Munters

Getting more out of your processes

Mist eliminators in the process industry

Reduce waste.
Optimizimize energy usage.

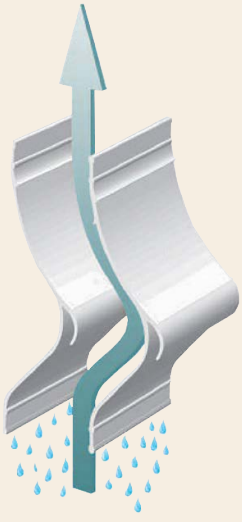
Mist elimination is a crucial component in numerous industrial processes, aiding in the recovery of lost product and safeguarding downstream equipment and operations from droplets present in the process gas stream.

These droplets stem from impurities within the gas phase, often forming due to cooling-induced condensation or as a result of high gas velocities leading to liquid carry-over.

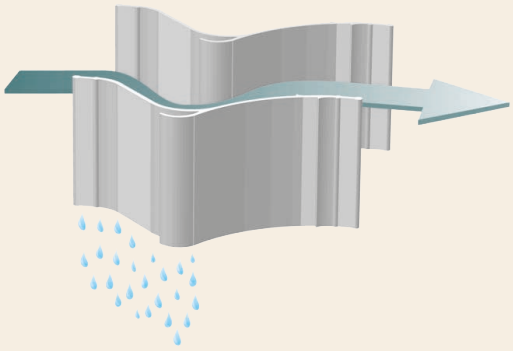
In all instances, the implementation of efficient mist elimination, tailored to the specific task at hand, not only saves costs by recouping product but also enhances process efficiency and minimizes wear and equipment damage.

Efficient mist elimination relies on accurately aligning the mist eliminator profile and configuration with the gas flow's particular traits. This understanding requires a deep grasp of the process.

The mist eliminator comprises vanes housed within panel systems, guiding the gas flow to make droplets hit the vanes. These droplets form a liquid layer that eventually drains due to gravity.



Vertical flow



Horizontal flow

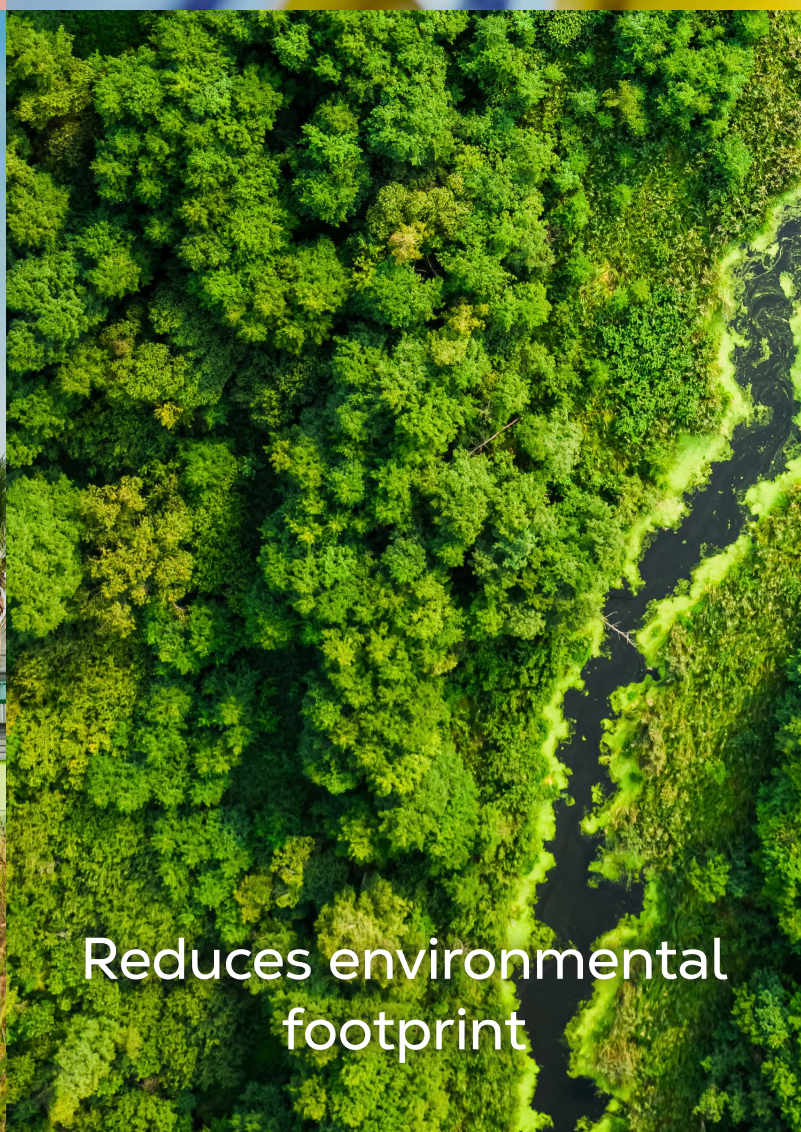
Efficient mist elimination:

- → Protects downstream processes and equipment
- → Saves energy in subsequent process stages
- → Recovers valuable product
- → Performs predictably and at high efficiency even under heavy liquid loading
- → Allows the process to be run at higher velocities with smaller apparatus diameter when using vane mist eliminators


Munters
30 years of mist elimination expertise


Improves process productivity


Lowers emissions


Reduces environmental footprint

Munters' mist eliminators, for newbuild or retrofit, enhance the efficiency of the evaporator process in pulp and paper production.

Mist elimination in evaporation processes

The process industry widely employs thermal product separation through evaporation. While the specific purpose of the extraction varies, the overarching aim remains consistent: to maximize product yield while minimizing energy and raw material consumption.

These industrial evaporation processes typically occur in multiple stages, gradually evaporating the solvent. As this happens, the product phase becomes more concentrated and viscous, increasing the risk of downstream equipment damage in the event of carry-over.

Furthermore, every lost droplet in the process signifies a loss of both raw material and energy. Effective mist eliminators play a pivotal role in evaporation processes by safeguarding downstream process equipment and curbing product loss.

Customer benefits:

- → Minimal pressure loss, even at high velocity
- → Predictable performance
- → High corrosion resistance for long life
- → Easy maintenance

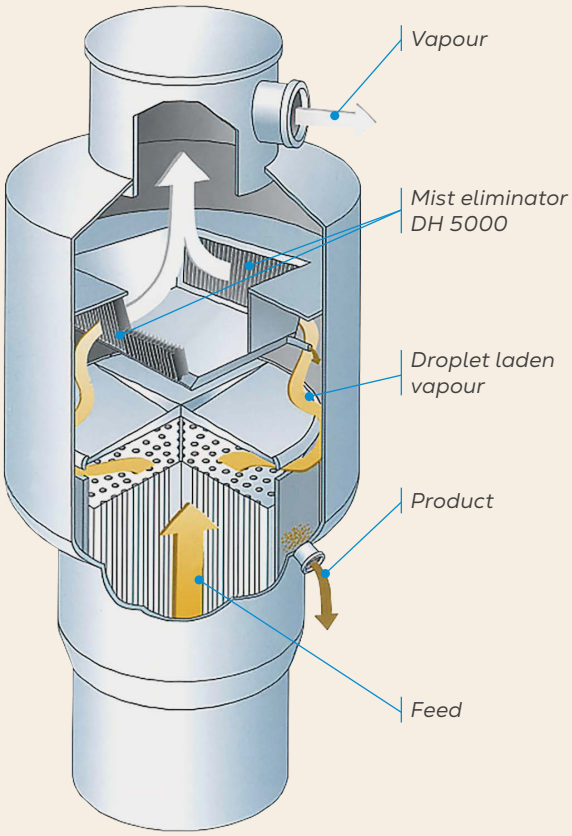
For more product information, please see the technical leaflets for DV 270 and DH 5000.

Pulp & paper

Black liquor, a byproduct of wood pulping, contains a dense mix of chemicals and solid wood fibers. Implementing multi-stage evaporation, along with effective mist elimination capable of managing high velocities, can result in up to 70% dry material recovery, along with the retrieval of process chemicals.

Sugar production

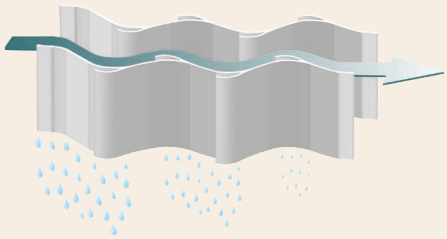
Whether from beets or cane, sugar refining encounters challenges related to viscosity. During the concentration of the product in the evaporation process, an adept mist eliminator vane design is crucial for efficiently capturing and returning the product without clogging.



Customer benefits:

- Efficient product recovery minimizes sugar loss
- Predictable performance
- No clogging design of the mist eliminator

For more product information, please see the technical leaflets for DV 270 and DH 5000.



DH 5000 droplet separator is designed for horizontal gas flow. The gas charged with liquid droplets is directed through eliminator chambers which are designed for maximum effect on the gas flow.

Evaporation processes that require mist elimination

Desalination

Desalination processes often require high-velocity, high-volume treatment, highlighting the need for mist eliminators capable of effectively operating under high flow velocity while being capable of resisting corrosive salt condensate.

Customer benefits:

- → High efficiency at high velocity
- → Possible reduction of apparatus diameter
- → High resistance to corrosion
- → Efficiency of condensate removal facilitates downstream operation

For more product information, please see the technical leaflets for DV 270, DH 2100, DH 4300 and DH 5000.

DV 270 vane type mist eliminator for vertical flow, here in black PVC.

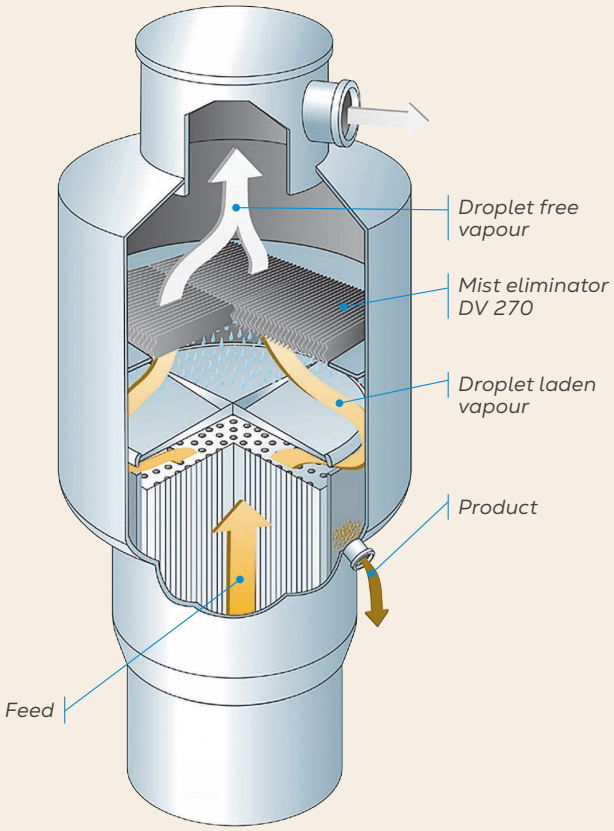
Stainless steel separator with a DH 5400 vane section.

Distilling

In the distilling industry, ensuring the reliable and efficient recovery of high-value products is paramount. The wide choice of mist eliminator profile material also ensures a neutral reaction with the product.

Reduce wastage and prevent damage

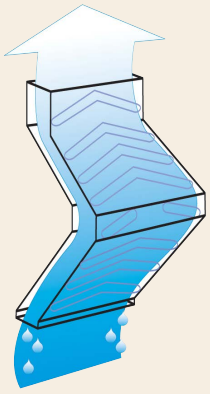
Water in a vacuum boils at a lower temperature so evaporators with vacuum columns save energy and can also save raw material. The evaporated water heats up the next stage of the process but if impurities are contained in the heating steam, as they usually are, damage can quickly occur downstream. Since every droplet lost in the heating system represents waste, mist eliminators should be installed at the top of the evaporators. By purifying the superheated steam, this not only eliminates dogging and fouling, it also reduces product loss.



Customer benefits:

- Efficient, predictable product recovery
- Flexible installation – will fit any vessel
- Choice of material

For more product information, please see the technical leaflets for DV 270 and DH 5000.



DV 270 is a vane type separator for vertical flow. The gas charged with liquid droplets is directed through eliminator chambers which are designed for maximum effect on the gas flow.

Mist elimination in other processes

Cooling down gases

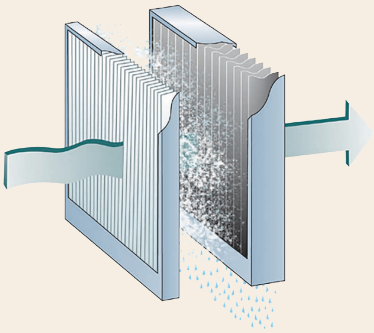
Condensate forms during gas cooling, and if not eliminated, it can severely harm downstream equipment. Furthermore, failing to remove entrained moisture demands extra energy for gas compression before transitioning to the next process phase.

In cases of forced or natural condensation due to temperature drops in the process, mist elimination is vital. Implementing suitable ‘low drag’ mist eliminator profiles enables accommodating higher gas velocities without excessive pressure drops, enhancing overall process efficiency. This optimization of process flow helps minimize energy requirements. Gravity facilitates the removal of collected liquids for treatment, reuse, or disposal.

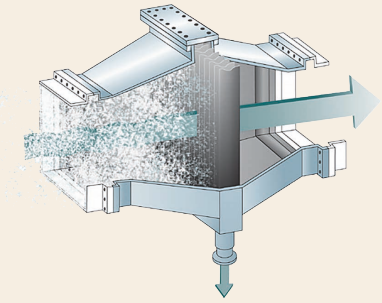
Customer benefits:

- → Protects valuable downstream equipment from corrosive condensate
- → Reduces malfunction and process outage risk
- → Stainless steel, plastic or other special materials
- → High efficiency at high gas velocities
- → Minimal maintenance (only when contaminants in gas flow)
- → Standard and customized dimensions

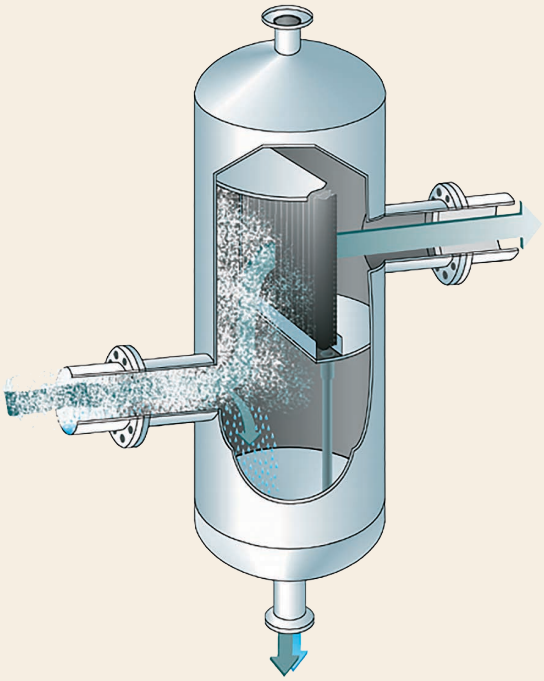
For more product information, please see the technical leaflets for DV 270, DH 2100 and DH 5000. DH 4300 and DH 5000.



Condensate after the heat exchanger.



Housing accomodating a mist eliminator for condensate removal.

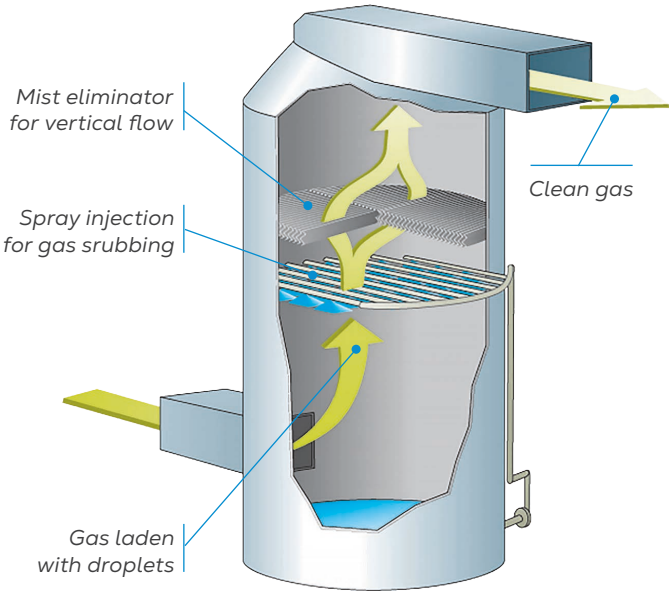


Pressure vessel accomodating a mist elimnator for condesate removal.

The formation of aggressive condensate from process gases can terminally damage compressors and other equipment. Effective mist elimination with optimized profiles protects this equipment while still permitting high gas velocities without moisture carry-over.

Gas cleaning

Efficient mist eliminators are crucial in eliminating entrained scrubber liquid from industrial process gas streams, especially with the increasing capabilities of wet gas scrubbers in removing contaminants. The high gas velocities, driven by the need for faster processes, often lead to liquid carry-over, which can be highly aggressive. Effectively removing this liquid and preventing droplet carry-over safeguards downstream components from damage and prevents potential process disruptions.



While this technique has been widely used for over three decades, evaluating design parameters remains complex, and using inappropriate equipment can hinder process efficiency. As specialists in mist elimination and humidity control, Munters offers a comprehensive range of standard and customized solutions for both new and retrofit installations. These mist eliminators, available in polypropylene, PVC, PVDF, stainless steel, and other materials, can also be set up as two or three-stage systems in cases where there is a high particulate loading.

Customer benefits:

- Efficient removal of entrained scrubber liquids
- High efficiency even at high gas velocities
- Easy installation and maintenance
- New builds and retrofits

For more product information, please see the technical leaflets for DV 270, DV 880, DV 210 and DH 2100.

Mist elimination in other processes

Stack “rain-out”

The process industry faces significant challenges in meeting the requirements of increasing global clean air legislation, impacting both new plant construction and retrofits. Complying with these demands is critical for maintaining a plant’s profitability, necessitating cleaning technology that not only meets regulatory standards but also ensures minimal disruption to the process itself.

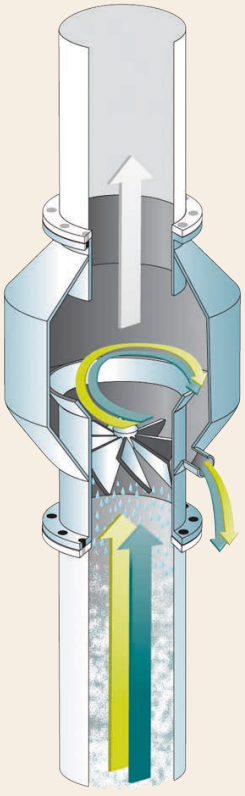
Stack rain, a prominent consequence of industrial processes, arises when saturated exhaust gas is released into colder air. Munters spin vane separators offer a straightforward solution for eliminating stack rain, with their design effectively rotating the gas flow, causing entrained liquid droplets to collide with the separator. Gravity then directs the droplets into a drainage chamber for recycling or disposal. This design minimizes the eliminator’s susceptibility to deposits, reducing maintenance and cleaning requirements.

Featuring a modular design, these separators can be easily retrofitted onto existing structures and installed in new chimneys. Their versatility allows for accommodating even horizontal gas flows, simplifying the installation process.

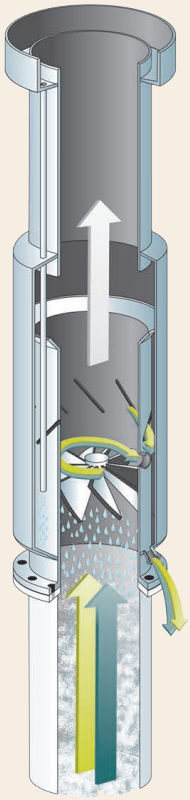
Customer benefits:

- Visible reduction in emissions
- Fits all chimney stacks
- Easy installation – new build and retrofit
- Droplets and particles can be recovered for use and disposal
- Meets the most stringent emission requirements
- Also accommodates horizontal flow configurations

For more product information, please see the technical leaflets for DS 8200 and DS 8300.



Spin vane separator DS 8200 for vertical and horizontal flow.

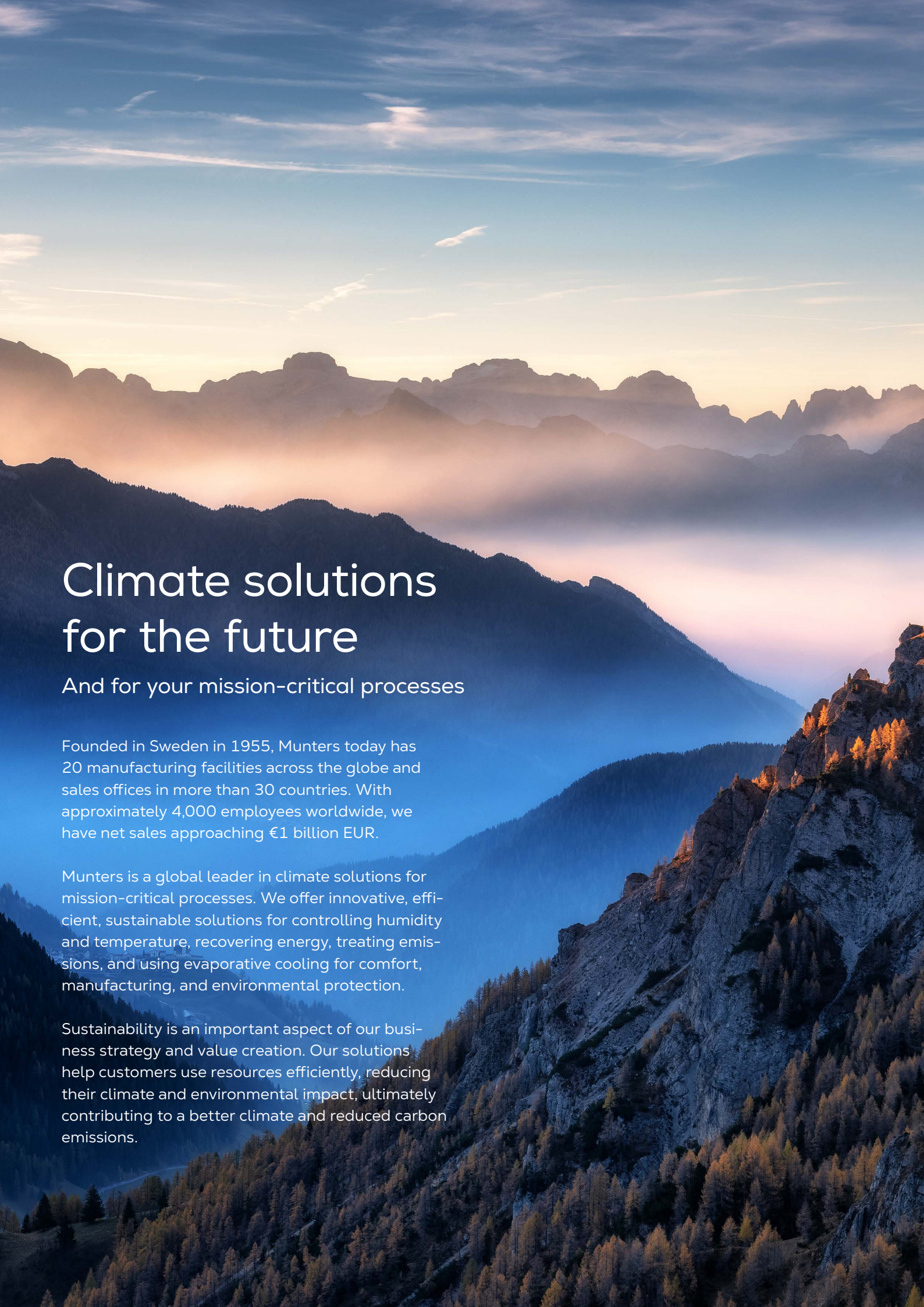


Spin vane separator DS 8300for vertical flow.

Mist elimination is our business

Wherever liquids and gases need to be separated, mist eliminators can do the job. But while the principle is simple, applying the technology efficiently and to maximum effect is demanding. Munters has the knowledge and experience to handle it.

Munters has been refining the technology for decades and working closely with customers in a wide range of process industries. Our mist eliminator profiles are continuously assessed and developed as processes and conditions evolve. Design parameters for installations are evaluated using an extensive database and a powerful design program. The results are then laboratory-tested. Our close attention to detail and the expertise of our R&D departments have made us the leaders in this technology.



Climate solutions for the future

And for your mission-critical processes

Founded in Sweden in 1955, Munters today has 20 manufacturing facilities across the globe and sales offices in more than 30 countries. With approximately 4,000 employees worldwide, we have net sales approaching €1 billion EUR.

Munters is a global leader in climate solutions for mission-critical processes. We offer innovative, efficient, sustainable solutions for controlling humidity and temperature, recovering energy, treating emissions, and using evaporative cooling for comfort, manufacturing, and environmental protection.

Sustainability is an important aspect of our business strategy and value creation. Our solutions help customers use resources efficiently, reducing their climate and environmental impact, ultimately contributing to a better climate and reduced carbon emissions.

Munters Service portfolio

At Munters, we are committed to offering a complete portfolio of service offerings to support you throughout the entire lifecycle of your Munters equipment.

Commissioning support

Our trained service technicians make sure your equipment is operating as designed so your investment gets the best possible start. We offer everything from basic unit start-up to extensive turnkey installations.

Maintenance

Keep your equipment running like new with on-site visits by factory-trained technicians and regular rotor performance checks.

Retrofit and upgrade

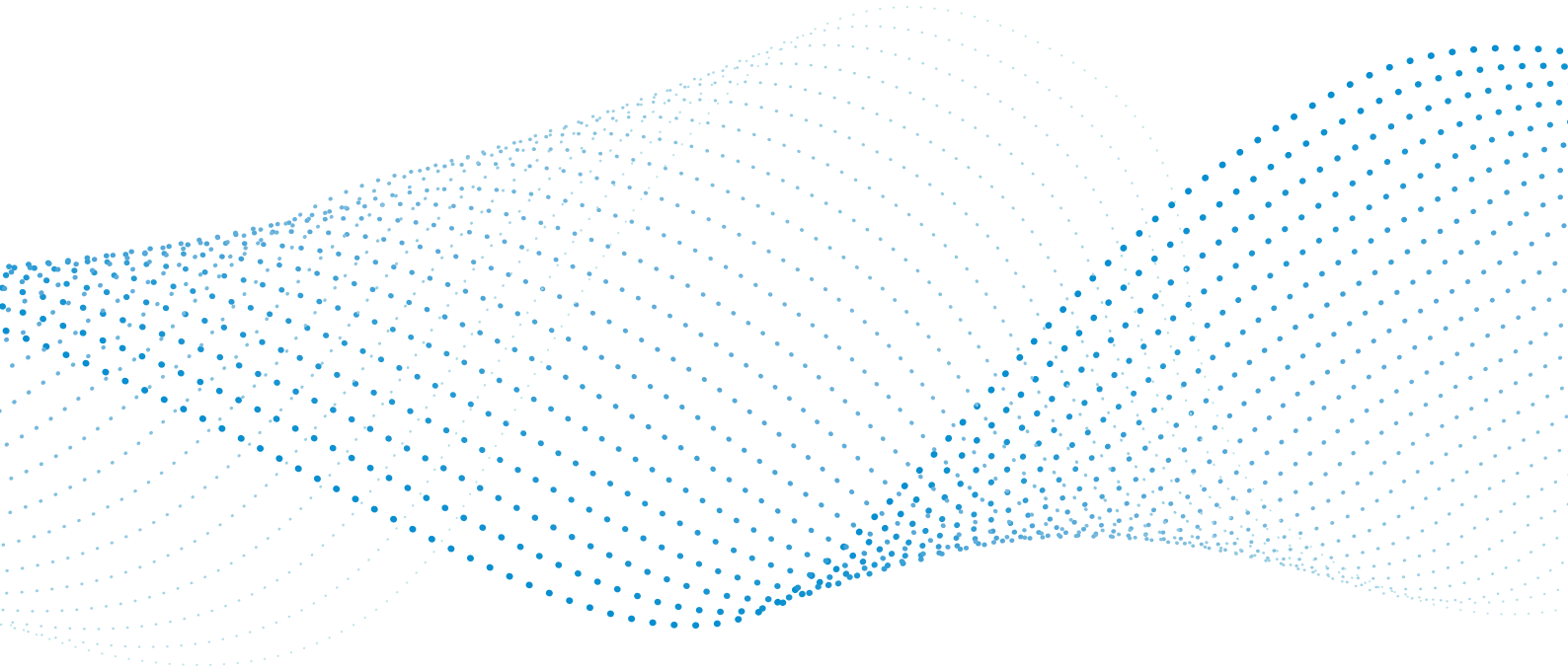
Boost energy efficiency and capacity with our retrofit solutions for equipment already in operation. Upgrade controls, replace your rotor or upgrade your fan to maximize performance, save money and energy. Munters also custom fabricates zeolite blocks for replacement of all zeolite and carbon rotor systems.

Munters Service Agreements

Ensure that your Munters equipment always performs according to specifications. Munters Service Agreements, tailored to your needs, offer industry-leading lifecycle care for your equipment – and peace of mind for yourself.

Munters Genuine Parts

We use only Munters Genuine Parts, which are designed, tested, and verified to ensure that each part meets or exceeds specifications. Convenient service kits are made to make maintenance simple.



Munters is a global leader in energy-efficient air treatment and climate solutions. Using innovative technologies, Munters creates the perfect climate for customers in a wide range of industries.

Munters has been defining the future of air treatment since 1955. Today, around 4,000 employees carry out manufacturing and sales in more than 30 countries.

For more information, please visit www.munters.com

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