

Air with method

Specialized solutions for the iron and steel, metal-working and processing industries



We make air work on your behalf



Air is the medium we work with. Research and development, planning and consulting, manufacturing and service, whatever we do, the emphasis is on innovative air technology. Venti Oelde plants and components are used for collecting, handling and filtering of air, vapours, gases, dust and airborne solids.

An enthusiastic, experienced and knowledgeable team, numbering 250, ensure that individual customer requirements are implemented under economically expedient aspects. The resulting solutions are innovative, efficient, cost-effective and forward-looking. They are appreciated all over the world and underline the claim to technological leadership.

As long ago as 1930 Venti Oelde was planning, developing and manufacturing in their North-Rhine-Westphalian location, Oelde. Apart from industrial fans, their manufacturing programme includes dust collection and process gas cleaning plants, exhaust air treatment plants, ventilating, heating and air-conditioning plants, recycling and waste treatment plants as well as plants for surface technology.



The conceptual range of available industrial fans includes high-efficiency fans to handle gas and dust and heavy-duty fans for dust-laden process gas or clean air. These also number specially designed fans to circulate hot gas with a temperature to 1000 °C and high-pressure fans to handle gas, dust-free air, chips and other material.

The field of dust collection technology includes the capture, handling and filtering of dust or solid particles out of air and process gases. The primary elements of the quotation are the planning, manufacture, assembly and commissioning of air-handling plants using a variety of separating systems which are selected to meet the individual need.

Extraction of welding fumes and vapours and exhaust from baths and of heat produces a good "working climate". Venti Oelde develops total solutions for workplaces, booths, rooms and workshops of all sizes.

In the business segment heating and air-conditioning technology, air heating systems, ventilating plants with heat recovery and air-conditioning plants for workshops and other industrial areas of all sizes are planned, manufactured and installed.

Venti Oelde supplies treatment systems downstream of large shredders, mills and incinerators for recycling plants for material separation and the recovery of reusable waste as well as dust collection plants and air management concepts for waste treatment plants.

Venti Oelde supplies complete systems to dry surface applications to a wide variety of materials. As a result of many years working with partners in the relevant branches, specially developed drying systems can be integrated into complete surface treatment plants.

Maintenance, servicing, inspection, repairs as well as plant upgrading, rationalisation and enlargement complete the available services. Experienced specialists in a large number of outside offices and agents ensure expert support all round the world and quick contact to all business partners.

The iron and steel, metal-working and processing industries



Every sector has its own specific processes, and these generate the wide-ranging individual demands placed on dust collection technology by the iron and steel, metal-working and processing industries. Dust capture and filtration systems and fans are vital for many processes, including casting, rolling, grinding, milling, cutting, coating and raw material recovery.

As an experienced system supplier, Venti Oelde has an intimate knowledge of the often complex techniques involved in metal-working and processing. A comprehensive range of air handling technologies, complete with specialist products and system solutions and backed up by planning, advisory and maintenance services, provides the foundation for optimum results.





Why not make use of our specialist knowledge and expertise right from the earliest planning stages? That way we can achieve the highest levels of efficiency, in other words the best possible results coupled with the greatest possible energy savings. This is the reason why Venti Oelde always focuses on overall, integrated system solutions in which the functional interaction of all components is a key feature.

At the same time, we do not rely exclusively on existing system components; new and advanced developments guarantee users problem-free operational processes in which appropriate technologies ensure an absolute compatibility between ecology and economy.

Specialised engineering, dedicated research and the constant evolution of technological solutions are what make Venti Oelde an internationally recognised and respected partner.

Preparing the blast furnace feedstock

Large fans are indispensable in the metal-working and iron and steel industries. All round the world, in sintering, pelletizing, dust collection and gas purification systems, in furnaces, pickling and direct-reduction plants, they work tirelessly, conveying vast volumes of gases, some of them laden with dust, others inflammable. Our fans offer outstanding heat and wear resistance, quiet running, minimal dust build-up, corrosion resistance, low noise levels and, where required, gas-tight designs.

Because technical, material and mechanical demands are complex and vary greatly from case to case, Venti Oelde designs each system specifically for the individual customer. To ensure optimum performance and reliable running, each system is planned individually, designed precisely and manufactured to the highest standards. Meanwhile, for plants in need of modernisation, our upgrades are the ideal solution: simultaneously boosting performance, optimising processes and saving energy.

For sintering plants, Venti Oelde manufactures such products as cooling-air fans, which in large plants convey up to three million cubic metres per hour of fresh air through the cooling chambers. At Venti Oelde we often fit fans this large with journal bearings to guarantee a long service life and trouble-free running, even under extreme process conditions. Additionally, in individual cases we can offer special blade designs featuring suitably high-quality wear protection.

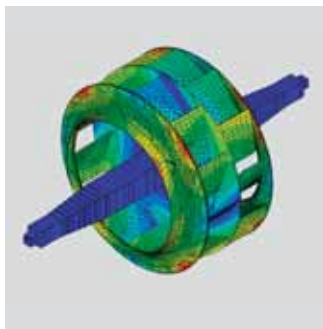
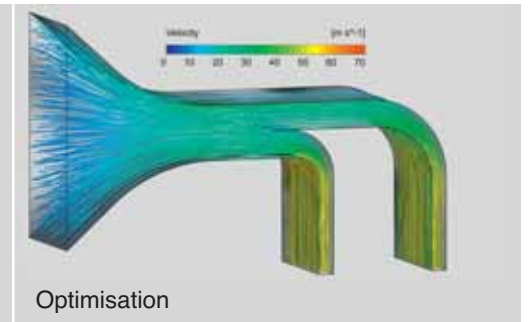
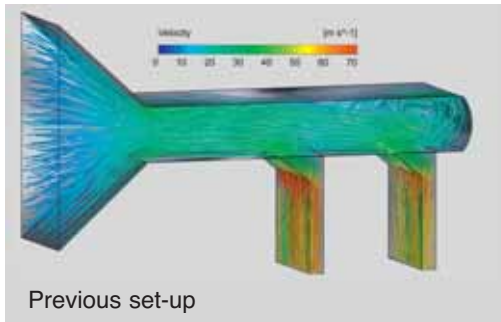


Baked-on deposits of sticky dust on the fans, caused for instance by conveying CO gas, can be kept to a minimum by targeted water injection.





Photo: Salzgitter Flachstahl GmbH



The tip speeds of large fans often approach the limits of the physically possible. For years at Venti Oelde we have researched the stability and yield strength of materials at different temperatures, established reference values and introduced our own safety standards. We plan, dimension and manufacture fans for permanently high demands on the basis of FEM computation.

When using large fans, the interfaces to the plant are of decisive importance. Because of this, Venti Oelde will, on request, provide the entire engineering package, including the pressure drop calculation and duct layout, the design of which is fine-tuned through the use of flow simulations. This often allows us to minimise the system pressure drop at the planning stage, thus significantly reducing energy consumption.



Primary and secondary metal production



Extraction from crucibles, furnaces, baths, moulds, blast cleaning booths, cooling lines and so forth requires individually tailored solutions, and Venti Oelde can boast an array of relevant references bearing on these specific demands.





Venti Oelde offers a wide range of filter systems for the extraction of process gases and dust. Depending on customer requirements, Venti Oelde produces industrial filters in galvanised, coated or stainless-steel versions, always with a minimum housing thickness of three millimetres. If a tight seal is particularly important, the interior joints can be welded. Venti Oelde industrial filters are suitable for both indoor and outdoor use.

For dusts in hot gases up to 250°C, we equip our filters with filter media suitable for high temperatures. We allow for the pronounced heat expansion through various structural features and the selection of suitable valves and electrical components, and it goes without saying that the filters are heat insulated.

Fans and dust collection systems are often subject to severe wear and tear. Abrasive media that are carried in the air flow assault the material.

Wear-resistant materials and plates protect vulnerable areas against abrasive dust.

Venti Oelde uses various measures to prevent abrasion to impellers and inner casing walls through friction and impact wear. When designing our fans, we identify effective protective measures: the right materials, high-precision processing and optimised blade geometries prolong their service lives.

If toxic or explosive gases are being conveyed, for instance converter gases containing carbon monoxide, an absolutely gas-tight seal where the shaft passes through the fan casing is essential. Multi-chamber labyrinth seals with gas barrier connection provide the security required here.

Metal manufacturing processes



There are many different metal manufacturing processes, ranging from shaping, cutting, joining and coating to changing the material properties, for instance hardening. The crucial tasks are emission and immission protection.

Venti supplies complete systems for every task, including central extraction with and without material collection, work booths and sound insulation. Venti also produces complete ventilation and air extraction systems plus heat recovery for booths and production halls.

Rolling steel or aluminium involves rolling out preheated bars into long, thin strips before rolling them up into coils. For cooling and lubrication, oil-in-water emulsion is used, and this turns to steam at temperatures of up to 500°C during the hot-rolling process.

Venti Oelde extracts the clouds of vapour rising from the rolling equipment through hoods, then conveys the vapour to the connected separation and cleaning systems. Droplet separators are also deployed along the roll train, and individual impingement separators are installed in the duct air filter. These droplet separators are made of fine expanded metal fitted in detachable cassettes.

The separated oil or emulsion mist droplets are conveyed via a control system inside the duct mist separator into the oil sump, and from there they either pass via a siphon into a collection tank or are returned to the rolling mill.

The built-in demisters are regenerative and can be cleaned using either a steam jet cleaner or ultrasound. The cleaning intervals are indicated via a differential pressure sensor installed in the filter.





For the different sheet metal and metal foil coating processes, Venti Oelde manufactures continuous-flow and chamber dryers designed specifically for the individual application.

These continuous-flow dryers are used for applications ranging from drying water-moistened sheet metal to coil-coating processes and drying high-quality surface coatings under clean room conditions. Special attention is given here to the dryers' central component, the air nozzle.



The optimum nozzle for the drying process can be determined through flow simulations.



Metal manufacturing processes



During coating, for instance by flame spraying, electroplating galvanising or hot-dip galvanising, exhaust air contaminated with gases and dust is produced. The volume and composition of the exhaust air produced during hot-dip galvanising depends primarily on the flux used which vaporises during the galvanising process, as well as on the other preparation processes (degreasing, pickling and drying).

Venti Oelde supplies complete filter systems for the effective extraction of exhaust air from galvanising or zinc baths. Collection is either via surface extraction or through hoods.

For flame spraying, the filters are fitted with a special cleaning system that ensures effective cleaning of the filter bags.

Tailor-made ventilation and exhaust extraction systems ensure constant air temperatures and humidity, while heat exchangers in the air ducts allow up to 75 per cent of the heat energy to be reclaimed. This makes the working processes even more efficient, cutting running costs and boosting productivity.





Grinding, smoothing and polishing sheet metal and profiles demand highly effective extraction systems. Dust collection, particularly when the filtered air is returned to the workshop, must comply with legal requirements. Special measures must be taken when processing high-alloy high-grade steels. Venti offers comprehensive solutions for this purpose, such as work booths with integrated filter system, controllable supply air flow and sound insulation.



When cutting workpieces using abrasive and cutting-off machines, the sparks thus produced pose a fire risk for fabric filters. An alternative here is the wet-type scrubber, which is used for the separation of aluminium dust, of course, in a particularly explosion-resistant design. Even if the exhaust air is contaminated with cutting oil or lubricants, or with abrasive paste or spray after polishing, the wet scrubber represents a tried-and-tested solution.



Metal manufacturing processes



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. Air volumes of up to 150,000 cubic metres per hour are exchanged this way.



It is also possible to exploit the thermal energy from the extracted air using a heat recovery system. Process heat is recycled using a highly efficient Rotovent heat exchanger, while fresh air enters the working area via intelligent air return systems. That way we cut operating costs, increase productivity and optimise the working processes.

For large workpieces mobile extraction arms ensure optimum welding fume exhaust.

For open processing of various workpieces, work benches with integrated filter units provide an ideal and economical solution.





Our circulation blowers can withstand temperatures of up to 1,000°C and are used for tempering, annealing and hardening furnaces, as well as for core drying. We adjust their speed to the requirement at the particular operating point.



Hydrochloric acid is used in pickling plants to descale steel plates. Our corrosion-resistant roasting gas fans lead off aggressive acid vapours. The inside of the fan casing is lined with extremely resistant hard rubber, the impellers are made of titanium.

Metal recycling



The recovery of raw materials is one of Venti Oelde's basic fields of competence.

For many years we have constructed plants all round the world for recycling scrap and metals, predominantly used in the metal recycling industry.

As well as providing the air technology for de-dusting the shredders, we also offer complete solutions right up to the separation of the crushed material. This means that the end products, such as cooling scrap, copper, non-ferrous metals, rubber and plastics from the entire shredder area are separated into reusable, highly enriched materials.



Hot, dust-laden combustion gases, produced for instance from the thermal crushing of scrap or as residue from iron and steel production, must be effectively captured, exhausted and de-dusted before they can be re-emitted into the atmosphere.

Collection hoods adapted to the various processes, effective extraction systems and reliable, efficient filter systems help transform these gas-cutting areas into clean, humane workplaces.



Mobile enclosures are used for extraction purposes. While, beneath the hood, someone is working with the lance from outside, the next workpiece is being prepared in the second gas-cutting area and then the hood is moved over. A jet filter is used to separate the combustion gases. The intensive air exchange within the enclosure, the removal of the toxic gases through a fabric filter to the exhaust gas chimney, adapting the exhaust velocity to the actual volumes of exhaust gas being released and the rigorous maintenance of minimum speeds in the raw gas pipe system are all vital requirements for faultless function of the plant.



Service right from the start



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 promotes an atmosphere of cooperation and trust, creating conditions conducive to a successful long-term partnership.

Starting with the project phase, passing through the planning stage 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. Based on our own assessment of the situation and our performance measurements, Venti Oelde configures fans according to customers' individual terms of reference. We also investigate the potential to optimise existing systems.

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

In facing up to new challenges we apply not only our expertise but also a good measure of curiosity: We are constantly testing new processes and procedures in our experimental and test labs. The knowledge thus gained is fed directly back into the development of innovative, long-term strategies for complex demand scenarios. We are only satisfied when our ideas have proved to be successful realities – and we are able to identify ourselves completely with the results.



In addition to our conventional maintenance service, we also offer telemonitoring of the plant with electronic data transmission. The telediagnosis provides us early with concrete indications of irregularities and allows us, when required, to carry out a rapid and precise fault analysis. In most cases these preventive maintenance measures allow us to avert production downtime or extensive repairs. Should the customer so desire, we offer specific and controlled online monitoring.



Venti Oelde specialists are there personally for all relevant work – for installation and commissioning as well as maintenance and servicing. They instruct your employees on-site and, as a special service, also carry out training of your qualified personnel. All backed-up by our Service-Hotline, available around the clock.

The quick availability of technical support naturally also applies to 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.



Refurbishing old systems is a cost-effective alternative to buying new. The upgraded plants are checked once the work is complete. Wear parts will be replaced by new parts.



Venti Oelde offers a comprehensive service package for optimising, maintaining, repairing and servicing fan impellers. Depending on your needs Venti Oelde will carry out swift on-site repairs, conduct checks, keep logs and balance impellers or indeed carry out improvements to the entire installation. If the work involved will require transportation to the Oelde plant, Venti Oelde will on request dismantle the fan on-site and either provide advice on or arrange shipment itself. This applies both to our own and to third-party products.

- 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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