Exhaust, filter and convey

We make air work for you





Your competent partner















Venti Oelde extraction, filter and conveying systems are used in almost all industries. They capture dust and solid particles from air and process gases, convey them and separate them. Among our core services are planning, manufacture and installation as well as the commissioning of our air handling systems, using a variety of separation systems.

As a quality-certified, mediumsized enterprise, we always think ahead. We see ourselves as a company that produces long-term concepts using our skills to provide individually customised solutions. Thanks to many years of knowledge interchange with customers, as well as participation in the German Machinery and Plant Manufacturers Association (VDMA) working groups, we have accumulated knowledge about our sector which makes us skilled problem solvers.

The design engineers in our research & development department are fully committed to continual optimization of quality parameters such as degree of separation, acoustics, efficiency and strength. The resulting reliability of our components makes a decisive contribution to a smooth production flow.

Venti Oelde offers customised solutions for complex requirement profiles. These are always based on functionality, reliability, a long service life and effectiveness, as well as economic efficiency. In development partnerships, we implement projects which far exceed the standards of conventional plant construction. Here, we draw on our experience from a variety of industrial sectors. This often enables us to design completely new system solutions when developing new plants, or further developing existing systems.

Our product range encompasses a broad spectrum of separators - from cyclones through filter systems to scrubbing systems. We are thus able to select the most suitable system in each case. These filters differ in their design, their cleaning method, such as compressed air cleaning and reverse air cleaning, and in the type of filter media. This range allows us to individually match process and filter. This is particularly important when space is at a premium. Our modular, standardised construction means that we can easily extend filters. Highquality filter media ensure that low residual dust levels can reliably be maintained. In many cases, the cleaned air can be returned to the workshops without reservation.



Complete systems for successful projects



Venti Oelde is a competent supplier of complete systems, with a comprehensive understanding of the sector and many years of experience in the market. We offer our customers consulting services and technology from a single source and provide assistance in every phase of your project. This avoids costly and timeconsuming interface problems. We always think beyond the current requirements by also taking our customer's future plans into account. This means that investments can be calculated on a long-term basis and that even subsequent extensions to a system or final construction stages can be planned cost-effectively, right from the outset.

On request, Venti Oelde can supply plants on a turnkey basis. This means that we will take care of all components from the point of extraction right through to the exhaust air stack. Our systems transport the separated dust to the transfer point either mechanically or, for larger distances, pneumatically.

Customers profit from our holistic approach in many ways: the long operational life and high availability of the systems, the calculations of economic viability and the increased production capacity. Appropriate protective measures offer a high safety standard. When planning each job, our engineers place particular emphasis on optimising energy use. Correctly selected pipe cross-sections and producing optimised layouts for pipe- and ductworks reduce energy costs

and ensure problem-free operation. Venti Oelde engineers produce computerassisted simulations of individual solutions in advance.

The control technology is of central importance for complete systems. Depending on the requirements and on the type of system, we can offer our customers simple control technology using compact components, or complex control using PLC technology On request, Venti Oelde can monitor the systems using remote diagnostic tools.

Waste material from production and correctly sorted waste offer tremendous recycling potential. Venti Oelde's range of services thus also includes the collection and separation of individual materials from the material flow, and feeding them through the corresponding recycling processes.

Our specialists remain focused on the success of a project, always with the customer in mind, and set about pursuing pragmatic solutions.













Modular industrial filters for indoors and out



Depending on requirements, Venti Oelde manufactures its industrial filters in galvanised, painted or in stainless-steel versions while always maintaining a minimum thickness of 3 mm for the walls of the housing. The extremely robust designs prove their worth on a daily basis in numerous industrial sectors, for example in the mineral processing industry, the wood industry, in metalworking and processing industries as well as in recycling.

Industrial filters are built using a sophisticated modular technology consisting of bent and bolted wall components. If the filter must be air-tight, the inner joints can be welded. The industrial filters are suitable for installation both indoors and out. Available in a variety of heights, they are designed for differing lengths of filter bag and a variety of pressure levels. Our snap ring fixtures form a particularly airtight seal. They press the filter bag firmly into the opening of the bag bottom, providing a good seal. The double bead also prevents assembly errors.

Depending on the product and the process, the cleaning of filter bags is activated either at regular intervals, or on the basis of pressure difference, in part with pulse pressure control. A brief, powerful pulse of compressed air dislodges the filter cake from the bag and transports it to the hopper to be discharged. The separated material is collected in the hopper and is discharged via a trough worm conveyor and rotary airlock or via double pendulum flaps. For small quantities, the dust can be discharged into dustbins or containers positioned underneath the outlet.

Maintenance is particularly easy when it comes to exchanging the filter bags with a standard diameter of 160 mm. This is done via the vertical exit in the area of the filter head.









Our special versions are as different as the requirements:

- For protection from the weather when changing filter bags, a penthouse is a good idea, especially for larger filter systems.
- We construct pressureshock resistant filters with pressure venting conforming to VDI 3673 for the separation of flammable and explosive fine dusts.
- Wear protection materials and wear protection plates, protect the endangered areas of the filters from abrasive dusts.
- For dusts in hot gases up to 240°C, we equip our filters with filter media suitable for high temperatures. We allow for significant thermal expansion by taking appropriate design measures and by selecting suitable valves and electrical components. Naturally, the filters are thermally insulated.
- To avoid adhesion and blockages with lightweight, fibrous materials, we enlarge the filter bag spacing and additionally include cleaning for the space between the bags.

 An additional empty chamber serves to calm the gas for large quantities of dust. Here, a large part of the dust will separate out. For suspended dust we use offline cleaning.





Normal bag spacing

Extended bag spacing

Filter construction

- ① Dust-laden gas inlet
- ② Dust gas baffle
- ③ Filterbags
- ④ Filter head
- 5 Partition dust-laden/clean air duct
- 6 Clean air outlet



Highly variable reverse air and pulse filters for the processing of light-density materials

When filtering air containing bulky and/or fluffy fibrous material, other parameters apply than for conventional dust. The aim is to avoid dust collecting in the spaces between the filter bags to ensure a continuous discharge of the filtered dust as well as to maintain a constant pressure loss in the filter. Venti Oelde has developed special reverse air and pulse filters for the processing of light-density materials in the wood, fibre, textile and paper industries. They work with air volumes from 10,000 m³ up to in excess of 250,000 m³ per hour and at maximum temperatures of 60°C. They guarantee troublefree, continuous operation and can be supplied to conform to the ATEX 94/9/EU guidelines.

The standard modular units, which can be combined to form filter systems of any size and length, consist of a hopper part with an integrated chain trough conveyor (if required, also with a worm conveyor), centre sections available in three heights which match the differing filter bag lengths, and a filter head with an integrated reverse air or pulse cleaning system. By inserting intermediate empty units to introduce the dusty air, we can achieve an intensive pre-separation of the coarse dust and optimal distribution of the air across the filtering sections.











We supply two versions of these filters: single or double row, in a parallel, two-chamber design. The modular construction of the reverse air filter makes the positioning and assembly of the filter very flexible. It is easy to extend this by adding units.

Cleaning using reverse air or jet pulse, depending on the process, means that filter bags with a length of up to 5.4 m can be used. For reverse air filters, a mobile reverse air cleaning unit moves within the clean air plenum of the filter, from filter bag row to filter bag row. The control system, which depends on the pressure difference, reduces the air consumed here to the necessary minimum. This needs-based cleaning helps to protect the filter media. For the reverse air process, process air is reused. In this way, we can avoid problems due to frost, condensation and caking. Despite the large amount of dust deposited on the filter

sleeves, the intensive reverse air cleaning achieves an excellent degree of dust separation. The energy used for cleaning is substantially reduced as no compressed air is required. To clean challenging fibrous dusts, we do however use the jet pulse version. Here, as well as the filter bags, the spaces between the bags in the dust-laden gas area are also cleaned.

The reverse air and pulse filters are extremely low maintenance. All the filter components that need to be regularly inspected are easily accessible. The filter bags are replaced from the clean-air side, away from the influences of the weather.



Needs-based round and cyclone filters with explosion protection

As a centrifugal separator with a tangential inlet, these filters offer the greatest possible primary separation. Pressure is carefully applied to the filter bags. The round shape of the housing makes it very robust.

Pressure-shock-resistance up to 10 bar has been proven via tests with water pressure. Use in areas at risk of explosion conforms to ATEX guidelines 94/9/EU. Pipelines with pressure relief baffles prevent the pressure wave from entering downstream equipment. The dust-laden air ducts can be decoupled with tested nonreturn valves. Despite all the safety precautions, should it still come to a dust explosion, the venting equipment will minimise the damage and the resulting system downtime.

Venti Oelde individually adapts the filters to the local circumstances. The flexible height and filter diameters from 1150 mm to 4500 mm in our product range unterline this.

As standard, filter bags with a diameter of 160 mm are installed. We offer bag lengths varying up to 5.5 m.



To separate large quantities of bulk materials, our robust and low-maintenance round filters with integrated cyclone separators are tried and tested. They are used as final separators for pneumatic conveying systems.

We supply round and cyclone filters tailored to your requirements. We use a variety of sheet thicknesses and materials such as stainless steel and highly wear-resistant steel.

Venti Oelde produces these filters in a variety of types, amongst others, for mounting on top of bunkers, with a clean air dome or with a cover. An extended primary separator creates additional storage space.

Compact cartridge jet filters for almost all types of dust

prehensive range of dry filters. Cartridge jet filters can be used for the separation of almost all free-flowing dusts. They are suitable for installation both indoors and out. The use of filter cartridges with a large filter surface in a very small space is what makes cartridge jet filters extremely compact. For many dusts, the high degree of separation provided by filter cartridges, enables the filtered air to be returned to the working areas. In combination with silencers cartridge jet filters are extremely quiet. These cost-effective dust separators can be supplied with or without integrated fans.

One example of the use of cartridge jet filters is in metal working, where a lot of fine dust is produced when grinding, cutting and cleaning. Here, they work well as intermittently operating central filters in combination with work protection benches. These filters are also used in the mineral processing industry as well as in the wood and plastics industries.

The superior ROVAL pocket filter system for dry dust

The ROVAL, oval bag filter range is a compact, spacesaving and extremely efficient pocket filter system for the separation of almost all dry, free-flowing dusts.

The oval filter bags are installed horizontally in the dust-laden gas plenum. They are clamped and sealed against the slotted wall from the clean air side. The advantage of oval filter bags is that they keep their shape. Cleaning is supported by the vertical downflow to the bags. Short, powerful pressure pulses dislodge the dust cake from the filter surface. The pulses come from the compressed air tanks, via the propulsion jet pipes into the oval filter bags.

Considerable space saving compared to conventional bag filters

By carefully matching up filter area, filter media and cleaning cycles, we achieve a high degree of dust extraction. All available textile filter media can be used.

Protection measures can be integrated such as spark and fire extinguishing systems, as well as explosion venting, offering a high safety standard.

Our ROVAL filters can be easily and quickly assembled on site, as they are factory pre-assembled, including the fitting of filter bags.

Low filter resistance and the sparing use of compressed air reduce operating costs.

Other plus points include the minimal maintenance requirements and the user-friendly filter replacement. Filter bag mounting, inspection and maintenance are very convenient and easy, and can be done horizontally, from the clean air side of the filter. Thanks to the large doors which swing out to the access side, a few movements suffice to swing the propulsion jet pipes to the side allowing the bag fixings to be undone.

Highly robust cyclone separators for all requirements

Today, we predominantly use cyclone separators when dealing with large amounts of material, as a primary separator for exhaust and filter systems, or even to separate sparks or droplets. They work without additional cleaning technology using centrifugal separation. They function reliably, are low maintenance and are insensitive to irregular material flow. They are wellknown for their robust operation.

To achieve optimum separation efficiency, various models allow an adjustment to each set of operational circumstances (flow volume and level of material).

For customer-specific solutions, Venti Oelde offers solidly built cyclone separators made of a variety of materials. On request they will be designed to be pressure-shock-resistant or can be supplied with wear protection. Screening cyclones are a special design of cyclone. Screening cyclones serve to separate fine dust from coarse materials. In the upper part of the cyclone and hopper, there are built-in perforated sheets which separate fine dust from coarse, using centrifugal force and directed flows. The dust-laden air attaches itself to the perforated sheet metal body ④. The fine dust passes through the perforated sheet into the space between the sheet and the cyclone housing. The coarse dust is discharged via the material outlet ⑦.The fine dust is sucked out through the connection (9) and is fed to a filter system. The air, now with reduced dust content, leaves the cyclone via the immersion pipe (5) and the clean gas spiral 6 to go to the filter.

The screening cyclone principle

- ① Dust-laden gas inlet
- (2) Upper part of cyclone
- (3) Cyclone cone
- ④ Perforated sheet
- 5 Immersion pipe
- 6 Gas spiral/outlet
- ⑦ Coarse material discharge
- $(\ensuremath{\underline{8}})$ Fine dust discharge
- (9) Fine dust exhaust
- (10) Inspection door

Wet scrubbers, venturi scrubbers and spray scrubbers for arduous conditions

Wet scrubbers are used in metalworking, in foundries, in the construction industry, in the mineral processing industry; everywhere, where difficult dusts have to be exhausted. Our wet scrubbers perform very well under extreme conditions: if dust is sticky or very moist; if hybrid mixtures occur; if dust contains a lot of sparks; if vapours and mists have to be cleaned of solid particles. Also, if materials are processed where there is a risk of explosion, but fabric filter plants cannot and may not be used. A prerequisite is, however, that the solid particles can be wetted. If the requirements of the clean gas are high, their use is somewhat restricted.

Venti Oelde manufactures wet scrubbers for flow volumes from 1,000 m³ to 50,000 m³ per hour.

As standard, we equip our round wet scrubbers with three different systems to discharge sludge. We can, however, also design special solutions.

For special requirements, Venti Oelde has venturi scrubbers and spray scrubbers. These scrubbers serve to prewet the dust and to reduce the amount of residual dust when working with large amounts of material.

The spray scrubber is a very high-performance scrubbing system. It impresses through its low pressure loss, low water consumption and an optimised, two-stage water treatment system. The centrifugal separation of coarse dust, fluff and solid particles is supplemented by intensive scrubbing of the fine dust components in concentrically arranged scrubbing zones. With very high concentrations of fine dust in the unfiltered gas flow, an additional, external venturi module can be added in front of the system. The legally required residual dust concentrations can be thus easily achieved.

The Venturi scrubber

① Droplet separator

2 1st stage of water injection

3 2nd stage of water injection

④ Venturi tube

5 Fan

6 Rotary screen

- $(\overline{\textbf{7}})$ Slurry conveyor for coarse fraction
- (8) Slurry conveyor for fine fraction

The venturi scrubber is characterised by especially intense scrubbing in a venturi tube. Due to the high velocity of the gas flow in the venturi throat, the injected washing liquid is converted to a fine spray. In the venturi tube diffuser, there is such close contact between the water spray and the dust particles, that the particles are sufficiently wetted to be captured by the liquid. Behind the venturi tube, there is a centrifugal droplet separator. In this, the water droplets entrained by the gas flow are eliminated together with the wet, fine dust particles. The scrubbing water can be reused after being processed in a drum screen and slurry conveyor.

Pneumatic and mechanical conveying for large quantities and distances

To transport large quantities of dust or chips, or to bridge large distances, we have high- and medium-pressure conveyor systems in our product range. When sizing these systems, we take particular care to select an energy-efficient and wear-protected, low-maintenance design. The decisive advantages result from the use of low cross-section pipes to transport the material. This means that you only need a minimum volume of air and low power consumption for a highcapacity system.

Pneumatic conveyors represent an interesting solution for the supply and disposal of bulk materials during the production process. A wide variety of bulk materials can be conveyed for storage or loading into silo stations.

Suitable options for disposal include replaceable containers, silo systems, press-container, big bags and loading onto trucks. You may also consider dust transport over longer distances using vibration troughs, conveyor belts or a floor conveyor system.

When the material concentration is high, we use our highpressure conveyor systems. The pneumatic conveyer systems used make it possible to transport even larger bulk materials over considerable distances and over difficult routes.

Efficient safety in the workplace

The machining of materials creates dust, swarf, sparks and sometimes even gases which are a health risk. These have to be exhausted and separated. To protect staff and to provide a pleasant working climate, Venti Oelde offers effective solutions such as work protection cabins and benches, and welding fume extraction plants.

Construction of workbenches fitted with extraction systems.

An ideal, cost-effective solution for the open machining of a variety of workpieces is provided by work protection benches with integrated filter units. They are distinguished by high-performance exhaust, low noise levels, compact construction and a universal range of applications. The work protection bench consists of a welded steel frame with a working platform made of a steel or wooden grid. The rear dust exhaust hood and the two side walls are equipped with integrated sound-attenuating components. The noise from grinding, cleaning and polishing is effectively reduced. To

machine aluminium, we make a special version of these workbenches.

Work protection booths are ideal for screening off adjacent workplaces from dust and noise. They consist of a cabin section, in open or closed versions. The walls and doors are equipped with high-qualitysplitter silencers. High-performance centrifugal fans produce the air flow which collects the dust produced when machining workpieces and remove it. The fine dust is carried to the side of the cabin, where it passes through a slatted exhaust wall and is fed to a separate filter module.

Welding fume extractors collect the fumes either from the immediate vicinity of the object or via large hoods. The exhausted fumes are then fed to the filter system via a main duct. It is also possible to exploit the thermal energy from the extracted air using a heat recovery system.

Specialities – maximum flexibility with tailor-made solutions

The variety of industrial requirements is matched by the variety of our individually tailored solutions.

Venti Oelde has developed a compact injection system for the extraction of edge strips. This is ideal for the uninterrupted pneumatic conveying of continuously produced edge strips to special containers. The edge strips from plastic or composite films as well as paper are continuously taken away, without tearing. The units, suitable as so-called auxiliary systems for flexographic or gravure printing machines, make a functional and reliable contribution to the optimisation of process technology. It is even possible to produce exhaust systems for the highest hazard level Ex-Zone 0, as defined by ATEX.

Venti Oelde uses specially shaped impellers to convey the material through an optimised pipework to a filter or container. If the material to be transported is abrasive, then Venti Oelde prevents wear from impacts and abrasion by hardfacing with tungsten or chrome carbides.

Cleaning pulse ntermediate space

As a supplement to conventional jet cleaning, we offer additional cleaning to keep the spaces between the filter bags free. This is located in the dust-laden gas space and is primarily used to separate lighter, fibrous materials.

The waste separated is then compressed in bailing or container presses. Dust from filter systems is collected in big bags or is compressed into briquettes or pellets.

With cutting fans, we can shred endless material such as edge strips which arise, for instance, during the manufacture of paper, cardboard and fibre-boards. The fan's design is dependent on the width of the edge strips, the roll-off speed and the type and thickness of the material. The tensile strength and coating of the waste are also determined and used in the calculations. The impeller blades are fitted with replaceable cutters or saw-strips, with which the endless strips are shredded.

For the preliminary separation out of the airflow of materials with varying coarseness, Venti Oelde has developed the coarse material separator. This enables continuous operation and material discharge. The air exhausted is cleaned in the downstream filter system.

Safety technology to prevent fire and explosions

Venti Oelde has extensive knowledge in this area and, working together with the customer, we can plan and integrate both active and passive safety measures. You can make use of this significant advantage by speaking to our engineers, who work together with renowned companies in the area of safety technology. For this special hazard, Venti Oelde offers equipment to suppress explosions as well as extinguishing systems, which can detect sparks in extraction lines and automatically extinguish them before they reach the filter system at risk.

As an additional protective measure, regarding explosions, the systems are decoupled from one another, so as to deflect the pressure wave and stop it using non-return valves. Of central importance in a safety concept is the local monitoring equipment, such as infra-red detectors, spark detection systems, pressure monitors, rupture sensors and level sensors. The evaluation of the signals that they produce, and the actions to be taken as a result, are controlled by the systems designed by Venti Oelde.

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carrying material, the individual fire zones can be separated from one another. Safety components are used to do this, such as certified quick acting gate valves or VDSapproved fire protection valves and rupture discs.

protection zones with ducts

Adequately dimensioned venting areas in the return air ducts and 180° air deflection prevent the pressure wave from spreading through workshops.

Permanently monitoring the residual dust levels prevents an explosive mixture from being created on the clean gas side. When faults occur, measuring equipment prevents dust from being discharged to the atmosphere or to the return air by switching off the plant in good time.

All-encompassing services

Venti Oelde's services start with the initial contact and continue right through to support in daily operation. Competent advice must be comprehensive by nature. This comprehensive service requires a trusting atmosphere collaborature and it creates the conditions for a long-term, successful partnership.

From the project phase, the planning phase and the engineering, right through to installation, you will have a personal contact at your side, ready to provide advice. This is how we quickly implement the required solution.

We see conscientious planning as a basis for efficient operation. After surveying the existing situation ourselves and taking performance measurements, Venti Oelde then configures the plant to the customer's individual requirements. We also investigate the potential to optimise existing systems. Among other things, our knowledge is based on the measurement results and the documentation of the systems implemented.

Our skills directly benefit our customers. This is because, in every new development, we can exploit our experience from comparable applications. We use our knowledge about aerodynamics, acoustics and vibration technology to constantly develop and optimise systems. In this way, Venti Oelde solves the most challenging tasks.

The specialists from Venti Oelde will be personally on site for all relevant work, during installation and commissioning as well as during maintenance and repair. They will instruct your local staff on how to use the system and, as a special service, can also train your specialists. Our service hotline is also available 24 hours a day.

The quick availability of technical support naturally also applies for our spare parts service.

If it is necessary to interrupt the production process to extend current plants or to repair them, then we will also carry out the necessary work at night and at weekends. In this way we reduce any down times to a minimum.

In addition to our usual maintenance services, we can also offer remote monitoring of systems via electronic data transmission. Remote diagnosis provides us with specific information early about any irregularities and if necessary, permits us to quickly and precisely diagnose faults. Through this type of preventative maintenance, we can generally avoid interruptions to production or extensive repairs in advance. If requested by our customers, we can activate specific and controlled online monitoring.

We approach new challenges with our experience and a good deal of curiosity. For example, in our modern test lab we analyse material samples to develop suitable separation, shredding and conveying processes. We are only satisfied when our ideas prove themselves in practice and we can identify 100 % with the results.

Venti Ocido Service Hallow + 49 171 1 95 57 50

- > Industrial fans
- > Dust collection and process air cleaning plants
- > Exhaust air treatment plants
- > Ventilating, heating and air conditioning plants
- > Recycling and waste processing plants
- Surface technology

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