

## Company Profile



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## Foreword



# THE COMPANY

The history of our company began in 1963 as a limited partnership founded by businessman Engelbert Kalthoff. Since then, his initials have been a part of the company's logo.

After the formation of the Kalthoff Luftfilter und Filtermedien GmbH in 1983, Hans-Joachim Badt, an export sales manager, joined the company as an additional partner.

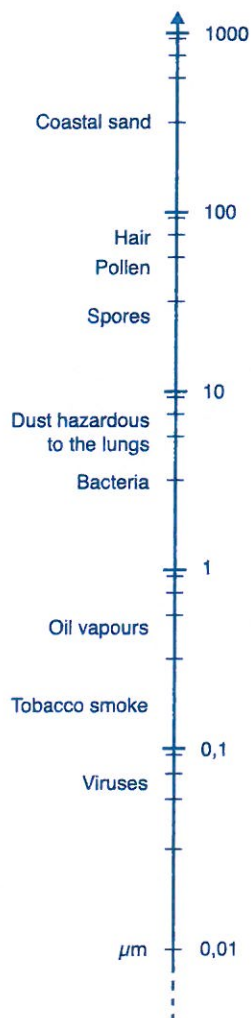
In 1987 the company moved to a modern production site in the Bork industrial park. A steady process of expansion proceeded in the following years. Due to the entry of the 2<sup>nd</sup> manager's generation we have ensured the continuity necessary for further development.

Today, Kalthoff Luftfilter und Filtermedien GmbH is an all-round company with a complete line of air filter products and services, its own research and development department, modern production facilities and internationally focussed sales organisation.





Where we  
are at home



## FIELDS OF APPLICATION

Air is essential for all living organisms. A human being consumes roughly 30 kg of it a day.

Our filter products filter out impurities and prepare fresh air for human consumption. Air filters can be used in stationary systems – such as in offices and homes – or in mobile systems such as vehicles, trains and aircrafts.

In other applications the air filters provide a clean environment for the modern processes required in today's civilisation,

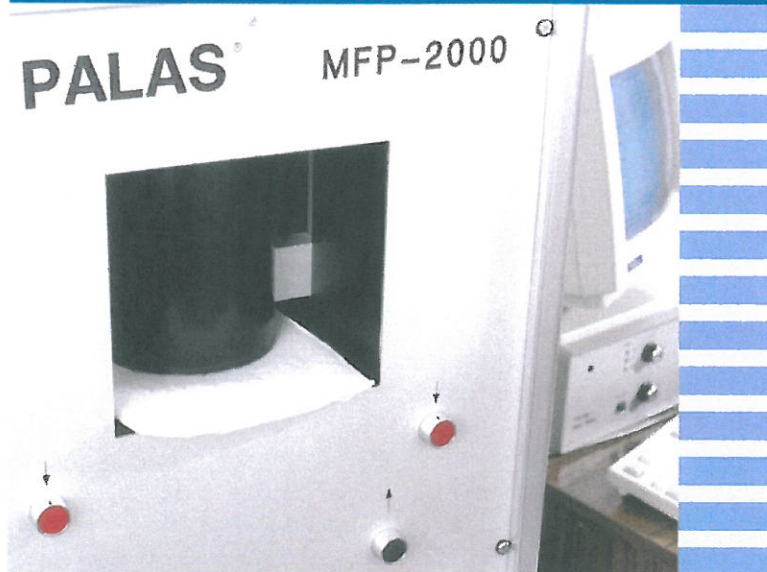
such as operations in hospitals, the production of semiconductors or pharmaceutical products, and the packaging of foodstuffs.

Or plants and machinery themselves require fresh air, too. For example, power plants, compressor stations and lacquering units all use air filters to treat the cooling or supply air.

The quality requirements for air as a product are constantly increasing. And our air filters meet these requirements.



Research and  
Development



Europäisches  
Patentamt

# INNOVATION

Kalthoff places special emphasis on the following research and development activities:

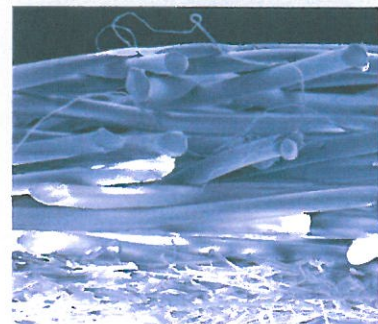
The foundation for new creation and further development should be laid, for example, for filter media. In addition, the application-related and customer-specific problems must be solved and documented in detail. Finally the quality management of the production process must also be supported.

Our company maintains a filter laboratory with the latest measuring technology. Filter properties such as fractional efficiency, pressure loss and dust holding capacity can be detected at various test channels.

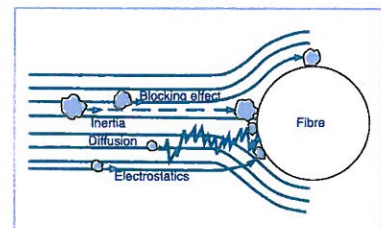
Kalthoff cooperates with research institutes and received financial support from regional and national government as well as the EU for this purpose.

Our research and development potential can be seen in the numerous registered designs and international patents which have had a lasting effect on the state-of-the-art air filter technology.

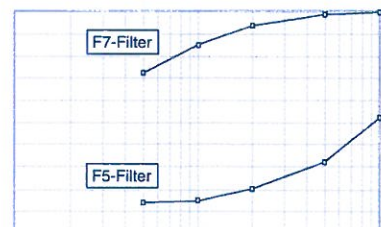
Kalthoff also supports the standardisation and guideline work by co-operating with working-groups and organisations of the VDMA, VDA, VDI and DIN.



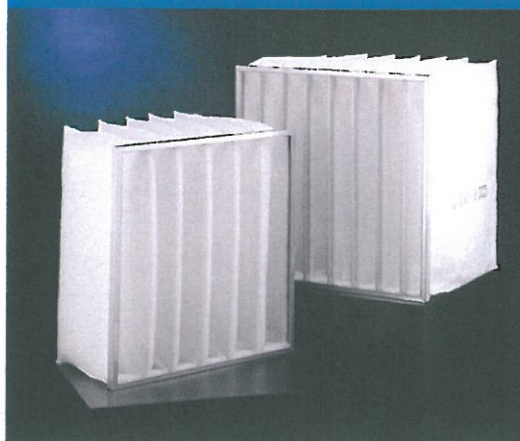
Composite filter structure (REM mount)



Separating mechanisms in technical deep bed filters



Schematic filter separation curve



### Bag-type Filters

Bag-type filters corresponding to DIN EN 779 are composed of a front frame and the bag-type filter medium. They are typical deep bed filters, which means that the particles are separated in the depth of the filter medium. Due to their physical separating mechanisms, bag-type are not recleanable.

Whereas coarse dust filters mostly use one-layer progressive synthetic nonwovens, for our fine particle filters we use patented multi-layer composite nonwovens made from non-electrostatically charged organic synthetic fibres (patent EP 0 687 195 B1).

Our bag-type filters comply with VDI 6022.

## PRODUCT RANGE

### Panel Filter Types F/W/V/ RELIM

Panel filters are used when the space available is limited. Their shallow depth yields an optimum use of the available space. We distinguish between the following types:

#### F-panel filters:

These use voluminous nonwoven mats made of glass, metal or synthetic fibre for the filter classes G2-F5.

#### W-panel filters:

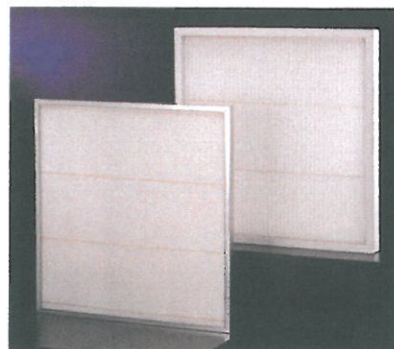
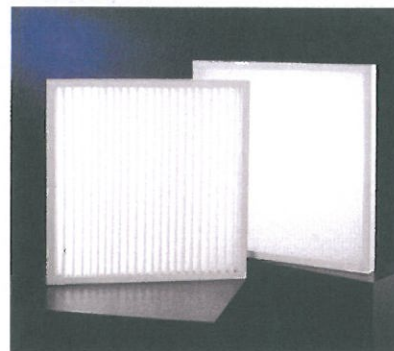
These have been designed to work especially economically. The class G4-F5 filters apply a combination of surface and depth filtration.

#### V-panel filters:

These use pleated paper types, where comparatively more surface filtration mechanisms occur.

#### RELIM-panel filters:

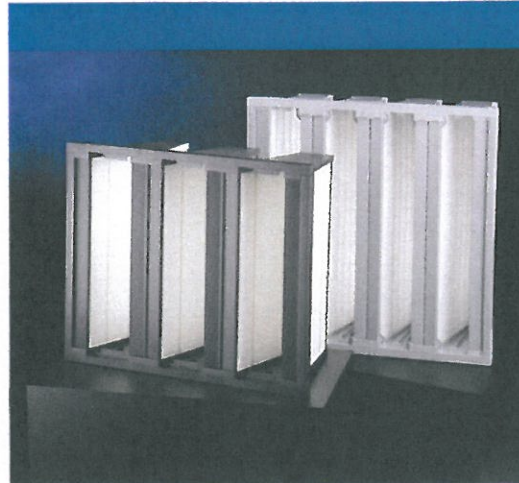
For fine dust particle filters in the classes F5-F9 we use RELIM-panel filters, which are based on the Kalthoff patent EP 0 533 864 B1.





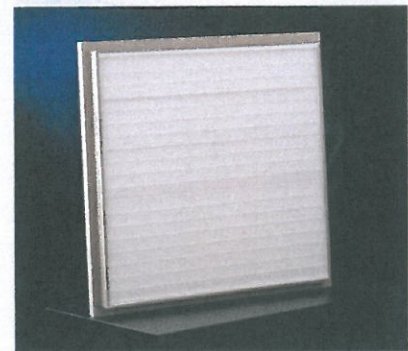
## Products

### Rigid Compact Filters



Rigid compact filters are principally a combination of bag-type filters and V-panel filters. The relation between the area of the filter media and the filter face is approx. 30-60 m<sup>2</sup>/m<sup>2</sup>. This enables the rigid compact filters to achieve an above-average service life when high concentrations of very fine particles occur.

Glass fibre papers or synthetic micro-spunbonds are used as filter media developed from Kalthoff's patents.

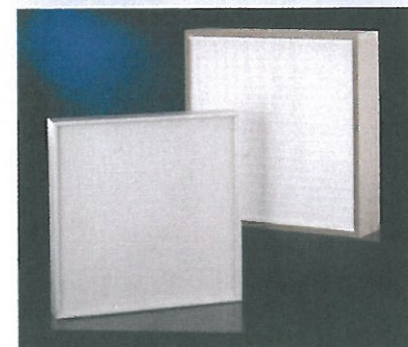
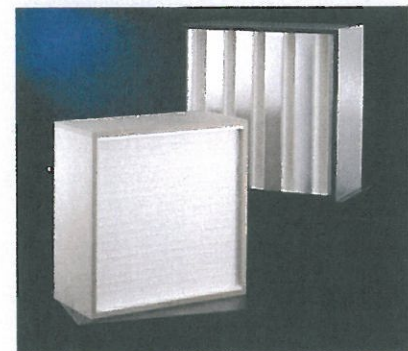


### High Efficiency Airfilters (HEPA/ULPA)

HEPA (High Efficiency Particulate Airfilter) enables the nearly complete separation of submicron particles. Separation efficiencies between 85-99.999995% are achieved in the filter classes H10-U17.

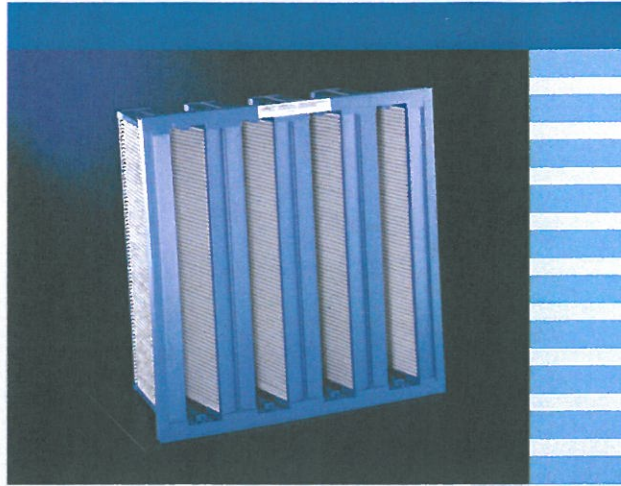
Ultra-fine micro glass papers are pleated to form the filter media area which is 40-100 times larger than the filter face area. This causes a particularly slow air velocity, which supports the diffusional separation of submicron particles. Effective pre-filtration of coarser particle fractions is absolutely necessary.

Kalthoff HEPA and ULPA filters in the filter classes H14-U17 are tested in accordance with DIN EN 1822 before they leave our company.



## PRODUCT RANGE





### Carbon Filters

Activated carbon filters, which belong to the sorptive working filter types, separate gaseous and molecular substances as well as odours.

Kalthoff activated carbon filters are supplied as grained layers, in flat cell form, and in cylindrical cartridges of various shapes.

Other types have very thin reactive layers which resemble the rigid compact filters with their pleated forms with large surfaces.

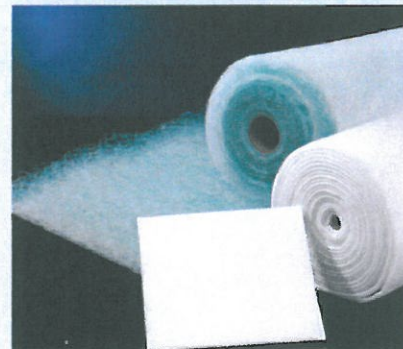


## PRODUCT RANGE

### Filter Rolls and Pads

Filter pads are the simplest form of deep bed filters. They are mostly used as flat-lying coarse dust mats up to a maximum filter class F5. Low purchase prices are, however, are often offset by high operating and maintenance costs.

Various types of fibre blends, impregnations or laminations can be used for special applications. These can also be cut to size.

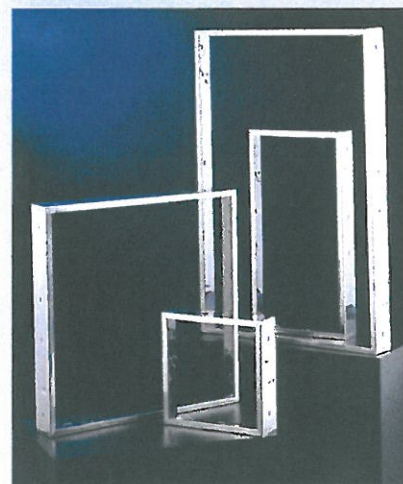


### Accessories

The universal installation frame is an important accessory for air filters. It fixes the air filter in the system.

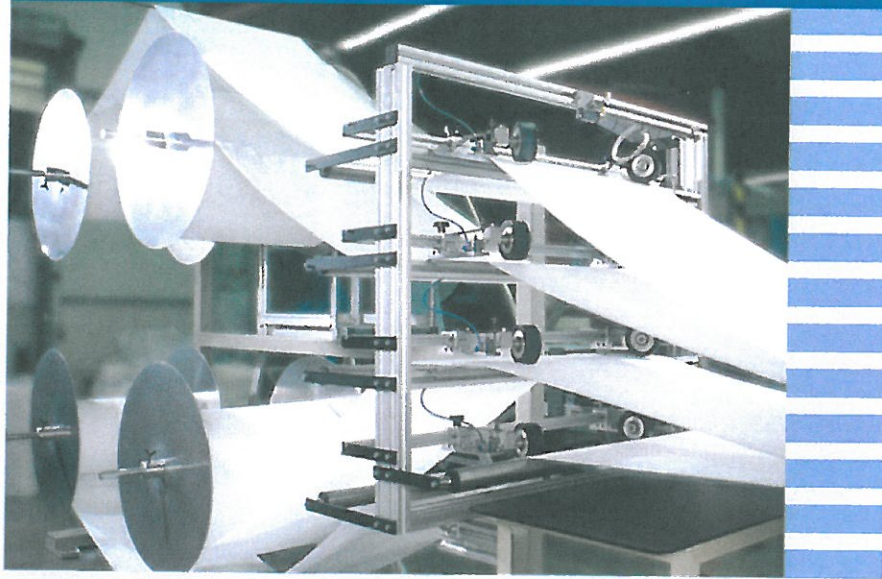
A tensioning spring mechanism presses the air filter against a seal, ensuring freedom from leaks up to filter class F9.

If complete filtration installations are to be constructed using Kalthoff universal installation frames, we offer complete constructions with mechanical and technical design and installation diagrams.





## Production



# TECHNOLOGY

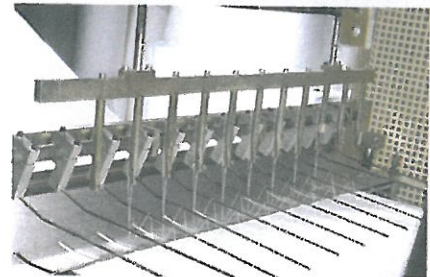
Modern air filter manufacturing must focus on mass-producing filters cost-effectively while remaining flexible enough to accommodate special products. The market requires economic efficiency and determines product diversity.

Bag-type filter production consists of single bag production, frame production and final assembly. The manner in which these steps can be carried out varies greatly according to filter type.

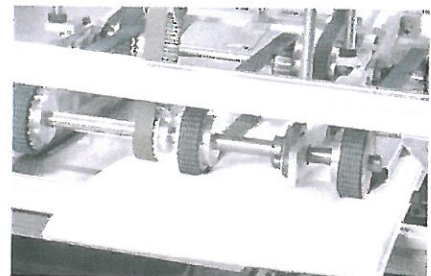
Cost-effectiveness is the prime consideration when producing single bags for coarse dust particle filters. A production line includes fast-running sewing machines and the subsequent welding and joining processes.

Single bags for fine particle bag-type filters have a complex geometric design. Multi-needle production units first optimise the form of the filter media in terms of flow. Then the sealed outer contours are produced using several automated production lines with combined sewing and welding procedures.

The filters are assembled either automatically or manually.



Multi-Needle Production Unit



Base Sewing Station



Manual Bag-Type Filter Assembly



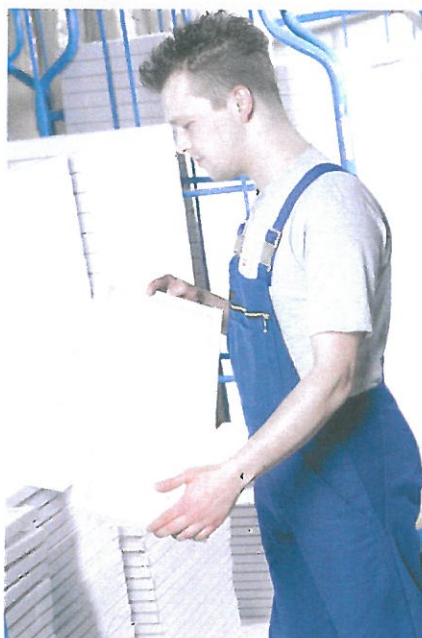


## & PROCESSES

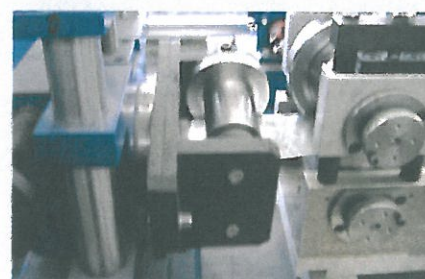
We manufacture all filter types with pleated filter media using modern pleating systems. Pleating, separation to defined pleat distances and fixing into a stable pleated pack are all performed sequentially.

The insertion in the various types of frames available is performed, for example, with 2 component casting compounds which are inserted using a dosing unit. Filter frames are constructed of stainless steel, aluminium, galvanised metal, plastic or card. The metal sections are produced with CNC-controlled cold forming profile shapers.

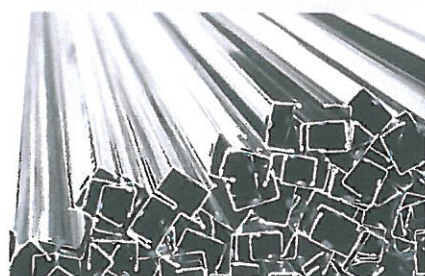
Manual production also plays an important role. Our employees are enthusiastic and motivated to produce top-quality products. Working in multi-shift operation, we maintain our high standards from the preparatory measures right up to the final inspection. Our quality management reflects both the latest technology and the demands of the product, helping both us and our customer.



Quality Control



Frame Profiler



Frame Section



Sales



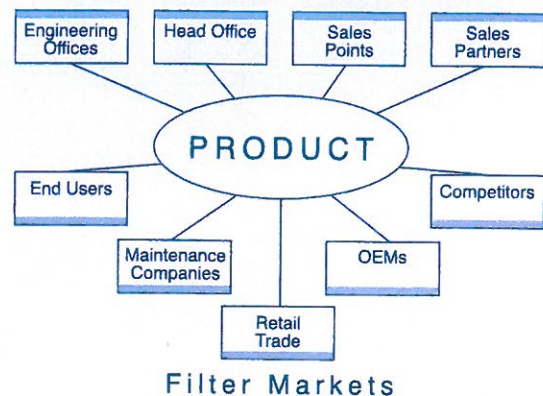
## CONSULTING & SERVICE

Air filters are technical products whose application requires consultation with the advice of specialists close at hand.

You have a direct route to our specialists in the Kalthoff engineering offices situated in Germany's major urban centres.

We maintain sales points in many European countries. In addition, we work together with numerous sales partners to ensure the required market presence.

### Kalthoff Sales Organisation







## 24 HOUR SERVICES

Our service and support complement our product range as indicators of the high levels of performance attained by our company.

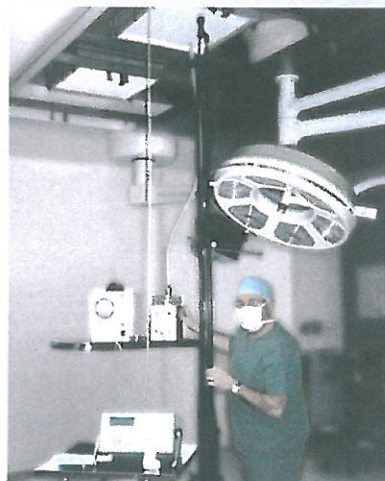
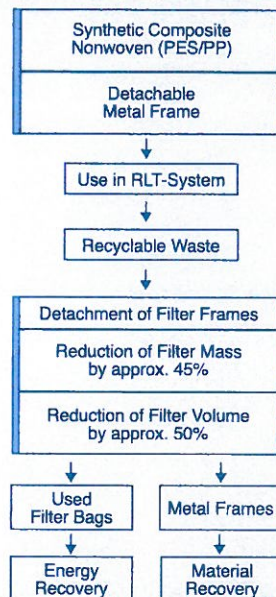
Our balanced advice, professional order processing, fast delivery and practical recycling concept for used air filter products have all been proven on the market.

We stock a wide range of finished products - some of which can be delivered within 24 hours by our Kalthoff fleet with its logistically planned operations.

We conduct hygiene maintenance and particle measurements on site and offer support in optimising the mode of operation and energy efficiency of your system.

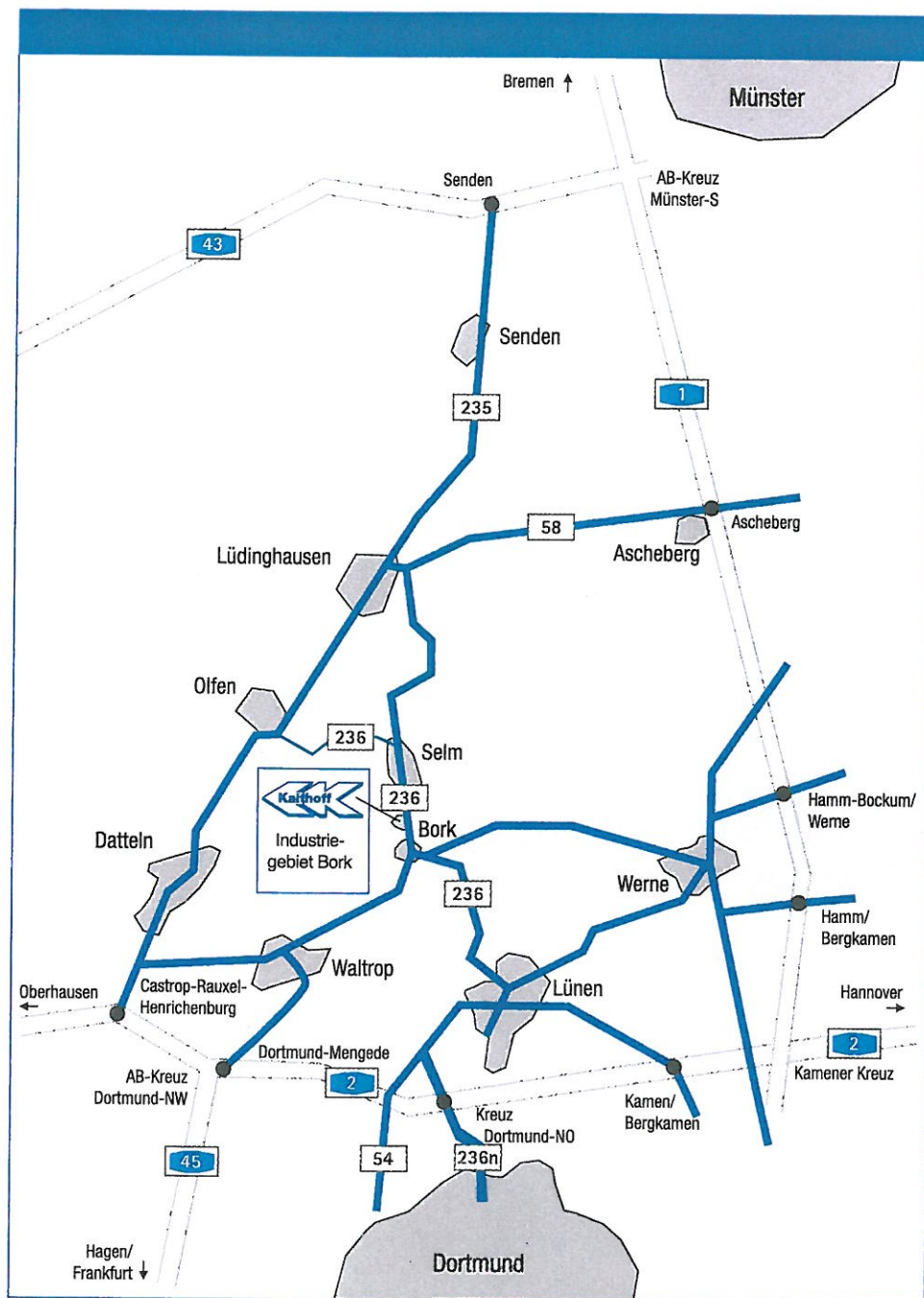
### RECYCLING-CONCEPT (KrW-/AbfG\*)

\*Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal





How to  
reach us



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Your partner for filter technology