Dry Electrostatic Precipitator
R&R-BETH® is an internationally active technology company in the field of filter, suction and dust removal technology with highly qualified and motivated staff.

The constantly growing needs of our customers and the steadily changing processes of the markets are the driving forces of our expansion for the dynamic and organic growth of our company. Targeted acquisition in relevant markets support this strategy.

The family spirit in our proprietor-run company is an essential basis for the motivation of our employees. The associates, the management team as well as all employees build a community with a climate for good ideas and highest commitment.

Traditional values and experiences as well as sound education of young people are the basis of our sustainable growth. During the process, we seek active exchanges with colleges and universities as a bridge to science.

Individual assembly groups and complete turnkey facilities are designed, manufactured and installed by our employees with greatest of care and highest professional expertise. Reliability, high efficiency and durability must be guaranteed by our products in customer-specific facilities. Functionality, efficiency and quality are the guiding principles of our product ideas and development activities.

Jointly with our long-standing partners, we succeed in securing all those requirements, which are necessary for a smooth work process, from planning to installation and commissioning to maintenance of your facility.
We serve all these industries worldwide

- Automotive
- Recycling and waste treatment
- Energy, coal and biomass
- Aviation and railways
- Stone and earth
- Plastic and rubber
- Chemistry and pharmacy
- Wood and wooden products
- Paper and cellulose
- Food
- Varnishes and paints
- Ferrous and non-ferrous metals
- Textile and fibers
- Non-woven / sanitary
- Electro technology
- Glas and ceramics
Tradition and Innovation

Tradition and innovation – these have been the trademarks of R&R-BETH®’s history for more than a century. The company was founded in 1887 by W.F.L. BETH, an engineer from Lubeck who invented the world’s first bag filter. The patent was issued as number #38396 by the »Kaiserliche Patentamt« on January 26, 1886.

Soon, the BETH® bag filter found its way into other industrial branches besides grinding mills, and in the course of the 20th century, the BETH® machine factory grew into an international leader in the field of industrial dedusting. When improvements were initially made to production processes, more and more filter systems were gradually added to increase operational safety and to protect the environment - and this was already happening at a time when environmental protection had no relevance.

Reducing noxious and hazardous dust emissions made industrial production not only more economically efficient and environmentally friendly, but also more humane. It takes not long, the term »BETH® Filter« became a synonym for dedusting itself. In 1956, wet and dry electrostatic precipitators were added to the company’s range of products.

Patent
**R&R-BETH® Dry Electrostatic Precipitator**

**Ease of maintenance and proven operational reliability**

**R&R-BETH® Dry Electrostatic Precipitators** effortlessly lower dust contents well below the legal emission limits of 20 mg/m³ in standard conditions. Compared to conventional filter systems, they offer considerable advantages because of their low energy demands, high operational reliability, low maintenance requirements, and – last but not least – low investment costs.
R&R-BETH® Dry Electrostatic Precipitator

High Voltage.

The R&R-BETH® Dry Electrostatic Precipitator can be used to extract ultra-fine dust particles from process gases up to a temperature of 420 °C (≈ 788 °F) by means of an artificial electrostatic charge. For this reason, the unit is used in particular for extracting dust from hot gases in combustion plants and other processing.

Maximum separation rate
The electrostatic precipitator can operate either with or without an upstream cyclone (centrifugal separator). It can reduce raw dust contents of up to 50 g/m³ to clean gas contents of 20 mg/m³ in standard conditions or lower. This corresponds to a separation rate of more than 99%.

Functional principle
The dust-laden process gas enters the electrostatic precipitator horizontally and is spread across the entire filter cross-section in an uniform flow profile by a gas distributor.

By applying high voltage to the discharge electrodes located between the collection plates, an electric field is created that charges the dust particles.

Passing through the electric field, the charged particles are transported by electric field strength to the collecting electrodes, where they agglomerate with previously separated dust particles and finally are rapped off by the mechanical rapping system.

The rapped off dust particles drop into the filter hopper and are removed via the dust outlet. The purified gas leaves the filter through the gas outlet hood.

Horizontal gas distribution
The gas perfuses the filter lanes horizontally. The lanes consist of flexibly suspended collection electrodes constructed as panels with dust collector bags.

Widely Spaced Lanes
Within the lanes, the discharge frames with discharge electrodes made from high-grade steel grip are arranged at the center. Depending on type, R&R-BETH® filter lanes are spaced at a distance of 250, 300 and 400 mm, which ensures high availability.

Periodic Purging
The discharge electrodes are fastened with self-locking screw connections. The discharge electrodes are purged with periodically operating, enginepowered rapping systems.

Robust
Built for gas temperatures of up to 420 °C (788 °F).
**R&R-BETH® Dry Electrostatic Precipitator**

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**R&R-BETH® optimizes**

**Electric heating**

Electric heating of the insulators, the filter hopper and the dust conveying system prevents build-up of dust caused by falling below the dew point.

**Optimized gas distribution**

Gas distribution is optimized by gas baffle plates and perforated plates that can be individually adjusted for larger gas volumes.
R&R-BETH® Mini Electrostatic Precipitator

For gas volumes from up to 6,900 Am³/h

Maintenance requirements reduced to once a year after initial break-in phase

Reduced energy consumption – increased performance

Pre-assembled components for fast and cost-efficient installation

Robust construction for extremely high durability

R&R-BETH® Electrostatic Precipitator

For gas volumes from up to 6,900 Am³/h (= 530 to 2,825 cu.ft./min), R&R-BETH® offers Mini Electrostatic Precipitators in 6 different sizes. In addition, there are two versions to choose from:

The R&R-BETH® Mini electrostatic precipitator was developed for small boiler plants up to 1,3 MW with biomass gasification.

Space-efficient
Due to its low installation height, the R&R-BETH® Mini ESP can be installed directly inside the boiler house.

Catch and Release
The maintenance door (located at the rear) is equipped with quick-release catches.

Tough
Built for gas temperatures of up to 300°C (572°F).

Variable
The R&R-BETH® standard design can be individually adapted to conditions at hand anytime.

Energy-efficient
Compared to filter separators, the R&R-BETH® Mini ESP uses significantly less energy. With its state-of-the-art high voltage control technology, the R&R-BETH® ESP can also claim superior separation efficiency.
Ever since the government started to offer subsidies for the use of biomass for energy production, there has been an increased need for inexpensive and unproblematic methods for extracting dust from small boiler plants between 500 kW and 2,500 kW that can reliably reduce gas dust content to below the legally required clean gas dust content.

R&R-BETH® has developed Small and Mini Electrostatic Precipitators especially for this type of application.

**Variable**  
The R&R-BETH® standard design can be individually adapted to conditions at hand anytime.

**Tough**  
Built for gas temperatures of up to 420°C (788°F).

**Space-efficient**  
Due to its low installation height of 6.0 m to 7.0 m (19.6 ft. to 23 ft.), the ESP can be installed directly inside the boiler house.
R&R-BETH® Standard Electrostatic Precipitator

Cost-efficient
Due to their standardized construction, we can offer these filter types at very competitive prices.

Pre-assembled
The largely pre-assembled components make quick on-site installation easy and cost-efficient.

Robust construction for extremely high durability
Their extremely robust and simple construction, as well as ingenious integrated detail solutions, result in high usability and outstanding durability. Built for gas temperatures of up to 420°C (788°F).

Customized adjustment to specific requirements

Variable
The R&R-BETH® standard design can be individually adapted to conditions at hand anytime.

Energy-efficient
Compared to filter separators, the R&R-BETH® Standard ESP uses significantly less energy. With its state-of-the-art high voltage control technology, the R&R-BETH® ESP can also claim superior separation efficiency.
R&R-BETH® Industrial Electrostatic Precipitator

For dust extraction from large gas volumes R&R-BETH® offers the Industrial Electrostatic Precipitator. ESPs of this size are usually designed and developed for the specific process conditions at hand.

R&R-BETH® Industrial ESPs are always custom built for each project to meet the individual requirements of our customers.

**Tough**
Built for gas temperatures of up to 420°C (788°F)

**Less maintenance**
Maintenance requirements are reduced to once a year by using few and slowly revolving plant components.

**Energy-efficient**
Compared to filter separators, the R&R-BETH® Industrial ESP uses significantly less energy.

**Why R&R-BETH® Electrostatic Precipitators?**
- Low pressure loss (approx. 2.5 mbar)
- Continuous separation process
- Very low maintenance requirements
- For gas temperatures up to approx. 420 °C
- Solid construction
- Customizing options
- High separation rate
- High energy efficiency
- High availability
- High durability
- High operational safety
- Uncomplicated spare parts service
- Trouble-free compliance with legal emission limits
R&R-BETH® Spares & Service

Friendly, reliable and competent

From planning to on-site assembly and maintenance, one source is all you need – R&R-BETH®. As your competent partner in plant engineering, we are asking ourselves one question: »How can we bring your technology one step forward?« and then we offer you the solution that is guaranteed to bring you the best performance, safety and efficiency.

Spezialized

Our team here at R&R-BETH® has one priority: To maximize the efficiency of your industrial plants and systems. We are a team of service specialists from the field of filtration, equipped with a treasure trove of experience that is beyond compare in this industrial sector. For many decades, we have supported and worked with the industry – a partnership that has resulted in our intimate knowledge of all media, materials and requirements.

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<tr>
<th>Our service includes:</th>
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<tr>
<td>Planning and implementing industrial plant reconstructions</td>
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<td>Planning and implementing plant recommissionings</td>
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<td>Finding innovative updating solutions, both standardized and customized</td>
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<tr>
<td>Providing service, maintenance and individual consultation</td>
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<tr>
<td>Supplying original R&amp;R-BETH® spare parts (OEM)</td>
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At your service

Do you have a question regarding our products or do you need support for servicing your filter units? Our R&R-BETH® SERVICE team will be happy to help you find a solution to your problem!

Just call: +49 451 530 - 7500 or send us an e-Mail: service@rr-beth.com

For ultimate performance, safety and efficiency.
R&R-BETH® Spare Parts Management

OEM – Original Equipment Manufacturer

“A chain is only as strong as its weakest link.” This is certainly true for the interaction of a machine and its auxiliary equipment. Incompatible equipment can impair the performance of your plant in the same way that original equipment can enhance it.

Setting standards that imitations just can’t reach

Our perfectly engineered production processes and ultra-precise workmanship make all the difference. R&R-BETH® Original Equipment is designed and developed along with the machines themselves. Every R&R-BETH® spare part passes through the same production process, including inspection and quality control, as the original part inside your machine.

Only the R&R-BETH® brand guarantees true R&R-BETH® quality

Using non-original spare parts will void the manufacturer’s warranty of your plant. Even worse: spare parts of inferior quality can damage your entire plant and result in total mechanical breakdown. Therefore, fine-tuning the interplay of all individual components is absolutely essential for optimal performance, efficiency and safety.

Precision vs. Imitation

Using R&R-BETH® original equipment will minimize your maintenance costs. Cheap knockoffs may seem like a bargain at first, but their poor durability and functionality will rack up costs in the long run.

Ready at hand

In order to keep potential machine downtime to a minimum, we will gladly compile a specific list of all spare and wear parts of your plant – along with advice on which parts should be stocked on site in case of an emergency.

A clear advantage for you – and a great benefit for the environment.
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Technologies protect living spaces of present and future generations

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