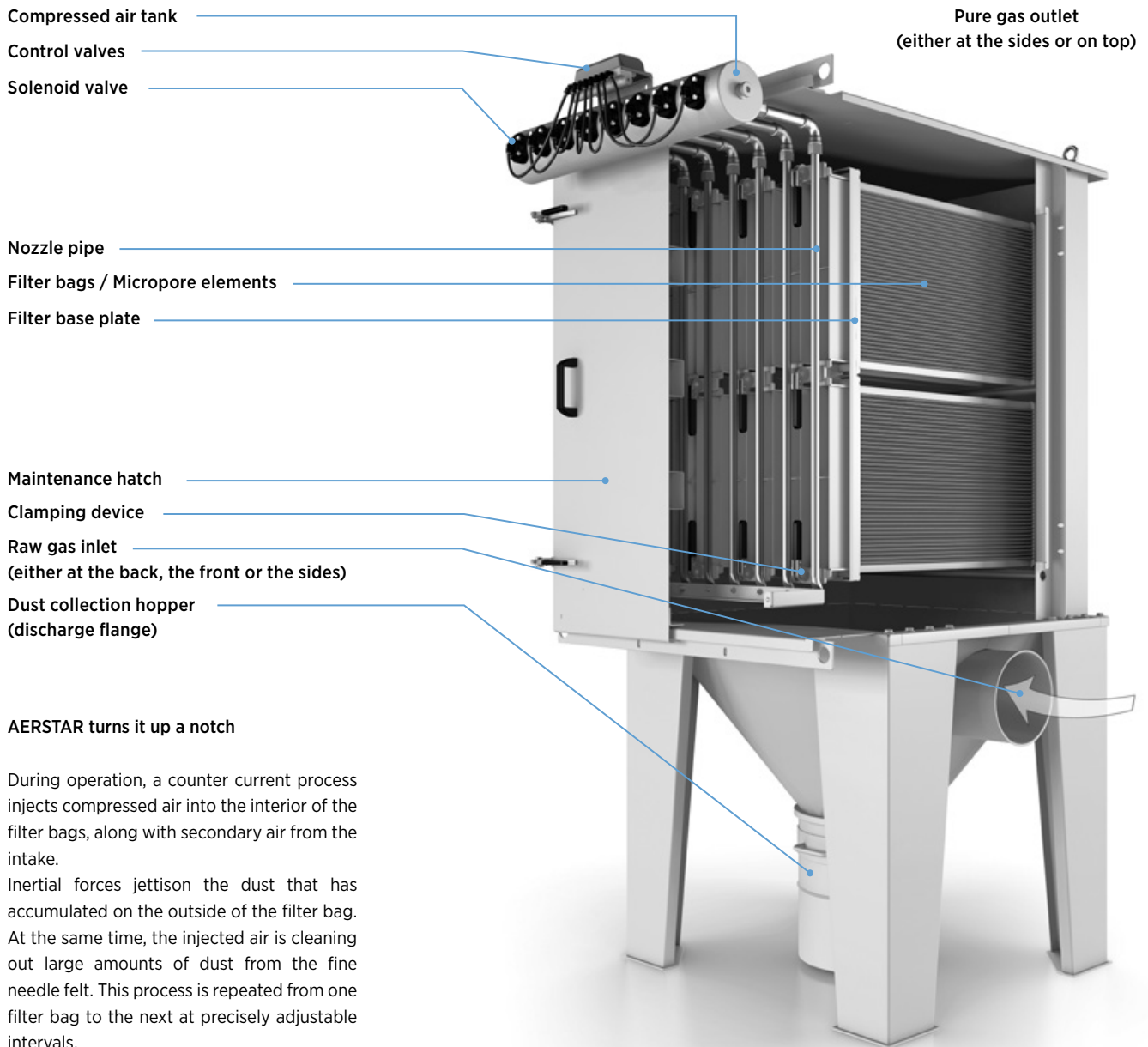
#### Advantages

Continuous operational mode • No interference liability • Highly durable filter bags  
Perfect functionality with very high dust concentrations • For pressure levels up to 8,000 daPa  
In-house production »Made in Germany«



Optionally equipped with pressure relief and explosion protection (DIN EN 1127-1).

**Dust Separator** Type Aerstar AAS



**AERSTAR turns it up a notch**

During operation, a counter current process injects compressed air into the interior of the filter bags, along with secondary air from the intake.

Inertial forces jettison the dust that has accumulated on the outside of the filter bag. At the same time, the injected air is cleaning out large amounts of dust from the fine needle felt. This process is repeated from one filter bag to the next at precisely adjustable intervals.

The compressed air (6 bar) required for this task is not a lot compared to the throughput volume of raw gas. Depending on type and amount of dust, the actual compressed air requirement is 0.02-0.3 m<sup>3</sup>/h of intake compressed air per square meter of filter surface area.

Selecting the correct frequency of air cleaning intervals relative to dust concentrations is essential. Our Pulstronic microprocessor control will automatically take care of this task for you.

**Pure Intentions**

R&R supplies the widest range of filter media to match your requirements. **Polyester needle felt**, our most popular material, is characterized by a very high separation rate and optimum filter resistance. Its unique fibrous structure and air permeability **ensures**

**reliable separation** even with grain sizes of only 0.1-5  $\mu$ m. The maximum constant temperature is set at +150 °C. Special needle felts can **withstand up to 240°C** (Nomex) and can be used for extremely hygroscopic or viscous products.

### High Pressure Humidifier & Washer

The components and system solutions of R&R Humidification Technology are specially adapted to the climatic requirements and the application in industrial processes.

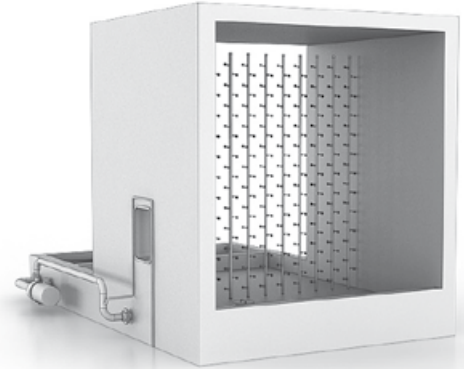
- Humidification
- Dehumidification
- Cooling
- Washing / Filtration

R&R Humidifiers and Washers include a hygienic certificate to meet highest hygienic demands.

- Indirect humidification via duct systems with special air diffusers
- Direct indoor humidification systems
- Adiabatic cooling systems
- Cooling washers
- Air coolers
- Water filters & Water treatment systems

#### Advantages

- Energy-saving & Water-saving
- Easy to maintain
- Supersaturation over 100% possible
- Extremely fine atomization and metering through high pressure



### Damper PKA

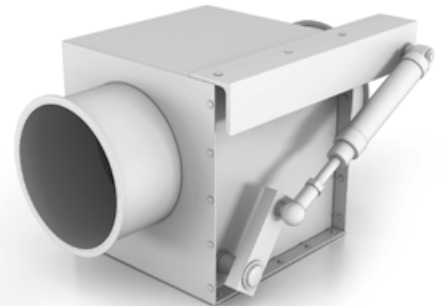
The R&R Damper PKA performs the function of closing or opening the air line cross-sections. It is mainly used as a shutoff valve for intermittent waste removal on textile machines (blowing room).

- Separation of single or multiple air ducts
- Closing/opening of material conveying ducts
- Combining of air and material conveying ducts

The R&R Damper PKA is also especially used for all material conveying applications like fibre, dust or chips transport systems.

#### Advantages

- Ultra airtight
- Low flow resistance
- Easy to install

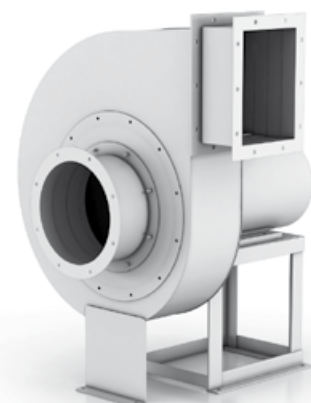


### Fan

R&R Conveyor Fans are turbines which convey and compress air aerodynamically. High-performance axial-flow fans of the LTG type utilize the same airflow effects as the lifting surfaces of an aircraft.

R&R Conveyor Fans are used for pneumatic conveyance of:

- Textile Dust
- Fibres
- Solid Particles
- Wood Shavings
- Sawdust
- Wood Waste
- Grain
- Nutshells and similar products





Visit [www.rr-bethfiltration.com](http://www.rr-bethfiltration.com) to learn more about our innovative products, systems and solutions!



## MEMBERS OF THE R&R GROUP

The R&R-Technik GmbH is an internationally operating technology company in the fields of filtration and extraction technology with highly skilled and motivated employees.

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When you choose R&R BETH Filtration, you're getting much more than an ordinary filtration and extraction company. You're getting industry experts who care about your needs, the environment and future generations.

