



**- Breathe the Difference -**

## **Products and Services**

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# CFT GmbH Compact Filter Technic:

Breathe the Difference



Against the background of expanding global mining and tunnelling markets and increasing industrialisation, there is growing demand for more efficient solutions for workplace health and safety and environmental protection. Dust removal and cleaning of the air are the key challenges. Since 1999 we have specialized in the design and manufacture of dedusting systems - and we have successfully established ourselves in the industry under the name CFT "The Clean Air Company".

Our comprehensive know-how is based on more than 50 years' experience. As a medium-sized enterprise we offer you a high level of flexibility and innovation. Within the framework of our parent company CFH Holding GmbH our business activities are given a broader base in cooperation with associate companies, representative offices and shareholdings.

We are organized as a system supplier. In the field of dust collection and ventilation technology, we offer the entire range of services from project engineering and planning to on-site installation and commissioning and after sales service. CFT's portfolio includes both dry and wet dedusting systems, including the fans. Furthermore, we distribute complementary products from other leading companies, offering you a full ventilation package from one single source.

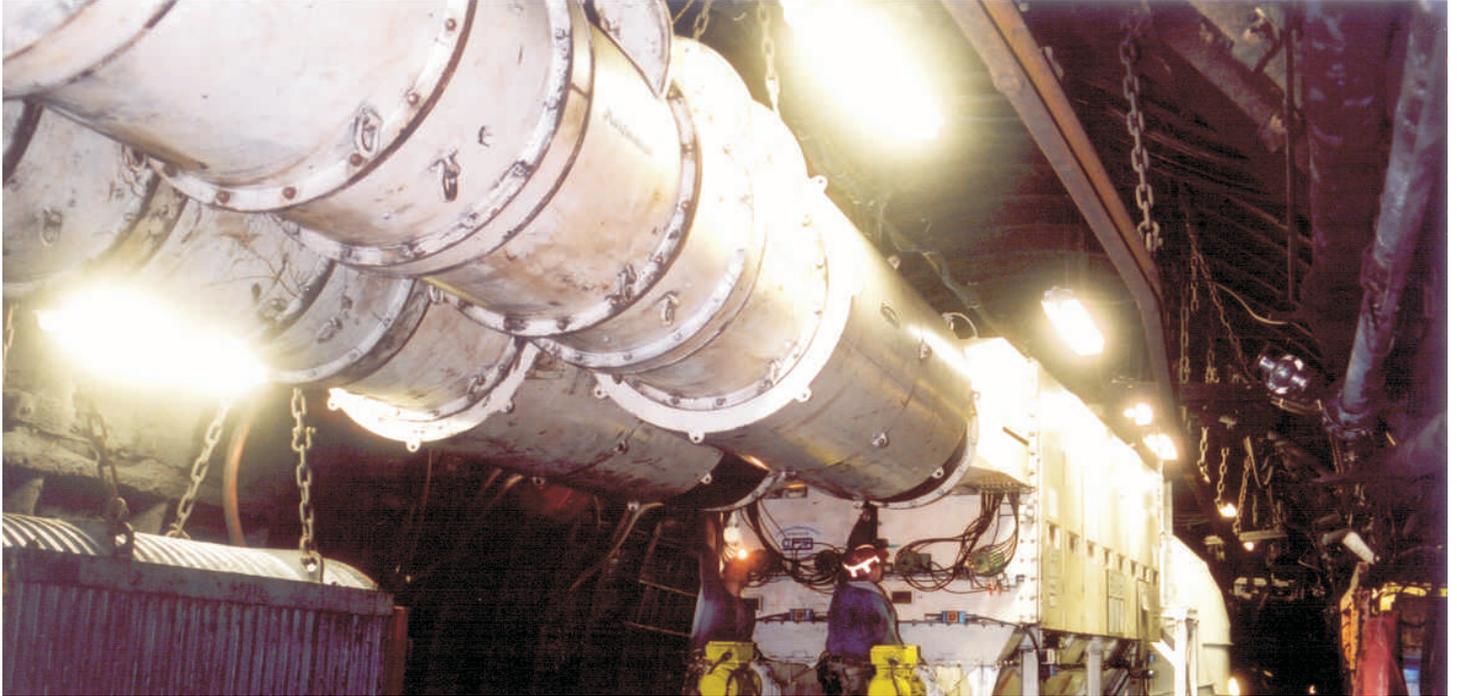
## **CFT dedusting systems operate efficiently and economically:**

- underground in mining and tunnelling operations
- in surface mining and quarrying operations
- in raw materials processing and refining
- in general bulk materials handling
- in the recycling industry
- during refurbishment of temporary tunnel sites
- on mobile sources of emissions and in other fields of application

Furthermore, CFT offers bespoke project-specific solutions; e. g. dust collection on mobile crushing plants.

# CFT Dry-Type Dedusters:

## Advanced Technology for Maximum Efficiency



**Equipped with our systems you will achieve separation rates of almost 100 % with low power consumption.**

For our dry-type dedusters we use our own patented technology. CFT rigid-body filters run under the name 'compact element filter'. Compared with conventional technology they offer unique advantages: lowest residual dust contents with low power consumption.

CFT-compact element filter achieve separation rates of almost 100 % with ease. The achieved clean gas concentrations fall significantly below the workplace exposure limits that apply around the world.

The following Table of Results demonstrates how CFT compact element filters achieve the required clean gas values even under extremely high dust loads – the tests proved values of  $\leq 0.1 \text{ mg/m}^3$  in the exhaust with a crude gas concentration of  $10,000 \text{ mg/m}^3$  at the intake.

The following results were measured in tests of a CFT compact element filter by the German Technical Institute for Coal and Steel (DMT GmbH) in Essen:

### Filter Material: CFM / Crude Gas Concentration: $10,000 \text{ mg/m}^3$

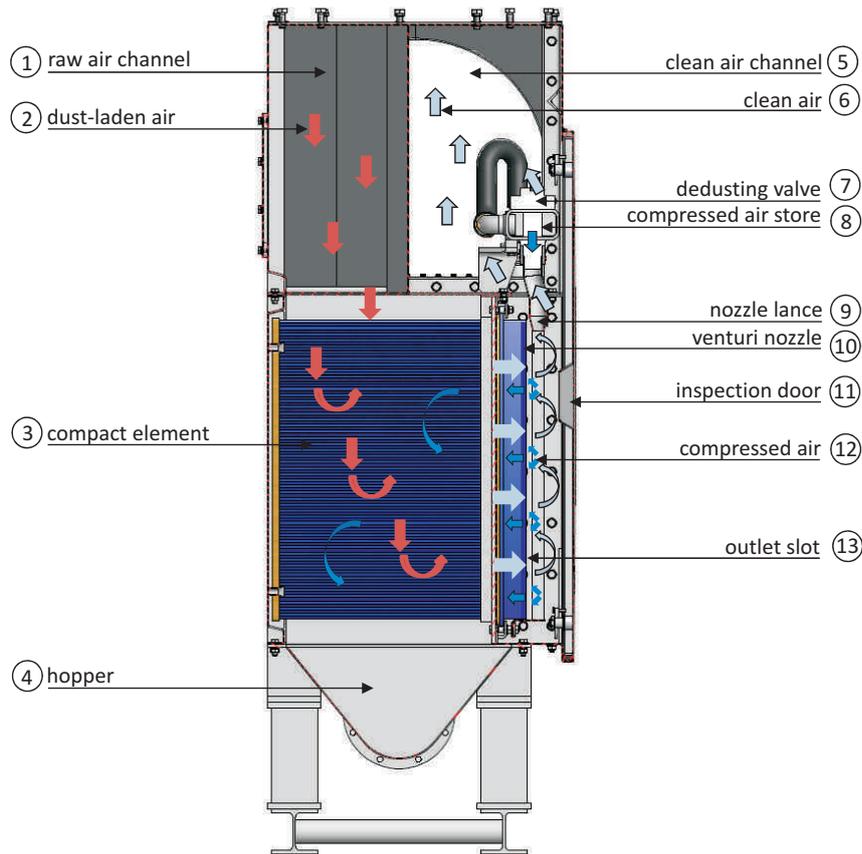
Air quantity (density = $1,2 \text{ kg/m}^3$ )	(average value) $\text{m}^3/\text{s}$	10,00
Total pressure loss	(average value) Pa	3,100
Raw gas concentration	$\text{mg/m}^3$	10,000
Clean gas concentration	$\text{mg/m}^3$	0,055
Degree of efficiency	%	99,999
Air-to-cloth ratio	$\text{m}^3/(\text{m}^2 \cdot \text{min})$	2,36
*= average value		

The clean air results for different grades of filter material at a crude gas concentration of  $10,000 \text{ mg/m}^3$  the were as follows:

- $\leq 0.5 \text{ mg/m}^3$  (material grade CF or CFA)
- $\leq 0.2 \text{ mg/m}^3$  (material grade CFC; CFCA or PMB)
- $\leq 0.1 \text{ mg/m}^3$  (material grade CFM)

The tests proved that these clean gas values could be achieved under a wide range of operational conditions irrespective of the crude gas concentration. The results at the DMT test facilities proved successful even with dust loads of  $50,000 \text{ mg/m}^3$ .

# Dry-Type Dedusters: Rigid Body Filters



## Operating Principles of a CFT Compact Element Filter

The dust laden raw air (2) enters the unit through the raw air channel (1) and is forced through both outer faces to the inside of the compact elements (3). From here it is transferred as clean air (6) into the clean air channel (5) and exhaust via the outer slot (13).

During this process the dust is deposited on the outer faces of the filter medium. The dedusting is effected by means of an intermittent jet of compressed air to the inside of the of the filter elements. The separated dust is automatically discharged from below; e. g. by means of a chain scraper conveyor or a hopper equipped with a screw conveyor (4).

Removable inspection doors (11) allow for the dedusting system to be checked and maintained and, where necessary, defective components to be replaced.

We prefer to use axial or radial fans installed on the clean-air-side to generate the necessary negative pressure, since these best meet the requirements in terms of stability, maintenance and life cycle costs.

# Dry-Type Dedusters: Rigid Body Filters



## Specifications

All CFT filters can be supplied as explosion-proof or flameproof versions. In such cases we are able to comply with all major international regulations depending on the place of use; e. g. ATEX for the European region, MA for the Chinese region, the mining explosion protection PB for the Russian Republics as well as MSHA for the American market.

## Sizes and Performance Options

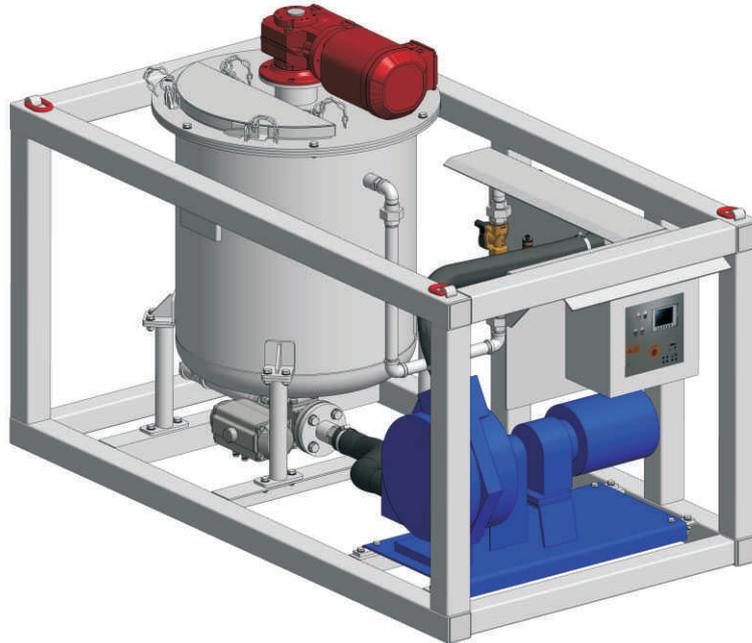
Our filters are of modular design. This allows us to offer both compact basic dimensions and flexibility for providing extensions. Thus, we cover a performance range from 30 up to 3.000 m<sup>3</sup>/min per unit. In addition to standard units we are also happy to provide special sizes on request. Preferably the necessary negative pressure for the filter plants is produced by axial or radial fans.

## Filter Media

It is important to select the correct filter media best-suited to the specific application. CFT offers a wide range of options – from compact filter elements made of needle felt, in calendered finish, coated with microporous foam or Teflon or made from a range of sinter materials. We are more than happy to help you to find the optimum solution for your requirements.

# CFT Mixer Unit with Pump:

For Treatment of Dispersible Dust Complying with EN 16191



The newly developed CFT mixer unit with pump Type CMPS, also referred to as „mixer“, is designed for the treatment of dispersible dust, which occurs during the cutting process in tunnelling when using tunnelling machines.

First of all, the filtered dust is conveyed to the mixer via the discharging system. By adding water the dust collected inside the mixer is processed into a homogeneous slurry.

This sticky viscous slurry is conveyed either directly on to a conveyor belt or into corresponding storage tanks by means of a hose pump. The mixer unit with pump is designed for the maximum expected dust quantity from a CFT de-dusting plant rated at 3000 m<sup>3</sup>/min.

The CMPS 250 has a minimum throughput rate of 2.5 tons per hour of sticky viscous slurry.

Thus, the unit is suitable for all dust collecting applications including the dedusting of hard rock machines as per EN 16191.

## Advantages of the New System

- Fully automated discharge of the dust-water mixture on to the conveyor belt
- Rigid transportable frame for the housing of all CMPS- components and to avoid complex assembly works on site
- Trouble-free and low-maintenance system
- Considerable savings in water and energy consumption as a result of optimised set-up of the control processes.
- Manifold with all inlet and outlet ports for the CMPS

# Wet Scrubbers:

## Highest Efficiency with Minimum Space



**Design and motor technology with low resistance significantly reduce the power consumption.**

Hoeko-Vent (HCN) is the designation for the highly efficient CFT wet scrubber product line that removes harmful dust and gaseous substances from the air. Thanks to their compact design the Hoeko-Vent systems require very little space. At the same time, they stand out due to their highest rates of efficiency: depending on the application and corresponding specification, HCN scrubbers can be supplied with guaranteed separation rates from 99.2 % to 99.5 %.

The design of CFT wet scrubbers means they consume very little energy in comparison with other technologies. This enables you to reduce energy costs and make more flexible use of existing energy capacities.

CFT supplies wet scrubbers rated from 60 to 1500 m<sup>3</sup>/min for a diverse range of requirements and applications. CFT wet scrubbers are also available with corresponding certificates of conformity for use in explosive atmospheres (ATEX).

### Efficiency

The German Technical Institute for Coal and Steel (DMT GmbH) in Essen determined the following values during tests on two CFT wet scrubbers:

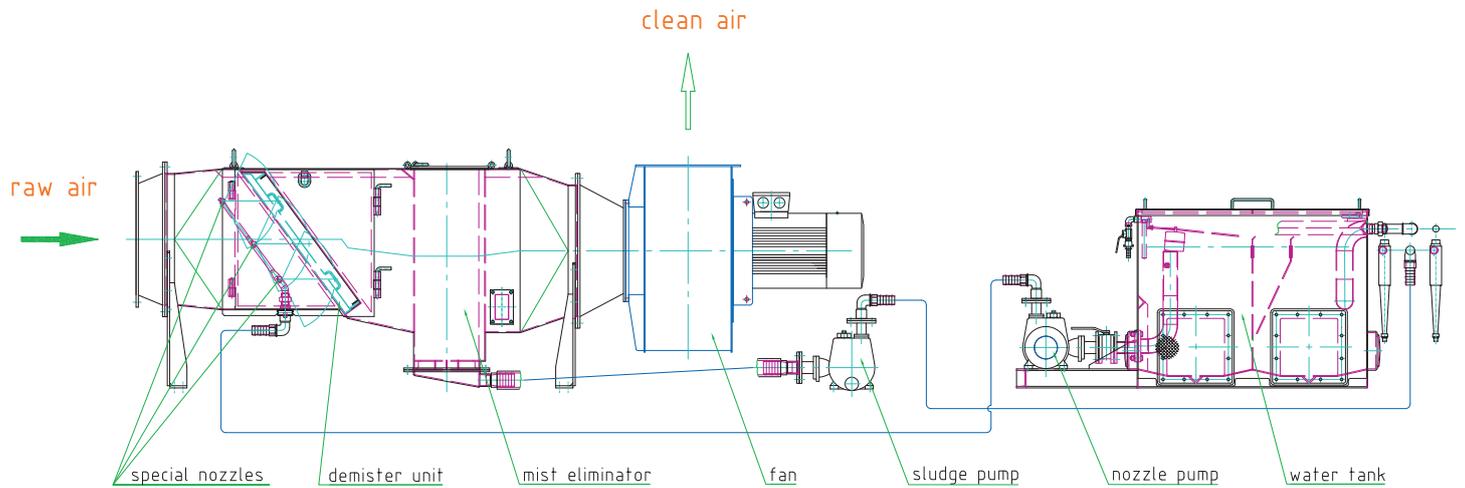
#### High Pressure:

Air quantity (density = 1,2 kg/m <sup>3</sup> ) (average value) m <sup>3</sup> /s	10.0
Total pressure loss (average value) Pa	2,250
Raw gas concentration mg/m <sup>3</sup>	2,000
Clean gas concentration mg/m <sup>3</sup>	7,465
Nozzle pressure P <sub>nozzle</sub> bar	4.5
Water consumption l/m <sup>3</sup>	0.2
Degree of efficiency %	99.627

#### Low Pressure:

Air quantity (density = 1,2 kg/m <sup>3</sup> ) (average value) m <sup>3</sup> /s	6.67
Total pressure loss (average value) Pa	1,220
Raw gas concentration mg/m <sup>3</sup>	2,000
Clean gas concentration mg/m <sup>3</sup>	14.16
Nozzle pressure P <sub>nozzle</sub> bar	4.0
Water consumption l/m <sup>3</sup>	0.0
Degree of efficiency %	99.29

# Wet Scrubbers



## Operating Principles of HCN Wet Scrubbers

The dust-laden raw air flows into the scrubber. Special nozzles create a water curtain close behind the entry. Now the mixture of dust, water and air passes through the demister unit. Here the dust is completely entrapped by the water. The resulting sludge particles are then carried with the air to the mist eliminator that removes the solid and liquefied components completely out of the airflow.

The clean air leaves the plant via the fan connected in series. The resulting slurry can be handled in either of two ways: If the unit is connected to a fresh water supply, the slurry can be pumped away via a sludge pump. Or if the unit operates in a closed-loop mode, the slurry can be pumped back into a settlement tank in which the mud is separated via cascades. The clarified water is then recycled.

CFT supplies systems for any requirements and operating conditions rated from 60 to 1500 m<sup>3</sup>/min. CFT wet scrubbers are also available with certificates of conformity for use in explosive atmospheres (ATEX).

\* flameproof electrical equipment

# Range of Application:

We Specialize in a Wide Variety of Uses



The technology, design and operating characteristics of CFT dedusting plants are finely tuned to the requirements and basic conditions of defined applications. Over the years, we have gradually extended the range of applications of our plants utilizing our engineering service and the development of innovative solutions. Presently we provide dedusting systems for the following fields of application:

- Underground mining and tunnelling (tunnelling, production, materials handling and processing)
- Surface mining and quarrying
- Coking plants and steelworks
- Mobile dust sources  
(e. g. road sweepers or road-milling machines)
- Temporary tunnel sites

# Dry Cuttings Extraction System:

Patented Performance



## Innovative technology guarantees almost entire collection of cuttings.

Water is the preferred medium for flushing out the cuttings when drilling boreholes by means of rotary and/or percussive drilling units. In some operations ("dry drilling"), compressed air has to be used. In order to prevent emissions from the emergent cuttings they are collected by vacuum and separated.

CFT has developed a high-performance and patented dry cuttings extraction system for this purpose. At the heart of the system is a highly effective rotary piston blower which generates the vacuum as well as a compact element filter that is designed to fulfil the workplace exposure limits underground.

Our CTBA dry cuttings extraction plants (CTBA) guarantee an almost entire collection of the cuttings. This unique capability offers you crucial advantages both in respect of workplace safety and of efficiency.

## Versions

Two standard versions of the CTBA system with differing suction hose diameters and suction rates are available which are designed to suit the most common drill rig arrangements. Depending on the hose diameter, these enable extraction at a distance of up to 50 m from the face. Special versions are also available.



# Gas Purification:

## Clean Air for Critical Environments



Whilst dust in the air is clearly visible, generally, harmful gaseous contaminants are not. For example, in the fumes that occur after blasting the dust content is visible but the toxic nitrogen oxide content is not. All the more you have to rely on the dependability of the gas purification technology.

We offer a variety of dedusting plant solutions for the reliable removal of unwanted or toxic gas content. Depending on the type of gas content to be removed and the general requirements to be met, you have the possibility to accesscan select the best possible solution for your needs.

### Versions

Optionally, you can use CFT wet scrubbers either with or without additives for gas purification. Furthermore, you can also use CFT baghouse filters in combination with packed bed filters connected in series; for example with activated carbon as the separator.

# Ventilation Technology:

## System Solutions for Every Need



### Fans for Efficient Air Movement

Fans are necessary negative pressure generators to move dust laden air in and through dedusting plants. They are also used for delivering fresh air, e. g. during tunnel heading.

Being aware of these necessities, for many years we have worked very closely together with the fan specialists Korfmann Lufttechnik GmbH. Our parent company is a shareholder. CFT exclusively manufactures Korfmann fans and silencers and is exclusive dealer for these products in Poland, the Czech Republic, Slovakia, China and the CIS as well as in combination with CFT dedusting plants.

### Low-pressure Generator for Special Applications

In certain applications, fans are not appropriate to create the necessary low pressure. Therefore, we offer alternative solutions – e. g. vacuum pumps and rotary piston blowers.

### Ancillary Equipment

In order to fully meet the ventilation requirements, a whole range of ancillaries are usually needed. As a system supplier, CFT is also able to deliver these components. These include duct storage systems, Coanda ducts and vent flaps which are especially required for use with roadheaders in coal mining. But we also offer all types of ducting; e. g. dust collection pipes within the back-up system of TBMs and roadheaders.

### Ducts

Both flexible and rigid air ducts are commonly used in many applications including tunnelling. In this respect, we have a wide range of solutions for every need; flexible flat ducts and spiral ducts or rigid fiberglass ducts. We also have special solutions to meet the specific needs of the coal mining industry. CFT is the exclusive dealer for the products of our partner Schauenburg Tunnel-Ventilation GmbH in Poland and in the CIS.

# Ventilation Technology



## Cooling Plants

Depending on their type, underground mining and tunnelling projects often require cooling of the fresh air supply.

In cooperation with its partners, WAT Wärme-Austausch-Technik, CFT designs and delivers appropriate air cooling systems for:

- longwall face operations in mining
- roadheading and tunnelling
- shaft sinking

## Mine Air Heating Systems

In the same way as the need for cooling, in operations with very low ambient temperatures there is a need to heat the air in order to meet the required workplace conditions. Our heating systems consist of a heating battery and a fan station connected in series and installed at the shaft head. They can either use electric power or warm water to generate the heat.

Here too, in cooperation with its partners, CFT offers bespoke solutions. We provide project planning, manufacture and on-site commissioning of the systems. Coming from a single source, you are guaranteed reliability of the outcome combined with efficiency in delivery.

# Methane Drainage and Utilization:

## Highest Level Explosion Protection



### Leading special technology effectively complements our systems.

Particularly in bituminous coal deposits, dangerously high concentrations of methane gas may be present. These concentrations cannot be reduced sufficiently by the normal means of ventilation

Therefore, for such applications, in cooperation with our partner Brockhaus Umwelt, we are able to offer methane drainage systems in cooperation with our partner. Brockhaus Umwelt GmbH ranks among the leading German manufacturers.

### Operation Mode and Designs

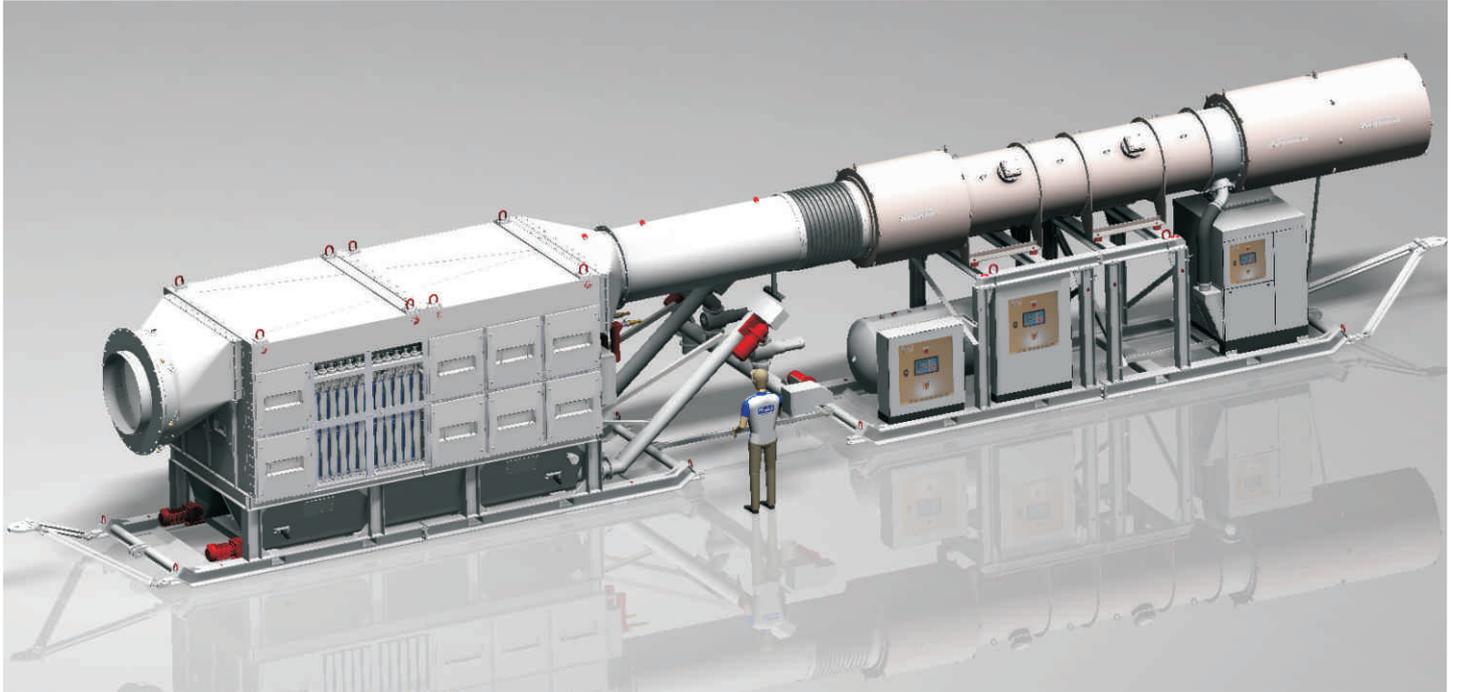
At the heart of the methane drainage systems are vacuum generators which are installed on the surface and suck the mine gas from the seam or the goaf via pipelines.

In our portfolio, we have several different methods for dealing with the methane that is contained in mine gas.

One possibility is the processing and subsequent utilization for power or heat generation. A further option is the disposal via hot gas flares which convert the polluting methane into less polluting carbon dioxide by combustion. A third option is to blow off the methane into the atmosphere by means of cold flares.

# Engineering:

A Turn-Key Solution for Every Challenge



All our equipment is designed and developed by our own team of experienced and well-qualified Project Engineers who work in close coordination with the engineers in our Design Department. The resulting customized turn-key dedusting plants are precisely and flexibly tailored to suit your individual needs. You particularly benefit from our considerable experience in the coordination with and integration into existing plant, local conditions and systems.

In the framework of a well tried and tested network, we work closely with partners, institutes and inspection bodies to ensure optimum results for you.

From CFT you can expect turn-key dedusting solutions for temporary tunnelling sites, tipping stations, processing plants, bunkers or shaft hoisting systems as well as the planning and implementation of the proper suction pipes. In addition, we also offer engineering services for ventilation plant; for example, together with our partners we successfully installed a semi-mobile main fan station including an electric heating system.

# Dedusting and Ventilation of Temporary Tunnel Sites



## We plan and implement individual system solutions.

Temporary rail tunnel sites, such as during the replacement of rails, points and ballast or the refurbishment of the tunnel lining, require the provision of an appropriate dedusting and ventilation system. The equipment used must meet the highest standards for safety and reliability in order to protect both the workforce and also the public in the immediate vicinity as rail services continue to operate.

We are very familiar with the specific challenges associated with temporary tunnel sites and together with our partner, Korfmann Lufttechnik GmbH, we are able to offer a full project package from a single source: – from the approval and planning phase via site installation and commissioning through to scheduled decommissioning of the plant.

No two refurbishment jobs are the same. If established standards don't apply, engineering know-how is called-for. With our considerable wealth of experience, we are able to develop and implement the widest range of solutions for your ventilation needs.



# After Sales:

More Availability for More Profitability



## **We secure your return on investment with competent technical service.**

We offer a comprehensive package of holistic solutions based around on-site inspections, repair and maintenance service. To guarantee the highest quality of service, CFT only uses in-house and highly qualified field engineers. Regardless of the type of plant or the location, we'll deal with it. Our experienced specialists have the necessary know-how to properly maintain your equipment or to get it operational again in the shortest possible time in the event of a breakdown.

## **Spare Parts Supply**

The fast and reliable availability of spare parts worldwide is assured thanks to our well-organized parts service. Within Europe we guarantee availability within 48 hours if required.

## **CFT In-house Workshop Repairs**

The CFT repair workshop is the only workshop that guarantees the unique combination of CFT original parts, CFT operating procedures, CFT expertise and CFT service technicians. Let us repair or refurbish your plant in our workshop – you can rely on the highest degrees of professionalism and efficiency

# CFT Partners:

Combined Competences for Clean Air



Together with reputable partners we are able to provide you with holistic solutions.

Sales Cooperation „Air“: \_\_\_\_\_



**Korfmann Lufttechnik GmbH**

Fans for mining and tunnelling



deichmannfiltertechnik

**DFT GmbH Deichmann Filter Technik**

Industrial dust collection

## WAT

**WAT Wärme-Austausch-Technik GmbH**

Air conditioning of coal, ore and potash mines

Sales partners: \_\_\_\_\_



**Aigner GmbH**

Turn-key extraction and filter plants for commerce and industry

**BROCKHAUS**  
UMWELT

**Brockhaus Umwelt**

for the business field mine gas extraction plants and block heating stations



**SCHAUENBURG**

Tunnel-Ventilation GmbH

**Schauenburg Tunnel-Ventilation GmbH**

Ducts for mining and tunnelling



**Egger Apparatebau e.K.**

Electrical air heating systems for mining and tunnelling



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QUALITÄTSMANAGEMENTSYSTEM



DQS-zertifiziert nach  
EN ISO 9001 : 2008