“Nowadays people know the price of everything and the value of nothing.”

Oscar Wilde
We won't leave you in the fog!
REVEN UK - Shaun Fairclough

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REVEN® = REntschler VENtilation

In the year 1980, Rentschler Reven-Lüftungssysteme GmbH evolved from the family-owned company that was founded in 1905. Right from the beginning, REVEN specialized in the processing of stainless steel. The core competence included the design and manufacturing of metal ventilating ceilings and fume extraction hoods for commercial large-scale kitchens. The economic rise came at the beginning of the year 1980, when the company decided to give up plant construction and concentrate on the production of air cleaning systems in the future. This decisive step opened up the ventilation market to REVEN, with the result that the companies which required ventilation equipment and had been competitors until then became customers. The skills and knowledge acquired during the decades of plant construction now formed the basis for state-of-the-art products that have set new standards.

The second supporting branch of the company was created in the middle of the 1980s when REVEN started to design, manufacture and assemble oil mist separators for industrial production plants. This sector has experienced a very dynamic development, because workers in industry benefit from the same air quality regulations as kitchen personnel. In addition, it is a matter of fact that precision work requires a clean working atmosphere free of oil and smoke. Two strong supporting branches and more than one hundred years of experience back up REVEN's position in the strongly growing market of today and allow the company to benefit from synergy effects in both sectors. Thanks to a large number of patents, innovations and improvements, REVEN can provide its customers with effective solutions that always strive to improve air purity.

The international success of the company, which is owned by the Rentschler family in the fourth generation, is a measure of the high esteem we enjoy among our customers.

If you would like to learn more about REVEN, please write to us or have a look at our homepage at www.reven.de.
Efficient manufacturing

Our production in Sersheim is largely mechanized and partly automated. We process coiled chromium-nickel steel and aluminium and also use copper and other materials on request.

Computer-controlled processing machines cut the metal sheets to size, straighten, emboss and punch them and drill the necessary holes into the standardized preshaped parts. The high degree of automation guarantees perfectly reproducible quality on a high level.

Our production is organized in line with the principle of lean manufacturing: The team-oriented workflow increases the operators’ motivation in each cell, encourages decision-making and improves quality. Potential failure sources are eliminated in advance rather than after assembly on site.

Online networking of CAD workplaces and processing sections is the standard at REVEN today.

The “modular system concept” surpasses all else

In order to reduce assembly expenditure on site, we deliver our systems in pre-assembled condition to the greatest possible extent. This considerably reduces assembly and commissioning times on site. It goes without saying that we apply the most stringent quality control procedures and final tests before our products leave the factory. For our customers, this means that they receive a high-end product from quality-assured production in accordance with DIN ISO 9001.
Based on decades of experience in the domain of mechanical separation in ventilation technology, REVEN® has developed the mechanical separating system X-CYCLONE® in close cooperation with the industry. Air pollutants and contaminants from oil, emulsions and other fluids are separated from the ambient air as aerosols to a very high extent. This equipment dispenses with auxiliary energy supply as well as any auxiliary material (fabric, etc.) and is particularly well suited for the separation of the following harmful substances from the air:

**Aerosols**
Dispersions of fluid droplets and solid particles in a gaseous environment.

**Mist**
Fluid droplets generated by supersaturated vapour through condensation when the temperature / pressure decreases.

**Vapour**
Substances that are generated at normal ambient temperatures when the vapour pressure is below 1.013 mbar.

**Fine dust**
Solid particles with a diameter below 10 µm.

Air pollutants in the form of aerosols, mist or vapour (saturated) as well as fine dust occur in various particle fractions [µm]. A particle is a defined mass depending on gravity. These particles are conducted together with the transporting medium air into the X-CYCLONE® separator by forced ventilation (fan).
The separation takes place in three stages:

**Stage 1**
Pre-separation through turbulences and flow separation in chamber 1.

**Stage 2**
Cyclone effect in chamber 2 with an extremely high medium surface tension, relief and re-establishment of the tension. Microparticles are ejected through small rotating cyclones.

**Stage 3**
The airflow in an X-CYCLONE® separating element consists of individual cyclones. They pass through the profiled element in such a manner that two cyclones flow into a common chamber 3. A specific agglomeration process as well as turbulences with flow separation provide for the separation of microparticles.

The separated fluids run vertically off to the bottom of the X-CYCLONE® element and are evacuated by a special drainage effect (illustration below). Most of the separated solid particles run off together with the liquid.

**This provides for a self-cleaning effect because the fluid mass ≥ the solid mass.**
X-CYCLONE® – filters microparticles

Fine dust

According to regulations, fine dust (PM10) is particulate matter with a particle diameter below 10 µm. Fine dust may contain heavy metals or dioxins a.o. In machining processes, particles that are considerably smaller than 10 µm might occur due to the cooling lubricants used on the machine tools.

The graphical comparison to human hair demonstrates how small these particles really are.

Enlarged 10,000-fold

Hair Ø approximately 80.0 µm

In 2010, the permissible average annual WEL* for PM10 will be reduced to 20 µg/m³. See page 114.
Particle range

When evaluating the separating rates, the range of the occurring particles is a most decisive factor. It includes all particles that occur in the polluted airflow and reveals all particle sizes and their quantities. The chart shows an example of a typical particle range.

You can see clearly the rising percentage of particles below 10 µm (number concentration), whereas the mass ratio exhibits a diametrically opposed behaviour.

In Germany, WELs are stipulated by the Federal Immission Protection Act (BimSchV) of 2002. These limiting values were even lowered in 2010. The average daily WEL for PM10 of 50 µg/m³ has been retained, whereas the average annual WEL was reduced to 20 µg/m³.

(For more detailed information, see page 114).

WEL = workplace exposure limit

Protection of personnel and machines

Scientific research proved that fine dust and airborne aerosols with a droplet diameter below 5.0 µm present an increased health hazard to exposed personnel. When inhaled, the particles enter the lungs and can cause severe respiratory ailments, such as asthma or pulmonary fibrosis. In addition, they can cause various types of cancer. The fine particles also get into the oesophagus and are absorbed by the skin.

(For more detailed information, see page 115).

Not to forget their harmful effects on sensitive equipment and machinery, buildings and environment.

Breathing
Gases, vapours, dusts, aerosols

Swallowing
Dusts and liquids

Resorption via the skin
Dusts and liquids

Nasal space
Trachea
Oesophagus
Bronchial tubes
Alveoles
Skin
or why do golf balls fly so far?

When a ball is flying, the highest pressure applies at its front. The dimples on the surface of the golf ball produce pressure compensation between the front and the rear of the ball, thus reducing aerodynamic drag. That is why a golf ball with dimples flies farther than a smooth one. We took advantage of this effect to improve our newly patented X-CYCLONE® profile:

Similar to the golf ball, we applied indentations and dimples to the surfaces that are exposed to the airflow. This helps to optimize the airflow and improves the separating performance of the device. The cyclones in the profile of the X-CYCLONE® rotate faster, with the same pressure loss, and therefore have an improved separating performance.

![Image of X-CYCLONE® profile sections and RXZ basic element]

**Ill.: X-CYCLONE® profile sections are the components of the RXZ basic element**

**Service life and maintenance**

Each RXZ basic element consists of two separate profile levels that could be separated completely after removal of the bracket holders. The only maintenance the RXZ basic element needs is a simple cleaning operation using a high-pressure cleaner or an industrial washing machine. Cleaning is required at regular intervals each time the pressure exceeds the $P_{\text{max}}$ mark of the pressure indication.

![Image of person cleaning a device]

**REVEN® gives a lifetime warranty on the X-CYCLONE® profile sections and basic elements.**
**UL test stand for flame exposure testing**

**Flame exposure testing in accordance with UL 1046**

UL 1046 is an American standard for the testing of the flame-arresting capability of equipment, which is comparable to DIN standards or the requirements of the German TÜV. UL stands for Underwriters Laboratories®. UL 1046 describes a procedure for the testing of the flame-arresting capability of oil separators and oil filters.

**Why do REVEN test their RXZ basic elements for compliance with UL?**

Because UL 1046 is one of few standards worldwide that describe a testing procedure for the flame-arresting capability. To date, the flame-arresting capability of hardly any filters used in oil mist or aerosol separators has ever been tested or proven in any way.

**Description of the illustrations:**

The RXZ high-performance separator is exposed to the test flame for three minutes. Although the test stand is flooded with air from a fan, the flames are “blocked” by the high-performance RXZ separator. This means that air can freely flow through the RXZ basic element, whereas flames are arrested.

The REVEN® X-CYCLONE® high-performance separators (RXZ) have passed this test without any problems.
**Explosion test on oil mist separator**

**REVEN® oil mist separators pass explosion test successfully**

The REVEN® oil mist separators brilliantly passed several explosion and flame exposure tests. Compare the illustrations and the test video on our homepage: www.reven.de.

*Ill.: Flame and pressure relief flap, no flame penetration into the REVEN® oil mist separator.*
REVEN® keeps your air clean

Up to 140 litres fluid mass are separated every week by REVEN® oil mist separators on a processing machine. More information on page 121.

AN ENORMOUS AMOUNT, ISN'T IT?
Description

Effective mechanical separation of oils, emulsions and other mists containing liquid particles (aerosols). The basic element consists of patented special profile sections arranged in two separable plate levels, spacers and a patented separable frame. Self-cleaning effect through special profile sections, smooth surfaces and suitable layout. Separating rates according to the following specifications.

All profile sections are fitted with the optimized golf-ball surface, see page 10.

All basic elements can be cleaned and reused, no throwaway filters! The flame-arresting capability has been tested successfully by the German TÜV in compliance with the directive UL 1046 of the American Underwriters Laboratories®.

Material:
Frame made of galvanized steel sheet; profile sections made of aluminium.

Special versions:
Frame and profile sections made of stainless steel.

Technical data 1

The following standard sizes in mm are available in stock (width x height x depth):
610 x 610 x 50 – 490 x 490 x 50 – 450 x 400 x 50 450 x 300 x 50 – 450 x 250 x 50 – 410 x 410 x 50 330 x 330 x 50

Special sizes are available on request.

REVEN® gives a lifetime warranty on the X-CYCLONE® profile sections and basic elements.
The illustration shows the pressure loss behaviour of a basic element in the state of medium pollution. The curve also applies to a saturated agglomerator.

For the calculation of the approach surface you should deduct the perimeter frame of 20 mm from the surface of the basic element, i.e. a basic element of 490 x 490 mm has an effective separating surface of 450 x 450 mm!

### Technical data 2

The diagram shows the separating efficiency of a basic element depending on the airflow approach velocity and the particle size.

The mass ratio should be considered when evaluating the separating efficiency and the compliance with WELs (workplace exposure limits) in mg pollutants per m² exhaust air.

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>10</th>
<th>5</th>
<th>3</th>
<th>1</th>
<th>0.8</th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass ratio*</td>
<td>8,000</td>
<td>1,000</td>
<td>216</td>
<td>8</td>
<td>6.4</td>
<td>1</td>
</tr>
</tbody>
</table>

* Refers to a particle size of 0.5 µm. A particle of 10 µm has a mass that is eight thousand times greater than that of the reference particle with 0.5 µm.

The measurements were carried out by the Fraunhofer Institute for Toxicology and Aerosol Research.
Technical data 3

Separation in a basic element - a system comparison - test parameters and measuring technology:

- Particle range: 3 to 10 µm
- Approach velocity of the airflow: 2.0 m/s
  REVEN® recommends an airflow velocity of 2 m/s!
- Medium to be separated:
  Oil emulsion 40 %
- 6-duct system (0.3 µm - 10 µm), particle counter
- Electronic impeller anemometer

All separating rates were tested and confirmed by the Fraunhofer Institute for Toxicology and Aerosol Research. You can find information about the separating rates referenced to the particle size and pressure losses in the documentation included in the scope of delivery.

The diagram shows the result of the test series

Type 1: X-CYCLONE®
Type 2: baffle plate
Type 3: optimized baffle plate
Type 5: aluminium mesh

Type 4: a combination of 3 + 5
**Description**

Complete patented RMZ separating cell suitable for installation in a horizontal duct section by customer. The RMZ cell consists of two individual basic elements (610 x 610 x 50 mm) arranged in a V-type layout. The airflow streams into the open end of the V inside the cell. RMZ separating cell with special **patented** drainage effect (the separated liquids run off). The cells and modules are standardized and can therefore easily be combined to **patented** multi-module MODUNO® separating units. The cell modules are made from galvanized sheet steel, torsion-free and self-supporting incl. the **patented** X-CYCLONE® basic elements.

All basic elements can be cleaned and reused, no throwaway filters! The flame-arresting capability has been tested successfully by the German TÜV in compliance with the directive UL 1046 of the American Underwriters Laboratories®.

**Material**

Basic element:
cells, housing and frames made of galvanized steel sheet; profile sections made of aluminium.

**Special versions**

The cell and the basic element are made entirely of stainless steel.
Technical data 1

Recommended operating volume flow:

RMZ-1: 5,000 m³/h
(consisting of two basic elements of 610 x 610 mm)

RMZ-0.5: 2,500 m³/h
(consisting of a single basic element of 610 x 610 mm)

Pressure loss: 350 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

Standard sizes available in stock:
RMZ-1: length (L): 594 mm width (W): 620 mm · height (H): 615 mm
RMZ-0.5: length (L): 594 mm width (W): 304 mm · height (H): 615 mm

Weight: RMZ-1: 60 kg
RMZ-0.5: 35 kg

Technical data 2

Separating rates with the airflow rates specified above:

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>9 %</td>
<td>14 %</td>
<td>18 %</td>
<td>67 %</td>
<td>98 %</td>
<td>99 %</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense - seek advice prior to any decision.
Assembly examples

The illustration shows a duct separator with six MODUNO® RMZ-1 cells (12 basic elements of 610 x 610 x 50 mm). The individual RMZ-1 cells have been screwed together to form a module. The red arrow indicates the airflow direction. The separated liquid runs off in direction of the dashed yellow arrow (patented drainage system).

Ill.: RMZ-1 with two incorporated RXZ basic elements of 610 x 610 x 50 mm

Ill.: Removal of the basic elements from the RMZ-1 cell

Ill.: Empty RMZ-1 cell without basic elements
In most cases, you can still use your REVEN® air cleaner when you have to convert your machine by adding an additional module. REVEN® offers a wide range of optional accessories, so if you have to use your machine for a different application or change the cooling lubricant, there is no need to scrap your air cleaner if it is from REVEN®.
Duct separator MODUNO®, type RKM

Description
Complete duct separator module suitable for installation in a horizontal duct line. The module is incorporated in a completely welded steel sheet housing with a lacquer finish in RAL 5002. The service door is fitted with clip fasteners. The housing is stable and torsion-free and has smooth internal surfaces. The bottom part is designed as an oil- and waterproof collection pan. The housing is fitted with patented RMZ separating cells. Each cell consists of two individual basic elements (610 x 610 x 50 mm) arranged in a V-type layout. The airflow streams into the open end of the V inside the cell. A patented special drainage effect ensures that the separated liquids run off from the cell. The collecting pan is fitted with a drain connection with a one-inch sleeve. It is intended for the connection of an on-site drain line with a siphon. The duct junctions are not included in the scope of delivery. The cells and modules are standardized and can therefore easily be combined to multi-module MODUNO® separating units. All basic elements and agglomerators can be cleaned and reused – no throwaway filters! The flame-arresting capability has been tested successfully by the German TÜV in compliance with the directive UL 1046 of the American Underwriters Laboratories®.

Material
Housing: steel sheet with a lacquer finish in RAL 5002
Basic element: cells, housing and frames made of galvanized steel sheet, profile sections made of aluminium.

Special versions
Versions made completely of stainless steel are available on request!

The MODUNO® duct separators type RKM are optionally available with an automatic REVEX® spraying facility.
Technical data 1

The duct separator modules are in general composed of the following separating cells:

**Recommended operating volume flow per cell:**
- RMZ-1 designed for a volume of 5,000 m$^3$/h (consisting of two basic elements of 610 x 610 mm)
- RMZ-0.5 designed for a volume of 2,500 m$^3$/h (consisting of a single basic element of 610 x 610 mm)

**Pressure loss of cell and housing:** 450 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

**Separating rates** of the RKM duct separator modules with the airflow rates specified on the next page:

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>9 %</td>
<td>14 %</td>
<td>18 %</td>
<td>67 %</td>
<td>98 %</td>
<td>99 %</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g., by using a particulate air filter) does not always make sense; please seek advice prior to any decision.

Technical data 2

<table>
<thead>
<tr>
<th>Type RKM</th>
<th>Airflow rate in m$^3$/h</th>
<th>Height H in mm</th>
<th>Width W in mm</th>
<th>Length L in mm</th>
<th>Duct connection* mm</th>
<th>Number** of RKM cells 0.5</th>
<th>Number** of RKM cells 1</th>
<th>Approx. weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5,000</td>
<td>1,020</td>
<td>720</td>
<td>1,600</td>
<td>626</td>
<td>606</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>7,500</td>
<td>1,020</td>
<td>1,028</td>
<td>1,600</td>
<td>924</td>
<td>606</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>10,000</td>
<td>1,020</td>
<td>1,336</td>
<td>1,600</td>
<td>1,232</td>
<td>606</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>3a</td>
<td>10,000</td>
<td>1,640</td>
<td>730</td>
<td>1,600</td>
<td>626</td>
<td>1,226</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>15,000</td>
<td>1,640</td>
<td>1,030</td>
<td>1,600</td>
<td>926</td>
<td>1,226</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>20,000</td>
<td>1,640</td>
<td>1,336</td>
<td>1,600</td>
<td>1,232</td>
<td>1,226</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>30,000</td>
<td>2,250</td>
<td>1,336</td>
<td>1,600</td>
<td>1,232</td>
<td>1,836</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>6a</td>
<td>30,000</td>
<td>1,640</td>
<td>1,950</td>
<td>1,600</td>
<td>1,846</td>
<td>1,226</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>45,000</td>
<td>2,250</td>
<td>1,950</td>
<td>1,600</td>
<td>1,846</td>
<td>1,836</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>60,000</td>
<td>2,250</td>
<td>2,565</td>
<td>1,600</td>
<td>2,461</td>
<td>1,836</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>8a</td>
<td>60,000</td>
<td>2,865</td>
<td>1,950</td>
<td>1,600</td>
<td>1,846</td>
<td>2,451</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>80,000</td>
<td>2,865</td>
<td>2,565</td>
<td>1,600</td>
<td>2,461</td>
<td>2,451</td>
<td>0</td>
<td>16</td>
</tr>
</tbody>
</table>

* Duct connection dimensions are internal clearance dimensions, a circumferential frame of 50 mm should be added on.

** The specified number also refers to optional agglomerator elements: one agglomerator of 610 x 620 x 50 mm per RMZ-1, one agglomerator of 305 x 610 x 50 mm per RMZ-0.5.

If higher airflow rates exceeding 80,000 m$^3$/h have to be handled, a modular system composed of several units should be selected.
**Technical data 3**

With an optional filter stage, the finest aerosols are agglomerated using a high-performance stainless-steel agglomerator to ensure that even the smallest droplets are separated.

**Pressure loss in an agglomerator incl. cell and housing: 800 Pa**

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

**Separating rates* of the RKM duct separator modules with the airflow rates specified on the next page, when an agglomerator is installed:**

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>25 %</td>
<td>41 %</td>
<td>53 %</td>
<td>95 %</td>
<td>100 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

*REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense, please seek advice prior to any decision.

**Ill.**: Stainless steel element, 610 x 610 x 50 mm of an AGG high-performance agglomerator

**Ill.**: AGG06 honeycomb agglomerator consisting of a combination of aluminium oxide and plastic foam. Particularly suitable for fine unpolluted oil vapours and steam.

**Technical data 4 EUREVEN® filter**

You can optionally fit the RKM duct separator with EUREVEN® filters instead of RXZ filters or high-performance agglomerators to separate finest oil particles.

**Ill.**: EUREVEN® filter, 610 x 610 x 50 mm; compare page 106.
Description EUREVEN®

EUREVEN® filters are suitable for the effective separation of finest dust and oil particles that are smaller than 1 µm. The filter complies with the required permissible maximum dust transmittance level of 0.5 % of the EUREVEN® filter class and is therefore classified into the BIA category M. We will send you a copy of the BIA test certificate on request. In terms of common filter classifications, the EUREVEN® filter satisfies the requirements of filter class F9. This means that in many cases, this filter can replace high-performance bag filters of class F9 and do their work. Furthermore, the filter can be cleaned and reused – no throwaway filters. Typical areas of application are small grinding machines and processing machines that use finely atomized oil as cooling lubricant.

Material:
Frame: stainless steel; filter mats: polyester; highly oil- and water-repellent.

Cleaning instructions
The filter can be cleaned with grease- or oil-dissolving agents. First apply the cleaning agent onto the filter, then allow it to react for 30 minutes. Subsequently remove the cleaning agent and the dissolved oil from the filter with a jet of water.
Duct separator type RK2

Description
Complete modular duct separator unit suitable for installation into a horizontal duct line. The unit is incorporated in a completely welded, steel sheet housing with a lacquer finish in RAL 5002. The service door is fitted with clip fasteners. The housing is stable and torsion-free and has smooth internal surfaces. The bottom part is designed as an oil- and waterproof collection pan. The housing is fitted with patented RXZ basic elements, which are arranged in two stages perpendicular to the airflow direction inside the duct separator module. The collecting pan is fitted with a drain socket, a level indicator and a one-inch socket for the connection of an on-site drain line with a siphon. The duct junctions are not included in the scope of delivery. All basic elements and agglomerators can be cleaned and reused – no throwaway filters! The flame-arresting capability has been tested successfully by the German TÜV in compliance with the directive UL 1046 of the American Underwriters Laboratories®.

Material
Housing:
steel sheet with a lacquer finish in RAL 5002
Basic element: cells, housing and frames made of galvanized steel sheet, profile sections made of aluminium.

Special versions
Versions made completely of stainless steel are available on request!

Highly efficient electrostatic duct separators for the separation of finest aerosols are available from now on!
Please send us your inquiry concerning our new electrostatic separator type RK-E.

NEW

Ill.: RK2 duct separator
Ill.: Interior view of an RK2 duct separator with agglomerator
Technical data 1

Recommended approach speed to the basic elements: 2 m/s

Pressure loss of the two-stage separator RK2: 800 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

<table>
<thead>
<tr>
<th>Permissible negative pressure:</th>
<th>6300 Pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible positive pressure:</td>
<td>2500 Pa</td>
</tr>
</tbody>
</table>

Separating rates* of the RK2 duct separator modules at an approach speed of 2 m/s:

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>11 %</td>
<td>17 %</td>
<td>22 %</td>
<td>80 %</td>
<td>99 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense, please seek advice prior to any decision.

Technical data 2

Opening on operating side:
- On the left in direction of the airflow
- On the right in direction of the airflow
(Please specify!)

<table>
<thead>
<tr>
<th>Type</th>
<th>Airflow rate in m³/h</th>
<th>Height H in mm</th>
<th>Width W in mm</th>
<th>Length L in mm</th>
<th>Duct connection* h</th>
<th>w</th>
<th>RXZ basic element** height x width</th>
<th>Approx. weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>1,200</td>
<td>708</td>
<td>493</td>
<td>660</td>
<td>320</td>
<td>320</td>
<td>370 x 450</td>
<td>50</td>
</tr>
<tr>
<td>1200</td>
<td>1,600</td>
<td>708</td>
<td>654</td>
<td>660</td>
<td>320</td>
<td>490</td>
<td>370 x 610</td>
<td>55</td>
</tr>
<tr>
<td>1700</td>
<td>2,400</td>
<td>878</td>
<td>654</td>
<td>660</td>
<td>490</td>
<td>490</td>
<td>540 x 610</td>
<td>65</td>
</tr>
<tr>
<td>2500</td>
<td>3,300</td>
<td>1,018</td>
<td>750</td>
<td>660</td>
<td>620</td>
<td>620</td>
<td>670 x 690</td>
<td>95</td>
</tr>
<tr>
<td>4200</td>
<td>6,000</td>
<td>1,238</td>
<td>995</td>
<td>660</td>
<td>840</td>
<td>840</td>
<td>890 x 930</td>
<td>125</td>
</tr>
<tr>
<td>7500</td>
<td>10,000</td>
<td>1,508</td>
<td>1,200</td>
<td>660</td>
<td>1,160</td>
<td>1,160</td>
<td>1,160 x 610 1,160 x 570</td>
<td>160</td>
</tr>
</tbody>
</table>

* Duct connection dimensions are internal clearance dimensions, a circumferential frame of 30 mm should be added on.
** For an optional agglomeration stage, please use the same size as for the agglomerator element.

With higher air quantities exceeding 10,000 m³/h, the system must have a modular structure and be composed of several units, or RKM MODUNO® duct separator modules must be used, see previous chapter. Optionally also available with fan module, see illustration on bottom of page 47.
Technical data 3

With an optional agglomerator stage, the finest aerosols are agglomerated using high-performance agglomerators to ensure that even the smallest particles are separated.

Pressure loss in an agglomerator incl. basic element and housing: 1,000 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach! Please make sure that the straight flow length upstream and downstream of the duct separator is at least equal to the diagonal of the duct connection.

Separating rates* of the RK2 duct separator modules with agglomerator

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>25 %</td>
<td>41 %</td>
<td>53 %</td>
<td>95 %</td>
<td>100 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense, please seek advice prior to any decision.

Description of bag filters

You can optionally fit the duct separator type RK2 with REVEN-PROF bag filters as a final filter stage. REVEN® bag filters are suitable for the separation of grease or oil aerosols from the airflow. The bag filters have been designed and constructed especially for use in oil mist or other separators that are suitable for the separation of liquid particles. The bag filters are fitted with a top plate of galvanized sheet steel. The filter medium are special synthetic fibre mats without supporting fabric that have a high affinity to oil and grease aerosols. The stabilizing strips are reinforced with spring wire at the air inlet side and are covered and braced with aerodynamic plastic profile sections. POPF bag filters are suitable for the absorption of very high liquid concentrations. The filter medium consists of a special polypropylene felt and has a particularly high affinity to liquid components. The maximum absorption capacity is approximately 2 kg liquid per square metre.

Material:
- Frame: galvanized sheet steel; filter mats: polypropylene

Only in the following sizes available in stock, dimensions in millimetres (width x height x thickness):
- 610 x 610 x 200; 490 x 490 x 200
- The following filters all have a depth of 220 mm; 450x370; 610x370; 610x540; 690x870; 930x890; 595x1160
- Special sizes are available with a delivery period of four weeks approximately.

Initial pressure loss: 100 - 250 Pascal approx.
Final pressure loss: 500 - 650 Pascal approx.

Maximum liquid absorption capacity: 2,000 grams per square metre.

Separating efficiency > 99 %
With liquid particles > 1.0 µm

Cleaning instructions

The filter can be cleaned with grease- or oil-dissolvent agents. First apply the cleaning agent onto the filter and allow it to react for 30 minutes. Then remove the cleaning agent and the dissolved oil from the filter with a jet of water.
REVEX® extension module for RK2 duct separator with patented spraying system.

Description

Completely assembled extension module suitable for attachment to a duct separator type RK2. The module is fitted with a patented REVEX® spraying system and a cleaning facility for the spraying chamber and the aerosol separators is available as option. The module can only be fitted into horizontally running air ducts.

Thanks to an optimized air flow inside the device the spray water is distributed over the entire filtering surface and the water consumption is reduced.

Stable and torsion-free housing made of sheet steel with a lacquer finish in RAL 5002. Version with one-inch hose connection suitable for connection to the existing cooling lubricant system.

Aerosols such as liquid particles from cooling lubricants, solid particles such as dust from the dry processing of cast and harmful gas molecules are bonded and washed out.

The extension module with the patented REVEX® spraying system has been developed particularly for the dry processing of cast and carbon fibre material and other highly vapour and smoke generating processes.

The extension module is suitable for connection to the tool cooling cycle of the processing machine (alternatively: supply via a separate tank and a pump by the customer).

Make sure that you use a pre-filtered cooling lubricant with particle sizes below one millimetre.

We will be pleased to quote other special applications for highly dust generating processing methods on your request and after technical clarification.

Material:
Housing: steel sheet with a lacquer finish in RAL 5002

Special version:
Versions made completely of stainless steel are available on request!
Technical data 1

**Recommended velocity of approach:** 2 m/s  
**Pressure loss inside the REVEX® module:** 50 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach! Please make sure that the straight flow length upstream and downstream of the duct separator is at least equal to the diagonal of the duct connection.

<table>
<thead>
<tr>
<th></th>
<th>6300 Pa</th>
<th>2500 Pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible negative pressure:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible positive pressure:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Separating rates* of the RK2 duct separator modules at an approach speed of 2 m/s:

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0,5</th>
<th>0,8</th>
<th>1,0</th>
<th>3,0</th>
<th>5,0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>69%</td>
<td>73%</td>
<td>80%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense, please seek advice prior to any decision.

Technical data 2

![Ill.: REVEX® spraying facility](image1)  
![Ill.: REVEX® extension for RK2](image2)

<table>
<thead>
<tr>
<th>Type</th>
<th>Airflow rate in m³/h</th>
<th>Height H in mm</th>
<th>Width W in mm</th>
<th>Length L in mm</th>
<th>Duct connection* h w</th>
<th>Approx. weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK2</td>
<td>REVEX®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>1.200</td>
<td>708</td>
<td>493</td>
<td>300</td>
<td>320</td>
<td>320</td>
</tr>
<tr>
<td>1200</td>
<td>1.600</td>
<td>708</td>
<td>654</td>
<td>300</td>
<td>320</td>
<td>490</td>
</tr>
<tr>
<td>1700</td>
<td>2.400</td>
<td>878</td>
<td>654</td>
<td>300</td>
<td>490</td>
<td>490</td>
</tr>
<tr>
<td>2500</td>
<td>3.300</td>
<td>1.018</td>
<td>750</td>
<td>300</td>
<td>620</td>
<td>620</td>
</tr>
<tr>
<td>4200</td>
<td>6.000</td>
<td>1.238</td>
<td>995</td>
<td>300</td>
<td>840</td>
<td>840</td>
</tr>
<tr>
<td>7500</td>
<td>10.000</td>
<td>1.508</td>
<td>1.200</td>
<td>300</td>
<td>1.160</td>
<td>1.160</td>
</tr>
</tbody>
</table>

* Duct connection dimensions are internal clearance dimensions, a circumferential frame of 30 mm should be added on.  
** For an optional agglomeration stage, please use the same size as for the agglomerator element.

With higher air quantities exceeding 10,000 m³/h, the system must have a modular structure and be composed of several units, or RKM MODUNO® duct separator modules must be used, see previous chapter.
Assembly examples

III.: RK2 duct separator with bag filter

III.: RK2 duct separator installed in an exhaust air line

III.: RK2 duct separator installed in an exhaust air line

III.: RK2 with fan module

III.: RK2 with fan module
Description

Complete duct separator module suitable for installation in a vertical or horizontal exhaust duct section. The stable and torsion-free housing is made of sheet steel with a lacquer finish in RAL 5002. The service door is fitted with clip fasteners. The bottom part is designed as an oil- and waterproof collection pan. The housing is fitted with patented RXZ basic elements and agglomerators. The collecting pan is fitted with a drain socket, a level indicator and a one-inch socket for the connection of an on-site drain line with a siphon. The duct junctions are not included in the scope of delivery. All basic elements and agglomerators can be cleaned and reused – no throwaway filters!

The flame-arresting capability has been tested successfully by the German TÜV in compliance with the directives of the American Underwriters Laboratories®.

Material

Housing:
steel sheet with a lacquer finish in RAL 5002

Basic element:
frame made of galvanized steel sheet, galvanized profile sections.

Agglomerator: stainless steel

Special versions

Versions made completely of stainless steel are available on request!
REJET® vertical pre-separator, type RKV

Complete two-stage unit consisting of an agglomerator and an X-CYCLONE® suitable for the installation in a vertical exhaust air duct section, designed for a vertical airflow (airflow through the housing from bottom to top, see blue arrows).

Technical data 1

Recommended approach speed to the basic elements: 2 m/s
Pressure loss of the two-stage pre-separator type RKV: 800 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

Separating rates* of the RKV duct separators at an approach speed of 2 m/s:

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>25%</td>
<td>41%</td>
<td>53%</td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

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Technical data 2

<table>
<thead>
<tr>
<th>Type REJET®-RKV</th>
<th>Airflow rate in m³/h</th>
<th>Height H in mm</th>
<th>Width W in mm</th>
<th>Length L in mm</th>
<th>Duct connection Ø l</th>
<th>Filter elements* Height x width</th>
<th>Approx. weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>500</td>
<td>490</td>
<td>200</td>
<td>660</td>
<td>100 80</td>
<td>150 x 150</td>
<td>50</td>
</tr>
<tr>
<td>1000</td>
<td>1,000</td>
<td>590</td>
<td>300</td>
<td>760</td>
<td>200 80</td>
<td>250 x 250</td>
<td>70</td>
</tr>
<tr>
<td>2000</td>
<td>2,000</td>
<td>790</td>
<td>320</td>
<td>960</td>
<td>300 80</td>
<td>450 x 290</td>
<td>90</td>
</tr>
<tr>
<td>3500</td>
<td>3,500</td>
<td>830</td>
<td>520</td>
<td>1,160</td>
<td>500 80</td>
<td>490 x 490</td>
<td>150</td>
</tr>
</tbody>
</table>

* Depth of RXZ basic elements: 50 mm; depth of stainless-steel agglomerators: 30 mm.
If higher airflows exceeding 3,500 m³/h have to be handled, a modular system composed of several units must be used.
**REJET® RP1 vertical / horizontal pre-separator type RP1**

Complete single-stage unit suitable for the installation in a vertical or horizontal exhaust air duct section, designed for a vertical airflow.

**Technical data 1**

**Recommended approach speed to the basic elements: 2 m/s**

**Pressure loss of the single-stage pre-separator type RP1:** 400 Pa

Please note: The specified pressure losses are always based on the assumption of a straight, steady approach!

**Separating rates* of the RP1 pre-separators at an approach speed of 2 m/s:**

<table>
<thead>
<tr>
<th>Particle size in µm</th>
<th>0.5</th>
<th>0.8</th>
<th>1.0</th>
<th>3.0</th>
<th>5.0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating efficiency</td>
<td>9 %</td>
<td>14 %</td>
<td>18 %</td>
<td>67 %</td>
<td>98 %</td>
<td>99 %</td>
</tr>
</tbody>
</table>

* REVEN is among the limited number of distributors that specify the separating rates for each individual filter element and each filter combination. A separating efficiency of 100% (e.g. by using a particulate air filter) does not always make sense, please seek advice prior to any decision.

**Technical data 2**

<table>
<thead>
<tr>
<th>Type REJET®-RP1</th>
<th>Airflow rate in m³/h</th>
<th>Height H in mm</th>
<th>Width W in mm</th>
<th>Length L in mm</th>
<th>Connection Ø in mm</th>
<th>RXZ basic element height x width</th>
<th>Approx. weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>500</td>
<td>370</td>
<td>380</td>
<td>370</td>
<td>140</td>
<td>280 x 330</td>
<td>12</td>
</tr>
<tr>
<td>1200</td>
<td>1,200</td>
<td>520</td>
<td>460</td>
<td>520</td>
<td>200</td>
<td>490 x 410</td>
<td>27</td>
</tr>
<tr>
<td>2000</td>
<td>2,000</td>
<td>600</td>
<td>540</td>
<td>600</td>
<td>250</td>
<td>610 x 490</td>
<td>43</td>
</tr>
<tr>
<td>3500</td>
<td>3,500</td>
<td>800</td>
<td>660</td>
<td>800</td>
<td>355</td>
<td>890 x 610</td>
<td>91</td>
</tr>
<tr>
<td>5000</td>
<td>5,000</td>
<td>870</td>
<td>820</td>
<td>870</td>
<td>450</td>
<td>990 x 770</td>
<td>134</td>
</tr>
</tbody>
</table>
III.: REJET® vertical pre-separator, type RKV

III.: REJET® vertical separator, type RKV

III.: REJET® vertical separator, type RKV
Press release

News about REVEN® filters

In the year 2003, the British BP headquarters decided to install RXZ high-performance separators from REVEN®. All oil rigs produce considerable environmental problems during the drilling process. The drilling mud that comes to the surface during the drilling process is collected in a large basin on the oil rig. Due to the high temperature of the drilling mud and its high crude oil portion, considerable quantities of oil mist rise from the collecting basin. Until recently, the oil mist was extracted by gigantic hoods that span over these basins and simply blown out into environment.

The blown out exhaust gas cooled down in the open air, the oil mist condensed and the droplets fell down to the sea surface in the immediate environment of the oil rig. British Petroleum (BP) decided to equip the exhaust air systems of the drilling equipment on their oil rigs with RXZ high-performance separators in order to avoid these negative effects on environment in the future.