

NETZSCH

Proven Excellence.



NETZSCH Filter and Cyclones

Efficient Separation of Dust with Problem-Free Operation

Business Unit
GRINDING & DISPERSING

Dedusting and Separating

For cleaning of dust-laden air, NETZSCH offers tailor-made solutions for customers. The filter and plants are designed according to customers' wishes and manufactured and adapted to suit the individual application case. Amongst other features, the filters are in type-tested ATEX-execution, heated and insulated and are available in various materials and surface qualities.

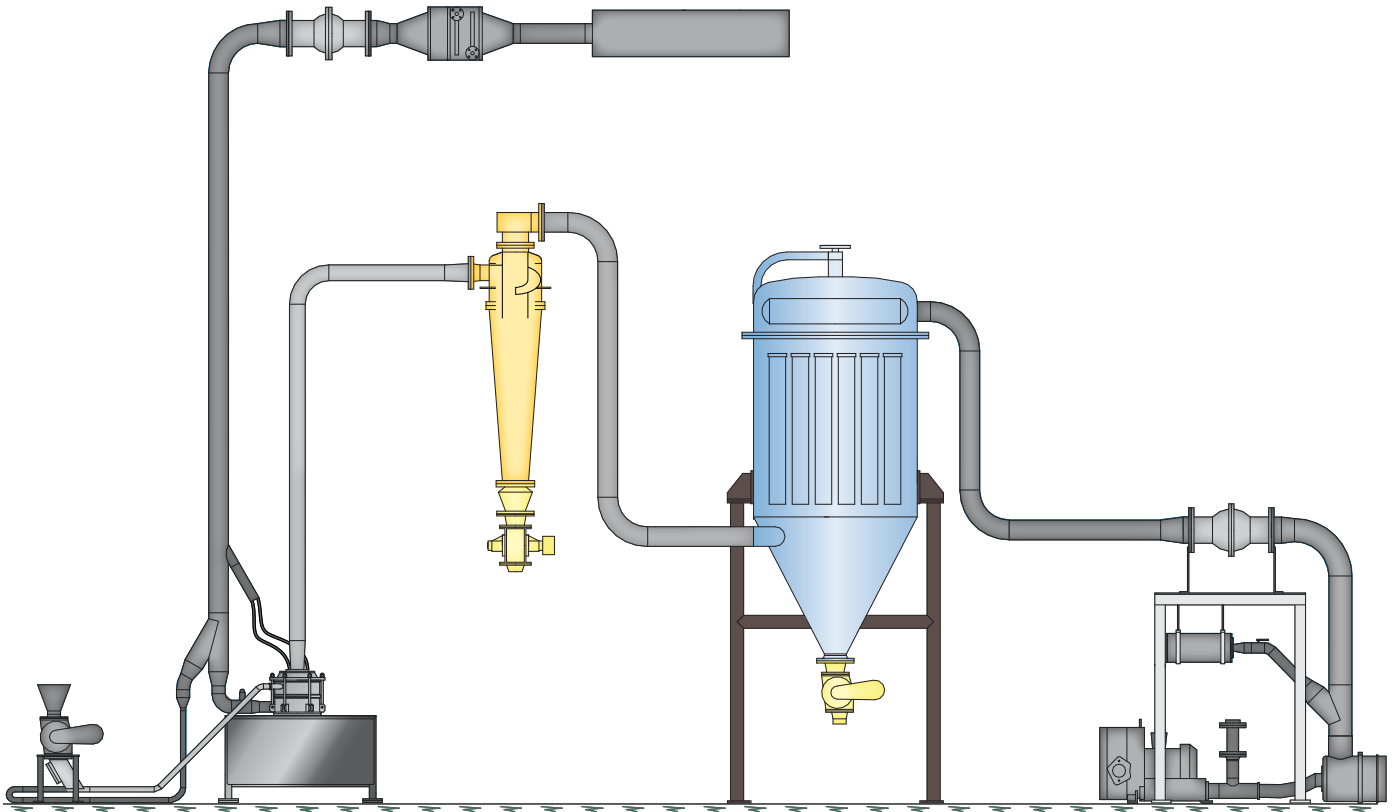
The following product overview reflects and give examples of a small number of our possibilities. Find out more about us and send us your inquiry. We will be pleased to send you an offer especially adapted to meet your particular requirements.



Use of Cyclones and Filters in Dry-Processing

The mechanical handling of adjuvants, raw- or finished substances is an important part of many production processes in various industries. Within the many, different production processes, numerous steps are required to obtain the desired finished product. An almost unlimited number of the most varied products are ground during one production process. This means that mechanical process technology by size-reduction, fine-grinding and classifying is of ever increasing importance.

The separation of the product being ground from the grinding gas is carried out in a mill and/or classifier with downstream cyclone and/or dust filter or a combination of the two.



Example of a Plant with Classifier Mill CSM, Cyclone and Dust Filter

NETZSCH Dust Filter

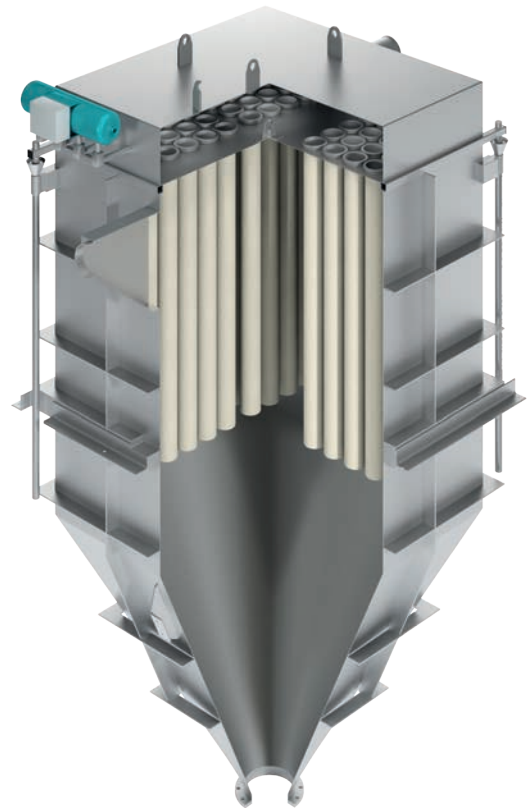
Your Solution for the Efficient and Reliable Separation of Dust

One of NETZSCH's key business activities is the design and production of jet nozzle filters for the cleaning of dust-laden air with explosion-hazardous and non-explosion-hazardous dusts. For the many and varied industrial processes in the chemical, pharmaceutical, cosmetic, foodstuff and mineral industries, NETZSCH can offer you dust filters in round or square construction designed to suit your particular requirements.

Functional Method of Dust Filters

The dusty air enters the filter and is applied to the filter hoses or filter elements from outside. The dust adheres to the surface while the cleaned air enters into the hoses or elements and then leaves the filter.

The cleaning of filter hoses or filter elements is carried out fully automatically. In conjunction with a differential pressure or cycle control a short, very powerful blast of compressed air (4 to 7 bar) is blown into the filter hoses and then the filter elements against the normal direction of flow. In this way, the filter cake is loosened and falls into the dust collection hopper. The dust filter remains fully operational even during the cleaning phase, as only a small part of the total filter area is switched off during the filtration process.



Filter Executions in Round and Rectangular Design

Round Filter

- Good pressure stability (over-/negative pressure)
- Pressure shock resistant execution (up to 10 bar)
- Equipped with swivel arm up to a diameter of approx. 2200 mm
- Filter perforated plate is clamped between the flanges of the clean- and raw gas chamber
- No corners for easier cleaning

Rectangular Filter

- Good use of space (+ 27% compared to round filters)
- Large filters with filter areas of over 1000 m² (in segmental construction) are possible
- Pressure resistance is improved by reinforcement ribbing or installation of pressure rods
- Filter can be dismantled into segments

Focus on Your Advantages

- Special dust filter designed according to your requirements
- Efficient separation of dust in trouble-free operation
- High degree of cleanliness and minimum residual dust content for a safe environment

Hose filter in Top Removal Execution

Optimally designed to meet the Requirements of your Product

In Top Removal dust filters the filter hoses and -baskets are removed from the top via the clean gas side. Depending on the application case or use the dust filter execution is designed and put together from a wide-ranging portfolio with many, varied options.

- Pressureless, pressure shock resistant or pressure relieved round- or rectangular filter in various material executions
- Filter areas from 0.2 m² up to 1000 m²
- Equipped with unscrewable or hinged cover for free access to the clean gas chamber
- Beater floor or complete filter upper part can be lifted off using a crane or swivel arm
- Rapid locking system *SMARTLOCK* for reduction of time required for opening and closing flange connection between raw- and gas side chamber
- Filter perforation plate can be lifted off completely with filter hoses and -baskets
- Snap-Ring technology for high dust-tightness to the clean gas chamber and the lowest possible residual dust content
- Delivery of all commercially available filter hose qualities as well as special equipment e.g. for higher operating temperatures or very fine dusts
- Filter baskets in galvanized or rustproof execution
- Rectangular construction also possible for lower negative pressures and greater air volumes.
- Accessible filter upper part
- Execution with self-supporting filter elements also possible



PILOTPLANT with High Density Bed Jet Mill *CONJET®* 16 and Top Removal Hose Filter with Rapid Locking System *SMARTLOCK*

Hose filter in *SMARTREMOVAL* Execution

The Economical and Innovative System for Easy Filter Hose Change

When planning the installation of a filter, an important subject is often the limited space available under the ceiling for using a top removal filter. Either the height of the building must be increased by expensive construction work, or a side removal system can be used. However, the side removal systems generally available up until now, could not guarantee the same residual dust content obtained with top removal systems due to their construction. Another of their negative features is the large amount of time required for changing hoses and cleaning. This involves a long production stoppage time, which means a decrease in yield, particularly for those application areas in which the type of feed product is frequently changed, and high costs.

With the patent-pending hose exchange system *SMARTREMOVAL*, NETZSCH has developed a system which has revolutionized the exchange of filter hoses and -baskets for side removal filters!

With NETZSCH *SMARTREMOVAL* you can achieve the same residual dust contents as with top removal systems. *SMARTREMOVAL* requires the same amount of space as side removal systems and means it is possible to change the filter hoses without tools with very simple and considerably quicker mounting. You can shorten your filter hose changing times by up to 80% and therefore lower costs!

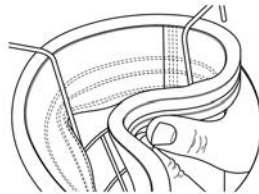
Changing the Filter Hoses – No Tools needed, quick and easy

The mounting and dismounting of the support cage is carried out from the raw gas side. The support cage is mounted on the perforated plate, fixed by spring steel clips and the position of the filter hose is then secured using a snap ring system.

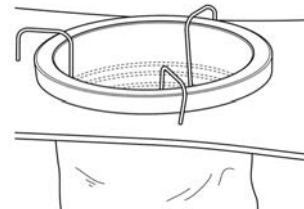
Mounting*



Hooking of the unit onto the perforated filter plate

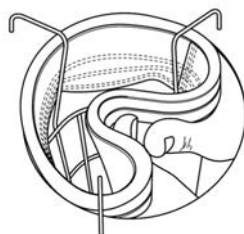


Mounting of the filter hose with snap ring

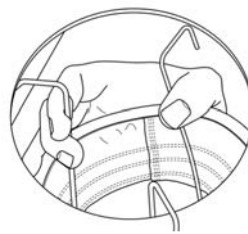


Mounting of unit completed

Dismounting*



Dismounting of the filter hose with snap ring



Unit is hooked off by pushing together the springs



Dismounted unit (filter hose and support cage)

Main Features of NETZSCH *SMARTREMOVAL*

- 1 Venturi, equipped with an integrated lifting stop for the support cage
- 2 Support cage which is hooked over the top of the perforated plate from the raw gas side and fixed by spring steel clips without tools
- 3 Filter hose with modified snap ring system for easy mounting from the raw gas chamber without tools



Focus on Your Advantages

- Mounting time up to 80% shorter compared to side removal systems.
- Easy mounting from the raw gas side without additional tools. Mounting errors cannot occur.
- Proven Snap Ring technology guarantees the dust-tightness of the clean gas chamber.
- The same residual dust contents as with top removal snap ring systems.
- No additional space in the building needed for dismantling the support cages as required for top removal systems.
- Filter in round or square construction depending on requirements
- Filter areas from 0.2 m² up to 1000 m²
- Inner rooms with accessible protective grid or walkway grating
- Filter baskets in galvanized or rustproof execution
- Delivery of all commercially available filter hose qualities as well as special equipment e.g. for higher operating temperatures or very fine dusts
- Existing systems can be modified and retrofitted



LABPILOT PLANT with hose filter in *SMARTREMOVAL* execution

ATEX-Filter

Safe Use also in Explosion-Hazardous Areas

NETZSCH has the required ATEX-EC-type examination certificate with certification for six filter model ranges for the EX-ZONE 20, II1D, according to directive 2014/34/EU, which was issued by a notified body for the designated use in explosion hazardous areas.

- Pressure-shock resistant jet-nozzle filter in round construction with filter hoses or self-supporting filter elements, produced in either explosion pressure resistant or in explosion pressure shock resistant construction.
- Executed with closed filter housing for a maximum explosion pressure of 10 bar(g) or with a pressure relief device for a maximum reduced explosion overpressure of 2 bar(g).



Pressure shock resistant filter in ...

- ...top removal execution which can be designed 10 bar pressure shock resistant or pressure relieved with rupture disc, with or without explosion channel or with relief vent.
- ...*SMARTREMOVAL* execution with filter hose removal from the side through a robust door, pressure relieved design with rupture disc, with or without explosion channel or with relief vent.

Explosion Pressure Resistant

- The filter housing can withstand the expected explosion pressure without permanent deformation.

Explosion Pressure Shock Resistant

- The filter housing can withstand the expected explosion pressure without rupture although permanent deformation is permitted.

Rapid Change Filter

Limitless Flexibility

Rapid change filters are particularly suitable for production during which the product or color are changed frequently, as the complete filter packet must then be exchanged.

The filter hoses/-baskets or self-supporting filter elements are mounted on mobile carriages. When these become contaminated, they are simply driven out of the filter. The product-contacted inner surfaces of the filter housing are then easily accessible and cleaning is straightforward. Afterwards an available clean carriage or a carriage with the desired color is pushed into the filter. In this way the loaded filter carriages can be changed rapidly and efficiently.

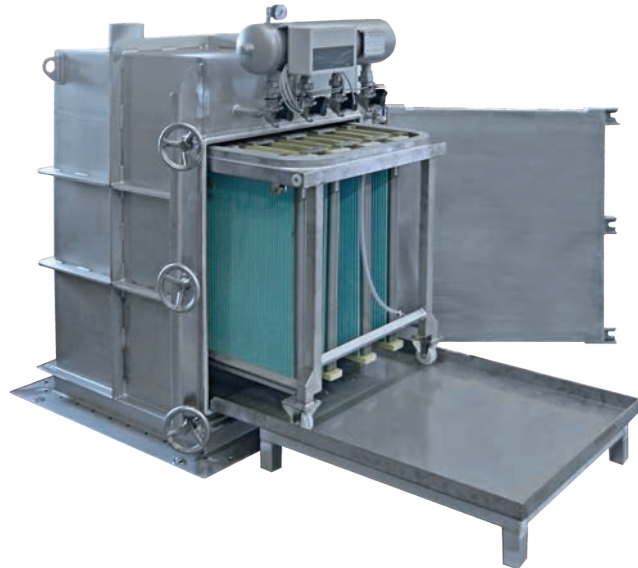
The use of filters with mobile carriages and filter elements is recommended if a particularly compact design is required.

Focus on your Advantages

- Short changing times
- Ideal for production lines with frequent change of product
- Optimal access for cleaning
- Compact construction and low space requirements



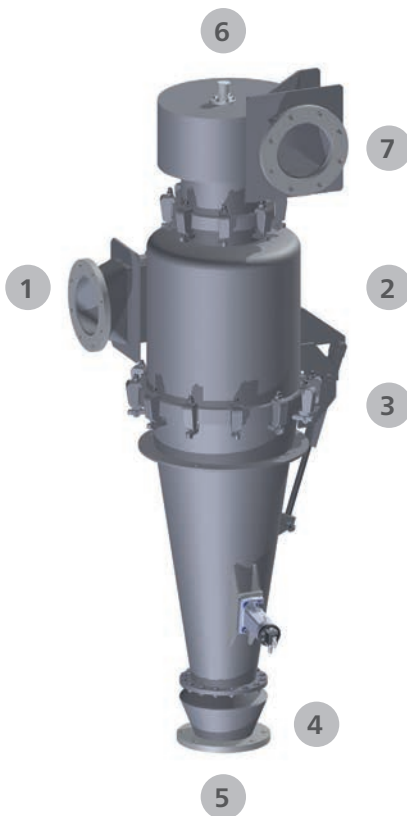
Rapid change filter with mobile carriage equipped with filter hoses



Rapid change filter with mobile carriage equipped with filter elements

NETZSCH Cyclones

Centrifugal Separator with Extremely High Degree of Separation



Cyclone or centrifugal separators are used in grinding- and classifying plants for separating the product out of the gas flow. The gas loaded with product (1) enters the cyclone tangentially via the inlet spiral (2) and is then set in a rotating motion. In the vortex the coarse particles are transported outwards by centrifugal force and then separated out through the product outlet (5). Small particles leave the cyclone at the gas outlet with the gas flow (7) after a vortex reversion (secondary vortex) upwards through the immersion tube.

With a NETZSCH cyclone you can achieve a degree of separation of up to 99.9% depending on the product and fineness*.

Executions with NETZSCH Cyclones

- With spiral hood for vortex-free gas outlet (6) and conditioning hopper (4) which prevents entrainment of the separated product in the secondary vortex
- Separation flange (3), can be optionally equipped with swivel device with manual winch or in hydraulic variants for simplifying demounting and cleaning
- Pressure shock resistant execution up to 10 bar(g) possible
- Materials normal- (1.0037) or stainless steel (1.4301, 1.4404, 1.4541, 1.4571)
- Surfaces and coatings:
 - Ground
 - Polished
 - PU or ceramic coatings
 - Further executions upon request

Use of Cyclones

- For use when frequent product change is required, for example in laboratory area
- In plants which are run with many different milling settings
- In plants which must be cleaned frequently (product characteristics, product change)
- To avoid contamination of the product with filter material (fibers)

Focus on your Advantages

- Proven and tested construction for problem-free long-term operation
- High efficiency and reliable separation of dry particles with high degree of separation
- Low operating costs

* Example: Product density = 7.87 g/cm³, fineness d_{97} = 11.2 µm

NETZSCH *SMARTLOCK*

Rapid Locking System for Filter und Cyclones

The NETZSCH newly developed rapid locking system reduces maintenance times required for opening and closing of the flange connection between raw- and clean gas chamber to a minimum.

For a filter plant with a filter area of e.g. 75 m², the loosening of 40 clamp screws takes around 35 minutes. After cleaning, these clamps must be carefully tightened again to prevent penetration of dust into and around the clean gas chamber. NETZSCH *SMARTLOCK* shortens the opening- and closing time for each flange connection to less than 2 min. Thanks to the easy handling, operating errors are practically eliminated and at the same time standstill times for maintenance- and cleaning work are reduced significantly.

When pressure is applied to the sealing, the flange connection is pressed against the clamping bracket, the filter is sealed outwards and the area between raw- and clean gas chamber separated. Thanks to the possibility of setting various charging pressure values of the sealing, the system can be used in vacuum areas from 0.65 bar(abs) as well as up to 11 bar(abs) overpressure.

NETZSCH *SMARTLOCK* is used for the following applications:

- Round filter
- Rectangular filter
- Separation flanges of cyclones
- Also for pressure shock resistant executions



Easy loosening of clamping brackets without tools in relieved state

The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. A worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

Proven Excellence.■

Business Unit Grinding & Dispersing – The World's Leading Grinding Technology

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