A CLEAN FUTURE WITH HIGH-TECH

Extraction
and Filter Systems,
Accessories

FUCHS Umwelttechnik
CLEAN AIR TECHNOLOGY

Welcome to Fuchs Umwelttechnik

CONTENTS

Whether you have to extract large quantities of dust, smoke or gases or whether you require precise detection of your emissions – Fuchs Umwelttechnik has the right extraction and filter system!

The ideal product for your application and your requirements. Thanks to our expertise, our many years of experience, our ongoing new and further developments as well as our individual consulting, we can offer you the right solution for your pollutant problem - tailor-made and effective.

Fuchs Umwelttechnik pays close attention to every detail, from the planning stage to manufacturing of the filter systems.

From detection to the right filter system to the right filter - we perfectly align all components with each other. In this way, all pollutants can be detected and filtered in the most effective way. At the same time, handling remains both easy and practical.

As a pioneering company, Fuchs Umwelttechnik develops sophisticated solutions to a wide variety of problems caused by air pollutants. This quality standard ranges from engineering to the selection of first-rate materials and raw materials, from complete in-house production to comprehensive service and well thought-out, practical accessories.

Engineering performance and quality work “Made in Germany” - this means reliable health protection and indispensable safety for all workplaces where air pollutants are produced. Clean air at the workplace - clean air for healthy, motivated employees - clean air for technologically advanced production methods.

Fuchs Umwelttechnik Produktions- und Vertriebs-GmbH, based in Staig-Steinberg near Ulm, is a leading technology developer and manufacturer of filter and extraction systems for industry and trade.

Founded by Dipl.-Ing. Harald Fuchs in 1984, the innovative company offers its customers outstanding solutions for the extraction and filtration of dust, particulate matter, laser emissions, smoke, gases, vapours, solvent vapours, soldering fumes, welding fumes, emulsion mist, plasma emissions and other harmful emissions in the air generated during the production process.

KFS

Small in size, big in technology

Application

- Very small welding and inscription lasers
- Soldering fumes
- Adhesive vapours

Features

- Needless to say, the high-quality EC motor is designed for continuous operation.
- Safety guaranteed: Automatic filter monitoring via differential pressure

Handling

- Very compact size and therefore easy to integrate into machines
- KFS is even suitable for 19″ inserts

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
KFS	18–50	7 – 25	230V/50-60Hz	0.1–0.25	53	10 x 10 x 16	approx. 44

KKF

Compact power with versatile capabilities

Application

- Small inscription lasers/ minimal material loss
- Small welding applications
- Soldering fumes/electronics production
- Solvent/adhesive vapours

Features

- Fuchs Umwelttechnik multi-stage filter combinations guarantee permanently high filter capacity
- High flexibility - depending on the specific situation, different blowers can be used
- Guaranteed safety: automatic filter monitoring via negative and differential pressure
- Visible safety: The LED on the control panel indicates filter saturation.
- Welding fume separator class W3, IFA certified

Handling

- Mobile or stationary use
- KKF can also be transported in the car boot without modification

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
KKF	18–200	25 – 84	120/230V/50–60	0.45–1.20	58–67	15 x 15 x 25	approx. 66

TKFD

The middleweight with the strength of champions

Application

- Inscription lasers
- Small welding applications
- Small cutting lasers (foils, plastic signs)
- Soldering fumes/electronics production
- Particulate matter, smoke
- Solvent vapours, adhesive vapours

Features

- The integrated pre-separator results in high filter capacity
- Different filter levels are possible and can be perfectly tailored to individual requirements
- Ideal for confined spaces - can be placed under a table or integrated into machines
- Safety guaranteed: automatic filter monitoring via negative and differential pressure
- Welding fume separation class W3, IFA certified

Handling

- Mobile or stationary use
- TKFD can also be transported in the car boot without modification

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
TKFD	18–200	25 – 84	120/230V50–60	0.45 –1.20	56–67	19 x 15 x 24	approx. 88

MKF

The classic module

Application

- Inscription lasers, engraving lasers
- Welding lasers, cutting lasers
- Soldering fume, (several workstations)
- Particulate matter, smoke
- Solvent vapours, adhesive vapours
- Erosion mist
- Plastic injection moulding emissions in conjunction with pre-separator:
- Oil mist, emulsion mist

Features

- Compact and versatile
- Fuchs Umwelttechnik multi-stage filter combinations achieve a consistently high filter capacity
- Depending on requirements, different fans can be used.
- Safety guaranteed: automatic filter monitoring via negative and differential pressure
- IFA certified
- Further options on request

Handling

- Mobile or stationary use
- Easy to transport and dismantle without tools

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
MKF	18–370	14 – 84	120/230V/50–60	0.40–1.30	57–67	26 x 15 x 33	approx. 132

IKF

The MKF's bigger brother

Application

- Additive manufacturing
- Inscription lasers, engraving lasers
- Welding lasers, cutting lasers
- Soldering fumes, welding fumes
- Particulate matter, smoke
- Solvent vapours, adhesive vapours
- Erosion mist

Features

- Compact and versatile
- Larger filter capacity
- Constantly high filter capacity with the Fuchs-Umwelttechnik multi-stage filter combinations
- Different fans can be used depending on requirements
- Significantly reduced energy consumption
- Quiet operation due to optimised blower technology
- Further options on request

Handling

- Mobile or stationary use

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3 ft (dBA)	Dimensions (in)	Weight without FA (lbs)
IKF	6–800	20 – 84	230/400V/50–60	0.36–3.5	55–76	26 x 22 x 30	approx. 176

IF

For 1, 2 or more extraction points

Application

- Inscription lasers, engraving lasers
- Welding lasers, cutting lasers
- Soldering fumes, welding fumes
- Particulate matter, smoke
- Solvent vapours, adhesive vapours
- Plastic injection moulding emissions in conjunction with pre-separator:
- Oil mist, emulsion mist

Features

- Suitable for one or more extraction points
- Depending on the field of application, use of different fans
- For optimum results, select the ideal filter combinations from a wide range of options
- Very high filter capacity due to multi-stage filter combinations
- The filtered air can be returned to the room. This eliminates the need to install exhaust air piping
- Ideal for quickly equipping existing workstations
- Extremely reduced energy consumption thanks to energy-efficient IEC 3/4 motors
- Especially low-noise
- LZH-tested
- Further options on request

Handling

- Mobile or stationary use

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3 ft (dBA)	Dimensions (in)	Weight without FA (lbs)
IF	530–1900	11 – 38	230/400V/50–60	0.75–5.5	57–71	28 x 33 x 70	approx. 330

INR320.1

The INR20‘s little brother

Application

- Oil mist, emulsion mist
- Solvent vapours, adhesive vapours
- Erosion mist
- Inscription lasers, engraving lasers
- Welding lasers, cutting lasers
- Soldering fumes, welding fumes
- Particulate matter, smoke

Features

- Very versatile range of applications
- Very compact, as oil pre-separator is integrated
- Module Basis MKF model series
- Suitable for 1 or 2 extraction points
- Option: Pump set for pumping off the filtered oil via integrated oil drain cock

Handling

- Mobile or stationary use
- Easy to transport and dismantle without tools

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
INR320.1	59–190	50	230V/50–60	1.2	67	26 x 15 x 50	200

INR20

The big one with built-in pre-separator

Application

- Oil mist, emulsion mist
- Solvent vapours, adhesive vapours
- Erosion mist
- Inscription lasers, engraving lasers
- Welding lasers, cutting lasers
- Soldering fumes, welding fumes
- Particulate matter, smoke

Features

- Very high filter capacity due to multi-stage filter combination
- Integrated pre-separator
- Also suitable for oil or emulsion mist
- Different fans possible depending on the area of application
- Especially low-noise
- Suitable for one or more extraction points
- Different air flow rates are possible
- Ideal for quickly equipping existing workstations
- Option: Pump set for pumping off the filtered oil via integrated oil drain cock

Handling

- INR20 can be installed anywhere with ease, the filtered air remains in the room

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
INR20	59–1400	12 – 38	230/400V/50–60	1.1–2.6	58–67	26 x 26 x 83	330

EXCHANGE FILTER SYSTEMS

TKFVA

Compact - but hungry for lots of dust

Application

- Smaller welding, cutting and Inscription lasers for dry smoke, for example from metals
- Process dusts e.g. from metals and light metals

Features

- Pollution-free dust removal through integrated dust collection device
- For pre-separation of larger quantities of dust
- The particulate filter is connected downstream and therefore highly efficient
- Trouble-free working: Very long filter service life due to automatic filter cleaning
- The special Fuchs Umwelttechnik clamping system ensures optimum tightness
- TKFVA is very easy to operate and maintain due to its well thought-out design.
- The high operational safety is rounded off by reliable monitoring functions.
- Option: automatic dust discharge

Handling

- Mobile or stationary use
- Ultra-compact and therefore easy to integrate

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
TKFVA	177–190	46 – 50	120/230V/50–60	1.1–1.2	69	28 x 15 x 48	220

MKFVA

The volume advantage when even more dust is generated

Application

- Welding lasers
- Cutting lasers
- Central extraction

Features

- Pollution-free dust removal through integrated dust collection device
- MKFVA is a compact dust separator with automatic, compressed air-supported filter cleaning for the pre-separation of larger dust quantities
- Problem-free operation: the automatic filter cleaning enables a very long filter service life
- Simplified filter replacement due to cover module with folding mechanism
- The special Fuchs Umwelttechnik clamping system ensures optimum tightness
- MKFVA is very easy to operate and maintain due to its well thought-out design.
- The high operational safety is rounded off by reliable monitoring functions
- LZH-tested

Handling

- Compact and therefore particularly flexible
- Mobile with optional chassis or for stationary use

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
MKFVA	188–230	50 – 52	120/230/400V/50–60	1.1–1.4	64	30 x 30 x 64	330

DEVICES WITH **AUTOMATIC FILTER CLEANING**

MKFV/INRV

The two dust suckers in L/XL format

Application

- Dedusting
- Welding lasers, cutting lasers
- Welding fumes

Features

- Pollution-free dust removal through integrated dust collection device
- For the pre-separation of particularly large quantities of dusts
- Compact, for limited space requirements
- High filter capacity, can be easily removed if required
- Optimum tightness due to a special clamping system
- Easy to operate and maintain
- Central system e.g. for several welding or inscription lasers

Handling

- Stationary use
- Compact in size, thus minimal space requirement

MKFV

INRV

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight without FA (lbs)
INRV0640–1600	177–940	27	400V/50 or 230/50–60	2.2–4.0	67	27 x 30 x 88	550
INRV2400–3400	590–1940	32	400V/50 or 230/50–60	5.5–7.5	78	48 x 30 x 91	700
MKFV0640	120–380	28 – 83	230V/50–60	1.1–2.6	59–70	26 x 22 x 73	440

IFVA

XXL for Big Business

Application

- Dust removal
- Welding, cutting lasers
- Welding fumes

Features

- Pollution-free dust removal through integrated double dust collecting device
- For pre-separation of very large quantities of dust
- Very powerful and yet compact in size
- High filter capacity, can be easily increased if required
- Optimum tightness thanks to a special clamping system
- Easy to operate and maintain
- Central system e.g. for several welding or inscription lasers

Handling

- Stationary use
- Compact, thus minimum space requirement

Model	Air volume max. without FA (CFM)	Negative pressure max. (in H_2O)	Electr. connection (V/Hz)	Electr. power (kW)	Sound pressure level 3 ft (dBA)	Dimensions (in)
IFVA	1413–3767	34	400V/50 or 230/50–60	2.2–5.0	69	58 x 37 x 154

DEVICES WITH **AUTOMATIC FILTER CLEANING**

VA2PF

The pre-separation module - and dust is a thing of the past

Application

- Smaller welding, cutting and inscription lasers for dry smoke, for example from metals
- Process dusts

Features

- The new development of the VA2PF pre-filter module for filtering dust emissions in a wide variety of applications
- Due to the automatic cleaning function and the pollution-free removal in PE bags, larger quantities of emissions can be handled easily.
- The streamlined air flow at both dust class M filter cartridges generates a high degree of efficiency and separation.
- Filter equipment: 2 filter cartridges with 30 or 60 ft² filter area
- Time-controlled cleaning
- Air requirement per cleaning: 1.3 gal.

Handling

- Mobile or stationary use
- The unit can be connected on delivery to an existing extraction and filter system and put into operation immediately.

Model	Air volume max. without FA CFM)	Compressed air (PSI)	Electr. connection (V/Hz)	Extraction ports (in/mm)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight (lbs)
VA2PF	188–265	44–58	230/50–60	1 or 2 x 2”/NW50	62	62 x 17 x 56	approx. 150–180

MKFVAF

The volume advantage for oil and emulsion mist

Application

- Oil mist, emulsion mist

Features

- Highly efficient pre-separation of oil and emulsion mist through multi-stage filtration
- Washable metal knitting filter and optional with F7 filter insert
- For volume flows up to 155 cfm
- Extraction ports 2 x 2”/ NW 50mm
- Option: Pump set for pumping out the filtered oil via integrated oil drain cock

Handling

- Mobile or stationary use
- The unit can be connected on delivery to an existing extraction and filter system and put into operation immediately.

Model	Air volume max. without FA CFM)	Filter level	Electr. connection (V/Hz)	Extraction ports (in/mm)	Sound pressure level 3ft (dBA)	Dimensions (in)	Weight (lbs)
MKFVAF	up to 265	1 or 2	230/400V/50–60	2 x 2”/NW50		26 x 15 x 19 or 26 x 15 x 30	approx. 66–88

LSKA

The laser protection cabin: Close the door, turn the laser on and be safe

Application

- Safety in laser inscription of different components in automation lines
- Recording and filtering of accruing emissions

Features

- Laser class 4
- High-quality model with aluminium profiles and sheet metal modules 2 mm in single-walled design, Performance Level D
- 2 pneumatic lifting gates 20x20”, incl.
- Cylinders, solenoid valves, non-contact limit switches and guide systems
- Non-contact limit switch Performance Level D
- Removable side panels for maintenance incl. switches, Performance Level D
- Indicator light for operating states
- Integration of roller track profile/covering track for a light-tight design
- Switching to terminal box for connection to PLC
- Laser safety certificate (tested design) for different inscription lasers)

LSKA03

LSKA01

Handling

- Simple mounting on base frame
- Connection for extraction point with suction nozzle and hose
- Can be combined with many extraction and filter systems

LSKWS

Emission-free in the laser workstation

Application

- Safety when laser inscribing different components as a workstation

Features

- Modular laser protection cabin type LSKWS for applications in mechanical engineering in the field of laser processing
- Construction with focus on the guidelines for safety of laser equipment (DIN EN 60825-4) as well as the BG Accident Prevention Regulations for Laser radiation BGV-B2
- Due to their complete encapsulation, these cabins can completely shield payload radiation, secondary radiation and reflective or scattered laser radiation which occur during material processing.
- The air pollutants are very effectively collected and extracted from the cabin through optimum use of the flow technology.
- LSKWS and other laser protection cabins from Fuchs Umwelttechnik can be easily automated and certified for applications by using high-quality standard parts.

Handling

- Mobile or stationary use
- The laser cabin is connected to an extraction and filter system via an interface.

Supply air modules

ABKAB01

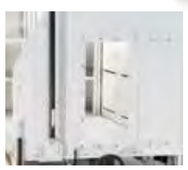
The extraction cabin that accommodates your back

Application

- Solvent vapours
- Adhesive vapours

Features

- Compact integrated extraction and filter technology
- Large-area extraction via the rear extraction wall
- Large lockable front flap with pneumatic springs
- Three grips on the front flap for protected operation
- Practical loading slide at the front with grips (loading opening 10 x 8”)
- Fatigue-free working due to individual adjustment of the working height
- Perfect illumination of the work area through the ceiling pane made of durable real glass with Ex-design lighting above it
- Spilled solvents collect in the drip tray under the perforated safety floor.
- An explosion-proof gas sensor on the 1st pre-filter measures too high concentrations of e.g. dichloromethane.
- Ground lugs on housing
- Connection nozzle 2 x 3 1/8” / NW 80 mm on the rear side



Handling

- Mobile or stationary use

ABKAB03

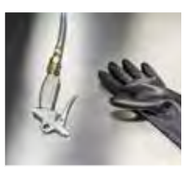
Divided into two parts behind closed doors

Application

- Solvent vapours
- Adhesive vapours

Features

- Two-part extraction cabin for cleaning tool parts with orange terpene
- Material: aluminium frame, stainless steel walls
- Left cabin area for blowing off with compressed air, reach-through with gloves
- Right cabin area with stainless steel cleaning basin and 3 sieves
- Complete extraction via extraction wall with suction slots to the rear
- Laminated safety glass panes.
- Integrated lighting
- Compressed air supply
- 4 sockets and light switches
- Connection cleaning basin 230V/50Hz
- Power consumption 3000 W,
- 400V/50Hz 9000 W, regulation 88-176°F
- Limitation 203°F
- Extraction port 1x NW 200 mm (8”) top
- insertion height approx. 400”



Handling

- Stationary use

SPECIAL SYSTEMS **CLEANING CABINS**

INRVABE3.1

Pollinates the airflow, improves cleaning

Application

- Laser welding
- Laser cutting
- Laser marking
- Laser sintering
- Welding
- Plasma cutting

Features

- Low contamination and easy replacement of the 25 kg bag
- Electropneumatically controlled pollinator
- Equipment for all devices with automatic filter cleaning
- For pre-coating filter cartridges and inerting emissions
- Improves the cleaning capacity of the filter cartridges and reduces the combustion factor by pollination of the air stream
- After each cleaning process, a pollination impulse begins
- The filter aid is blown into the air stream and onto the filter elements.
- Depending on the application, different pollination media are possible as filter aids.

Handling

- Mobile and easy to use

Model	Compressed air (PSI)	Electr. connection (V/Hz)	Extraction ports (in/mm)	Sound pressure level 3 ft (dBA)	Dimensions (in)	Weight (lbs)
INRVABE3.1	70	230/50–60	2 x 2”/NW50	53	20 x 15 x 43	approx. 66 (without filter aids)

MKFFUW/INRFUW

Our fire brigade - and every fire hazard is extinguished

Application

- Safe extinction of sparks from process air, e.g. laser welding or grinding of steel or stainless steel

Features

- Compact design
- With or without integrated spark extinguishing zone
- Streamlined design
- Removable covers for easy cleaning and maintenance as well as removable impact inserts
- Standard connection nozzle for easy connection to all common extraction systems

MKFFUW2

INRFUW2

MKFFUW7

Handling

- Mobile or stationary use
- Easy cleaning and maintenance

Model	Air volume (CFM)	Connections (in/mm)	Dimensions (in)	Weight (lbs)
MKFFUW	up to 265	2 x 2”/NW50	15 x 6 x 4 to 16 x 16 x 28	approx. 11–55
INRFUW	265 to 942	2 x 2”/NW50 2 x 4”/NW100	14 x 21 x 34 to 26 x 30 x 57	approx. 110-220

Extraction cabinets and extraction plates

Protected work areas as desired

Application

- Solvents
- Adhesive vapours
- Dusts

Features

- Streamlined air flow for efficient recording of emissions
- Extraction downwards via extraction plate and/or backwards via extraction wall
- With extraction ports for all common extraction systems
- Optional with ergonomic height adjustment or lighting

Handling

- Stationary or mobile use

MKFAKR07

MKFAKRT7

ABAKB02

MKFAKRB

MKF APL1

MKFAKRT7

ABAKB02

Extraction nozzles and hoods

Accurate detection is the key

MKFMSD15

MKFMH300

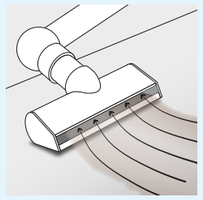
IFMSH500

Interesting facts about aerodynamics

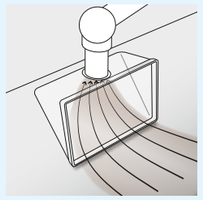
The Coanda Effect

Placing the extraction opening near a flat surface limits the ability to extract excess room air not polluted by smoke or steam.

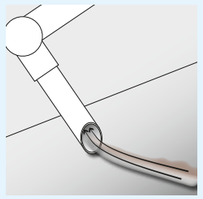
In this way a vacuum is created between the surface and the transported air, which is why the air tries to “stick” to the surface. It is a kind of ejector effect called Coanda or adhesive effect.
By using this method, the distance from the place where the contamination occurs to the extraction screen can be extended.

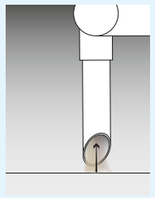


In this arrangement, the Coanda effect is perfectly utilised with the MKFSD.

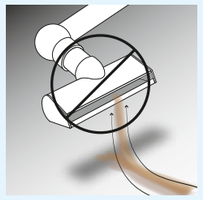


The Coanda effect on the MKFAH extraction hood.





The tube nozzle should be arranged as close as possible to the surface.



If it just hangs freely in the air, the slot nozzle ihas almost no effect..

MKFSD10

MKF ALR intake slot

MKFRD

MKFSD12

MKFSD15

MKFSHD02
Suction nozzle holding arm

MKFAH

IFMSH1500

MKFAH02

Extraction arms

Flexible and effective - you can get anywhere with them

Application

- Point extraction for welding fumes, soldering fumes, plastic injection moulding emissions and particulate matter

Features

- Flexible
- Aerodynamically optimised detection nozzles
- Can be attached to all common extraction systems
- Different diameters for corresponding volume flows

Handling

- Ergonomically easy to adjust

MKFAB

INRFAB

MKFAB06

INRAB

IF/INR Extraction arm

Competence and responsibility

From consultation to maintenance - the Fuchs-Umwelttechnik all-round service

Application consulting

Our employees advise you individually and competently on every problem: Hazardous emissions? Air pollutants? Individual workplace or industrial application? Special work processes? The customer‘s situation is the task at hand.

Our solutions adapt to the local conditions - not the other way round! Only when all parameters are completely matched to each other, the reliable elimination of pollutants is guaranteed. So with Fuchs Umwelttechnik you can always be certain of working with the best possible collection and filtration of your air pollutants.

There is a reason for this: Fuchs Umwelttechnik has rightly been regarded as a specialist for the collection, extraction and filtering of hazardous pollutants at the workplace for over 35 years. **This long experience and expertise are reflected in our entire product range.** Whether small mobile single unit or stationary extraction system in XXL format, there is something suitable for every area of application. Based on the modular design, all systems offer extreme flexibility and problem-free expandability.

If necessary, we develop and produce **special systems**, ideally suited for the special purpose. Automatically cleanable filter systems for smoke and dust, high vacuum systems, laser applications or, for example, large activated carbon filter systems.

Of course, we coordinate all components perfectly with each other. Aerodynamically streamlined extraction nozzles, extraction hoods and special collection systems remove all emissions with little energy input. Because only what is completely collected cannot cause any damage. The connected filter system takes over the filtration with outstanding separation efficiencies. Intelligent technology and sensor technology enable optimum energy efficiency and long filter life throughout the entire working process.

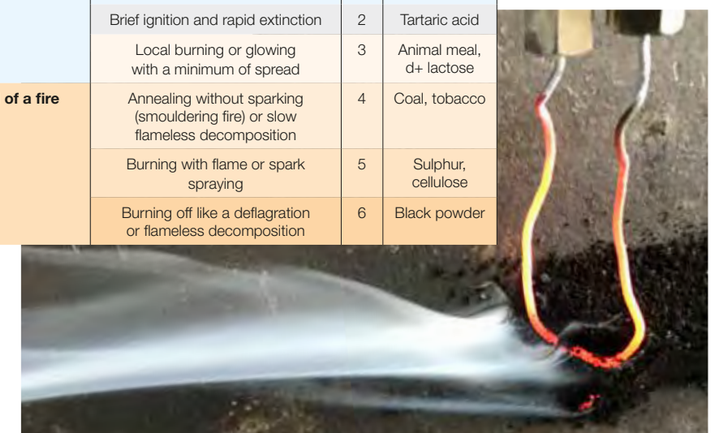
Once again, Fuchs Umwelttechnik expertise is impressive: **our engineers and technicians create solutions with a view to the future. Engineering in the planning and design of our extraction systems based on the latest technical standards. These characteristics make Fuchs Umwelttechnik equipment a sensible investment for the world of the day after tomorrow.**

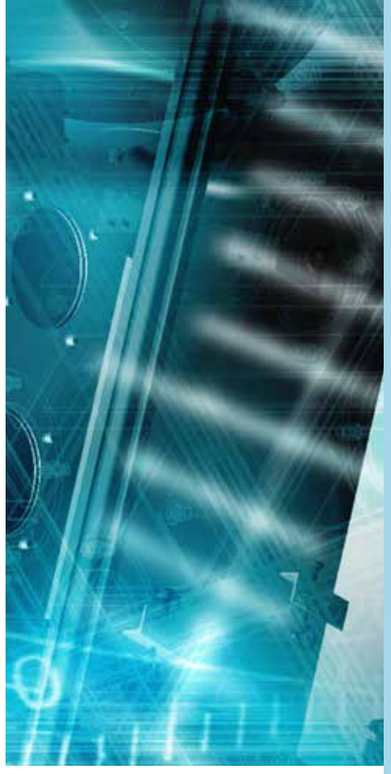
For reliable health protection and indispensable safety at all workplaces where air pollutants are produced. A decisive advantage for your employees, for your equipment and for our environment.

Combustion factor specifications

Combustion behaviour is examined based on the test of combustible dusts according to VDI 2263 and provides information on whether and to what extent a fire initiated by external ignition can spread in deposited dust.
Combustion behaviour is determined at room temperature. In accordance with the reaction sequence, the combustion behaviour of the product is characterised by a combustion factor (FC) which is defined as follows:

Type of reaction		BZ	Examples
Fire doesn't spread	No burning	1	cooking salt
	Brief ignition and rapid extinction	2	Tartaric acid
	Local burning or glowing with a minimum of spread	3	Animal meal, d+ lactose
Spread of a fire	Annealing without sparking (smouldering fire) or slow flameless decomposition	4	Coal, tobacco
	Burning with flame or spark spraying	5	Sulphur, cellulose
	Burning off like a deflagration or flameless decomposition	6	Black powder





Development and design

We develop and build innovative special systems and tailor-made extraction solutions.

- CAD-3D design with INVENTOR system complete with drafting and documentationn
- Calculations and simulation for aerodynamic and thermal tasks (CFD) as well as structural mechanical calculations (FEM)
- Engineering in the planning and layout of extraction systems through energy-efficient solutions based on the latest technical standards
- Emission measurements and forecasts for checking the occupational exposure limit values (OEL) to ensure occupational health and safety in accordance with the Ordinance on Hazardous Substances (GefStoffV)
- If required, Fuchs Umwelttechnik has the dust explosion parameters determined by accredited service providers. Here, explosive gases, vapours and dusts are examined in a standardised environment and different parameters are determined.
- The KSt value determined in this way can be used to define three different explosion classes for combustible dusts. In addition to other parameters, these dust explosion classes provide us with an indication of which protection concept we should develop and incorporate into the design with regard to dust explosions.

Our qualified maintenance service

To ensure that your extraction and filter systems are always in perfect condition, we offer our qualified maintenance as a perfect supplement to your safety concept. This ensures that you always have the guarantee of completely eliminating all air pollutants. All over Europe. All over the world.
The scheduled maintenance work includes::

- ***Inspection and, if necessary, replacement of the installed filter elements***
- ***Checking the filter monitoring and the entire electrical system***
- ***Inspection of the seals on the filter elements and on the housing***
- ***Inspection of hoses and piping***
- ***Checking the suction effect and the extraction fan***
- ***Final functional check***

Maintenance can be carried out on your premises or, alternatively, in our factory after we have received your system.
For the duration of maintenance we will gladly provide you with a loan system so that your production can continue without interruption.
This ensures that the outstanding Fuchs Umwelttechnik quality always remains outstanding.

Our maintenance contract - individual and flexible

With our optional maintenance contract we offer you additional relief. You always work safely and undisturbed. We take care of all maintenance work and updates. And all this while you keep full cost control.
Please contact us for further information at any time: info@fuchs-umwelttechnik.com

You need Replacement filters?
info@fuchs-umwelttechnik.com
or
+49 (0) 7346/ 96 14-0

Rules and regulations

Legal requirements

The German Hazardous Substances Ordinance (GefStoffV)

Investigatory duty
According to § 16 the employer is obliged to “investigate” whether hazardous substances are present at the workplace. Welding, laser or soldering fumes must always be treated as hazardous substances; the same applies to solvent and plastic fumes.

General duty to protect
The “general duty to protect” according to § 17 means the employer‘s obligation to take the necessary measures to comply with the occupational health and safety and accident prevention regulations applicable to him.

Monitoring obligation
The presence of one or more dangerous substances in the air at the workplace during welding, cutting and related processes as well as laser emissions, soldering fumes, solvent vapours cannot be completely excluded. In accordance with § 18 “Monitoring obligation”, it must then be determined whether the occupational Exposure Limit Value (OEL) or the Technical Standard Concentration (TRK) has fallen below or exceeded the triggering threshold.

Order of priority of the protective measures
According to § 19 “Order of priority of the protective measures”, the following order of priority results for the measures to reduce or prevent hazards, taking into account the state of the art:

- Design of the working procedure in a manner that hazardous substances are not released
- Detection of hazardous substances in the source area
- Ventilation measures
- Personal protective equipment

The regulatory situation with air recirculation

General requirements
§ 4 Ventilation systems, paragraph 2 of the UVV VBG 15 reads as follows: Extracted air may only be supplied to working and traffic areas after sufficient filtration of hazardous substances. According to the implementing instructions for the above regulation text, a filtration is considered sufficient if the concentration of the substances in the recycled air does not exceed ¼ of the respective workplace limit value.

Air recirculation when handling carcinogenic substances and other emissions
If the welding fumes contain carcinogenic components - such as nickel compounds or chromates - and it is not possible to discharge the exhaust air outside for operational reasons, it must be ensured that the requirements of TRGS560 “Technical Rules for Hazardous Substances - Air recirculation when handling carcinogenic hazardous substances” are met. Accordingly, the concentration of hazardous substances in the recirculated, cleaned air must not exceed one tenth of the TRK value.

Tips for users
Mobile dust extractors as well as central systems are available for the operator to comply with the regulations.
Effective extraction of pollutants through extraction systems can only be ensured in the long term if these systems are subjected to regular inspections.
In accordance with the German Workplace Ordinance, legislation stipulates an annual inspection by an expert, which must be documented in an inspection book.

The legal basis for the licensing authority for exhaust air operation

Total dust
According to the German Clean Air Act (TA-Luft), the dust emissions contained in waste gas must not exceed a concentration of 1.15 x 10^-8 oz/in³.
If the mass flow exceeds 0.88 lb/h, a mass concentration of 5.78 x 10^-8 oz/in³ shall not be exceeded.

Dust-like inorganic substances
Even in the presence of several substances of the same class or of Classes II and III, the total mass concentrations of the following particulate inorganic substances in the exhaust air shall not exceed the following values:

Cobalt and its compounds, to be indicated as Co, nickel and its compounds, to be indicated as Ni, in the case of a mass flow of 0.13 lb/d or more than 2.9 x 10^-10 oz/in³.

KClass III:
Chromium and its compounds indicated as Cr for a mass flow of 0.26 lb/d or more than 5.78 x 10^-10 oz/in³.

Hazard assessment
“Technical Regulations for Hazardous Substances”(TRGS)
If the occurrence of hazardous substances with AG or TRK values at the workplace cannot be safely excluded, the concentration of the hazardous substances must be determined and assessed in accordance with TRGS 402 “Determination and assessment of concentrations of hazardous substances in the air in working areas”. This is done through work area analyses and, if necessary, through control measurements.

The determination as to whether the limit values are complied with is based on knowledge of the temporal and spatial distribution of the hazardous substances. This knowledge is based on measurements in the work area or on reliable calculations. To obtain this information, the following data may be used:

- Existing results of own measurements or third-party measurement results
- Measurement results from comparable systems, or activities
- Reliable calculation

Terms

AGW
(Occupational exposure limit)
Occupational exposure limit values serve to protect health at the workplace. They are defined as the maximum permissible concentration of an agent (gas, vapour or suspended matter) which does not affect the health of employees in the long term.

TRK value
(Technical indicative concentration)
The Committee for Hazardous Substances at the Federal Ministry of Labour and Social Affairs establishes TRK values for carcinogenic and suspected carcinogenic substances for which no AGW exists. Compliance with the TRK value is intended to reduce the risk of adverse health effects, but cannot completely rule these out. The AG and TRK values are listed in TRGS 900 and are published anew each year. AG and TRK values are referred to as air limit values.

Triggering threshold
The triggering threshold is exceeded if compliance with the air limit value has not been demonstrated. In case of split air limit values, the lower value shall apply unless, in individual cases other regulations are made (TRGS). If the triggering threshold is exceeded, additional measures to protect health are required, e.g. preventative occupational medical check-ups (GefStoffV).

Extraction of pollutants directly at the point of origin and efficient filtering with our compact filter systems.
In conjunction with our extraction systems, which are precisely matched to these requirements, we enable effective collection of the pollutants.
Practical and economic advantages:

- No large pipe diameters, short pipe lengths and thus low installation costs.
- Compact modular design and efficient collection elements can be individually designed and are easy to handle
- Pollutants are collected before they reach the user‘s breathing zone
- High user acceptance, therefore very high effectiveness
- Very low costs due to reduction of fresh air supply (reduction of heating costs)

Air filter classification

Filter classification

DIN EN ISO 16890 came into force on 1 July 2018, replacing the previously valid industry standard EN 779. This amendment allows the performance of a filter to be described more precisely under real conditions and divided into four categories. Depending on the type of application, an optimal selection of filter media can be made.

What is the difference between ISO 16890 and EN 779?

The most important difference is that EN 779 classified filters in the laboratory only on the basis of a particle size of 0.4 µm. The composition of particulate matter is never consistent in terms of size and shape.

This means that exposing a filter to only one particle size does not reflect the real operating conditions. In the ISO 16890 filter test, the filter is exposed to particles from 0.3 µm to 10 µm. Thus the filters are tested under more realistic conditions.

What are the new ISO 16890 filter groups?

Based on the filter test mentioned above, ISO 16890 classifies filters according to their effectiveness as PM10, PM2.5 and PM1 in their fine dust classes.
A filter must retain at least 50 per cent of the corresponding particle size range in order to be assigned to one of the fine dust groups - PM1, PM2 or PM10. A coarse dust filter (ISO coarse) is defined as a filter that separates less than 50 percent of PM10 particles.

These four particle sizes form the basis for the four ISO 16890 groups:

- ePM1, EPM2,5, ePM10 and Coarse (ISO coarse)

The “e” in the group name stands for effectiveness. The effectiveness of the filter is given in rounded 5 percent steps. A filter that intercepts 87 percent of PM1 particles must be classified as ISO ePM1 85%.

Summary of the advantages of ISO 16890

Closer to practice and reality than EN 779

- Real separation efficiency of a filter with regard to particulate matter (spectrum between 0.3 and 10 µm)
- Improved power of information on the operating behaviour of an air filter
- ISO 16890 uses the same assessment parameters as the World Health Organisation (WHO) and many other environmental authorities, such as the Federal Environment Agency in Germany.

Example for filter selection

Let us assume that we receive the locally collected data via the website of the Federal Environment Agency, and an annual average particulate matter concentration of 70 µg/m³ for PM2.5 dust is given for our site. If we now use an ISO ePM2.5 75% filter, this means that a maximum of 75% of this dust fraction is extracted. Thus the annual average is reduced to 25 % of the previous value, in other words 0.25 * 70 µg/m³ = 17.5 µg/m³.

SERVICE & INFO

Filter classification according to ISO 16890:2018

Coarse dust	ISO Coarse	Old filter class	Average filtration efficiency in %
	ISO Coarse ≤ 30%	G1	50 ≤ Am < 65
	ISO Coarse 30 - 40%	G2	65 ≤ Am < 80
	ISO Coarse 45- 55%	G3	80 ≤ Am < 90
	ISO Coarse 60 - 95%	G4	90 ≤ Am
	ISO 16890:2018 currently valid standard		EN 779:2012 Obsolete standard

Particulate matter	ePM_1 Particles between 0,3 and 1µm	$ePM_{2,5}$ Particles between 0.3 and 2.5µm	ePM_{10} Particles between 0.3 and 10µm	Old filter class	Average filtration efficiency target compared to test dust in %
	5 – 35 %	10 – 45 %	40 – 70 %	M5	40 ≤ Am < 60
	10 – 40 %	20 – 50 %	60 – 80 %	M6	60 ≤ Am < 80
	40 – 65 %	65 – 75 %	80 – 90 %	F7	80 ≤ Am < 90
	65 – 90 %	75 – 95 %	90 – 100 %	F8	90 ≤ Am <95
	80 – 90 %	85 – 95 %	90 – 100 %	F9	95 ≤ Am
	ISO 16890:2018 Currently valid standard				EN 779:2012 Obsolete standard

Average collection efficiency: The filter is weighed before and after dust collection. The dust mass in the filter and the feed mass are put into proportion and the average collection efficiency is calculated from this.

Average efficiency: The filter element is exposed to a synthetic droplet aerosol between the individual dust loading stages and the particle number concentrations are measured upstream and downstream of the filter. The efficiency is calculated from the difference between the two concentrations at a particle size of 0.4 µm.

Filter classification according to EN 1822:2011

Suspended matter	Filter class	Collection efficiency in %	Old filter class	Collection efficiency in %
	E 10	≤ 85	H 10	≤ 85
	E 11	≤ 95	H 11	≤ 95
	E 12	≤ 99.5	H 12	≤ 99.5
	H 13	≤ 99.95	H 13	≤ 99.95
	H 14	≤ 99.995	H 14	≤ 99.995
	U 15	≤ 99.9995	U 15	≤ 99.9995
	U 16	≤ 99.99995	U 16	≤ 99.99995
	U 17	≤ 99.999995	U 17	≤ 99.999995
	EN 1822:2018 Currently valid standard			DIN EN 1822:1998 Obsolete standard

E = EPA Efficient Particulate Air Filter
H = HEPA High-efficiency Particulate Air Filter
U = ULPA Ultra-low Penetration Air Filter

AND WE ARE ALWAYS OPEN TO SPECIAL REQUESTS

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CLEAN AIR TECHNOLOGY