

KEMPER[®]



Product catalogue 2008



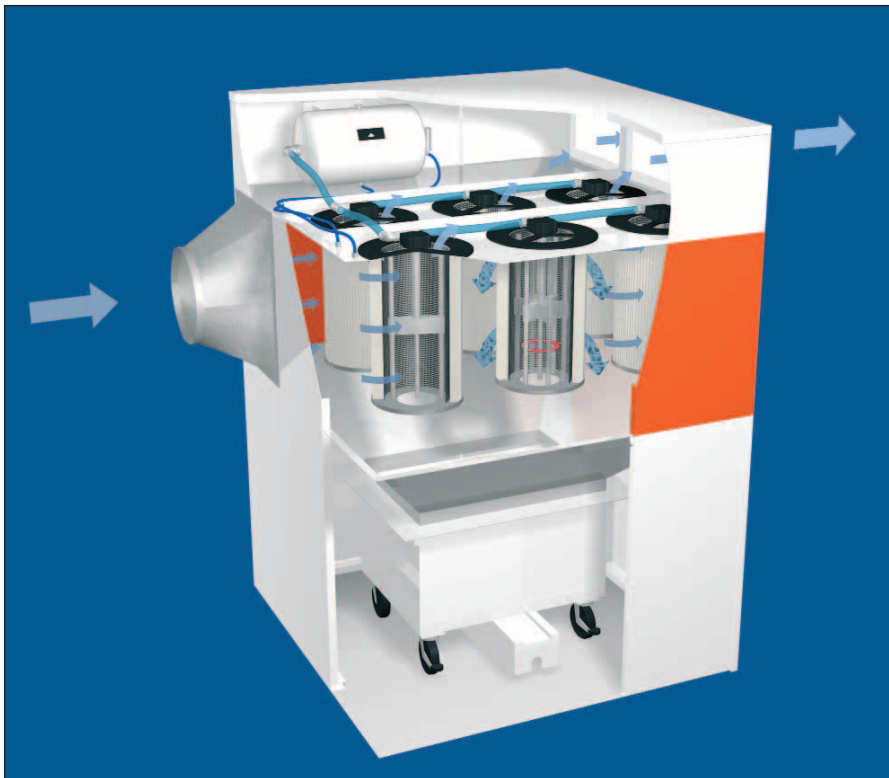
welding, cutting and more...



Extraction and filter units

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The Design of the KEMPER Filter Units



Cut away view of a filter segment system 9000

Advantages

Flexibility

Due to the modular design an adaptation to nearly every extraction problem is possible, both, with high vacuum and low pressure systems.

Floor space

The KEMPER system 8000 units do not take a lot of floor space due to the compact design. In connection with a weather proofed housing or underneath a slope roof, the unit could also be installed outside.

Expansion

By installing additional filter or fan sections it is possible to align the existing unit to an increased demand in the future.

Modification

If the local circumstances change, it is no problem to change the filter unit as well to meet the new requirements.

Connection possibilities

The modular design of the unit offers a wide performance range. This offers unlimited connection possibilities.

Robust

The filter systems 8000 and 9000 are made, as well as all other KEMPER extraction and filter units, out of a rigid metal construction. For a lasting durability the unit is finished with an epoxy powder coating.

Noise level

The exceptional low noise level of the KEMPER filter units is achieved by the special construction in connection with a sophisticated integrated silencer system. Depending on the type of unit, the noise level is as low as 65 dB (A).

Adaptability

KEMPER filter units are supplied as standard orange and white, however other colour schemes are available upon request.

The filter units with automatic filter cleaning from KEMPER are distinguished due to their modular design. This enables a flexible installation and an adaptation to nearly every requirement.

The filter units are commonly used in welding workshops as a central extraction

and filter unit in connection with central ducts which are connected to capturing devices like exhaust arms or exhaust hoods of robotic welders.

Also the connection to KEMPER extraction table for laser-, plasma- or oxy/fuel cutting units is ideal.

What application so ever, KEMPER filter units can always be adapted to your individual requirements.

The extraction principles differ between low-pressure and high-vacuum. The latter offers a much lower air demand due to high pressure but would only be suitable for welding workstations. The ideal extraction principle depends on the type of work and the number of workstations.

KEMPER offers two different systems:

Type "8000" filter units are ready to use units with a capacity of up to 13,000 m³/h.

Due to the compact design this can be moved very easily by fork lift or hand pallet truck.

Units of the type "9000" consists of several modules, which will be assembled on site. The main parts of this type of unit are the fan unit with integral silencer housing and one or more filter segments with filter cartridges, cleaning mechanism and dust collecting container.

Both systems are offered as low pressure and high vacuum units. The main difference between the two systems are the fan units.

The low pressure principle is working with a high airflow and low pressure whereas the high vacuum system is working exactly the other way around. Low airflow but high pressure.

Intelligent filtration technology

The surface filtration

After the pre-separation of the coarse particles the remaining particles will be precipitated according to the principle of the surface filtration. *KemTex*[®] ePTFE-membrane is laminated on the surface of the filter media, which is used for the filter cartridge.

The unique microstructure of the *KemTex*[®] ePTFE-membrane consists of millions of fine fibres, which hold back even the smallest particles. Especially during the welding and cutting process superfine particles are generated which are averaged between 0.1 µm and 1.0 µm. They are therefore alveole exchangeable. Especially those particles deposit on the alveole (pulmonary alveoli), reach the blood-stream, can diffuse through the vascular wall and then deposit in the body. Tests of the BGIA for the particle size distribution during the welding process have shown the following results (E308-16).

Particles Ø in µm	<0.2	<0.4	<0.6	<0.8	<1.0	>1.0
Quantity	800	251	9	0	1	2
% of the quantity	75.3	23.6	0.9	0	0.1	0.2
% of the mass	15.9	38.7	7.5	0	8.2	29.7

The result is, that consequently 98.9 % of the particles arise in the region smaller than 0.4 µm which represent

Automatic filter cleaning

The cleaning of the cartridges, which is activated and controlled by the intelligent control, automatically takes place by means of rotating nozzles. Once the cartridges are loaded with dust, the cartridges get cleaned, one after the other, during the normal operation. A compressed air shot is released from the internal compressed air reservoir of the filter unit. The rotation nozzle starts

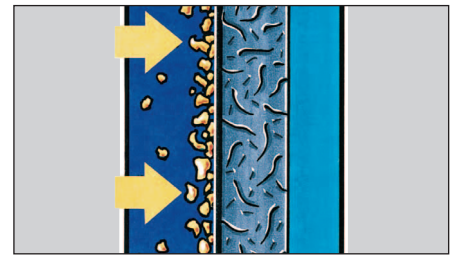
(ultra-particulate matter) 54 % of the total volume because of their acuteness. Therefore the precipitation of the particles in the region smaller than 0.4 µm is very important. Usual filters, which come indeed up to category M, reach their limitations at this point. Therefore the effective pore size of the *KemTex*[®] ePTFE-membrane is that small, that even particles with 0.1 µm already will be filtered up to 92 %.

The nearly zero-emission of the *KemTex*[®] ePTFE-membrane is exceeding all current regulations, also those for superfine particles. The *KemTex*[®] ePTFE-membrane filters are therefore the ultimate technology concerning welding and cutting processes.

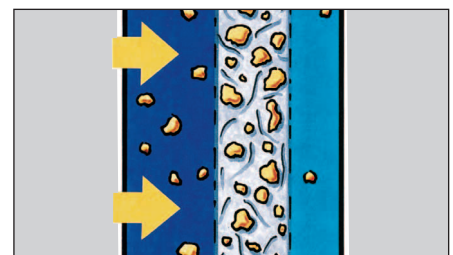
Consequently, the high efficiency membrane guarantees an excellent filtration performance and has got outstanding cleaning characteristics. This is the basic requirement for a long-lasting filter durability at an excellent air purification.

These results can not be achieved by cartridges, which are PTFE impregnated nor with standard deep bed filtration filters.

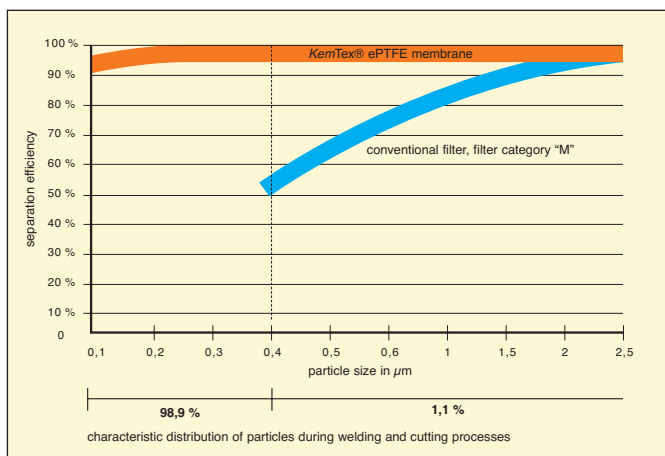
spinning and gently blows off the dust. Due to the numerous small openings in the nozzle sticks, the inner surface of the cartridge is evenly cleaned. Only by reaching the complete inner surface evenly, together with the ePTFE-membrane, a filter can be cleaned efficiently. Commonly used reverse jet technique cannot nearly achieve the same results.



With the surface filtration, the harmful substances are separated at the surface of the filter medium. The filter can easily be cleaned.



With depth filtration, the harmful substances penetrate the filter medium. A cleaning of the filter is not possible.



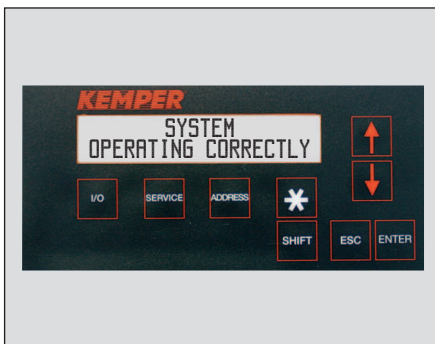
Suitable for alveole exchangeable dusts
separation > 99 % of particles < 0.4 µm

KEMPER Extractio System 8000 an



The functionality

The contaminated air is extracted via a duct system and led in to the filter unit. The dust will be precipitated on the surface of the filter media. The intelligent control monitors the settlement of dust on the filter surface and starts a cleaning process by means of compressed air as soon as the limit value has been reached. This all takes place without interrupting the operation of the unit. The cleaned off dust falls into the dust collecting container from where it can be disposed easily.



Intelligent control

The core of *KEMPER* extraction and filter units is the intelligent control based on a Simatic S7 by Siemens. All functions can be accessed via the control panel of the especially designed control unit via a clear text display. An integrated diagnostic system controls all functions of the filter unit and reports possible malfunctions to the clear text display. The analytic function of the control aligns the duty points of the filter unit to the local circumstances to prolong the service and maintenance intervals as well as the life time of the filters.



Exact adjustment

As an option the extraction and filter unit of *KEMPER* can be fitted with a extraction dependent control which aligns the capacity to the real demand and cuts the running cost enormously. Sensors permanently control the required capacity and the inverter aligns the speed of the ventilator.

The principle: As much as necessary and as little as possible. This has a direct influence to the power consumption and will reduce also the wear and tear of the filter unit. The extra investment will be realised in no time at all.



Good connections

System 8000 machines are supplied ready for use with 3 phase socket and plug. Both, system 8000 and 9000 have potential free contacts which can be connected to external controls of e.g. cutting machines. That way the filter unit can be started by the cutting machine which will reduce the running costs again. If the filter unit and the control need to be installed in different rooms or buildings, a second mobile control terminal can be connected. By connecting a modem to the *KEMPER* control, remote diagnostics can be undertaken.

on and Filter Units d 9000 in Detail

The "upper precipitators"

The filter cartridges used by *KEMPER* belong to the "upper class" in two ways. Firstly they work to the principle of surface filtration. That means that the extracted dusts can not penetrate the filter media. Secondly, the used filter cartridges belong to the absolute prime class. Because of achieving the surface filtration only filters with a laminated *KemTex*[®] ePTFE membrane are good enough. This method is very complex, but it is the only reasonable way of filter units of this kind. You will find further information on the following pages.



The cleaning

The advantage of the surface filtration principle used by *KEMPER* is the possibility to clean the filter cartridges. This is taking place during the operation of the filter unit by means of compressed air. Thus, a non-interrupted operation of the filter unit is possible and the filter cartridges are only cleaned when necessary. This procedure of course is controlled and monitored by the integrated microprocessor control.



The disposal

After the dust has been cleaned of the cartridges, it falls into the dust collecting container. From here the dust can easily be removed and disposed. On the system 8000 one or two dust buckets are lifted and pressed pneumatically to the dust hopper from where they can be removed very easily. The system 9000 has a dust collecting container which is larger in size and has castors for easy transport. Also the bigger dust collecting container has pneumatic lift.



The maintenance

As a health and safety relevant device, a filter unit has to be inspected and maintained and documented on a regular basis following the current legislation. *KEMPER* is therefore offering different service and maintenance packages to comply with the regulations. From a yearly inspection up to a full service contract including all necessary labour and parts. That way you are always on the safe side, and the running cost of your unit can be kept on a permanent low and calculable level.



Extraction and Filter of Central Extrac

Due to the diversity of types and the compact construction of the systems 8000 and 9000, they are very suitable for the design of central extraction and filter systems. Whether in large welding or grinding shops, training shops, robot lines or other installations.

For the design of the central extraction systems the filter unit will be connected to the corresponding capturing elements of the *KEMPER* range together with an exactly dimensioned and optimal ducting.

The different capturing elements for welding workstations are e.g. exhaust arms/cranes or telescopic arms. Due to its parallelogram the exhaust arm can be brought into any desired position within its reach without any additional support. Furthermore, they can be equipped with workplace lighting.

Welding and grinding tables of the *KEMPER* standard range could be connected in the same manner as the especially developed training tables with extraction. Extraction tables for work-shops are available in different variations

and sizes and could therefore be arranged to the respective requirement.

Extractions for robots in cabins or in a production line could also be realised easily with the *KEMPER* extraction and filter system. Therefore special exhaust hoods will be produced individually to the requirements. Another possibility is to connect the cabin to the ducting if it is already roofed.

A versatile range of optional equipment as well as an extensive accessory program is available for the extraction systems. Large units with many extraction elements the filter unit should be equipped with an automatic extraction control.

Thereby the air flow is adjusted to the actual requirement. That way, only as much air as necessary will be extracted. Thus, energy and costs will be saved.

You will find further equipment possibilities in this catalogue.

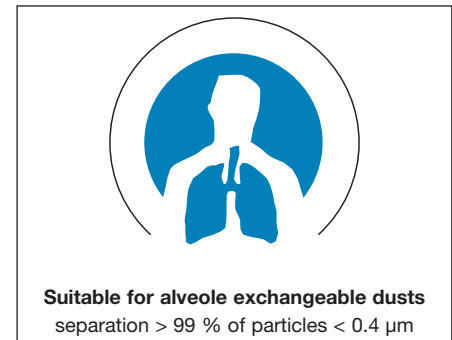


Table System 8000

The following table shows the standard product range of the system 8000. For further technical details please ask for the corresponding data sheet.

Part No.	Extraction capacity (max.)	Motor capacity	Width x Depth x Height (in mm)	Weight (in kg)
81 0200 250	2,000 m ³ /h	1.5 kW · 3 x 400 V / 50 Hz · 3.25 A	962 x 962 x 2,110	385
81 0250 250	2,500 m ³ /h	3.0 kW · 3 x 400 V / 50 Hz · 6.5 A	962 x 962 x 2,110	410
81 0300 250	3,000 m ³ /h	3.0 kW · 3 x 400 V / 50 Hz · 6.5 A	962 x 962 x 2,110	410
81 0350 250	3,500 m ³ /h	3.0 kW · 3 x 400 V / 50 Hz · 6.5 A	962 x 1,413 x 2,110	530
81 0400 250	4,000 m ³ /h	3.0 kW · 3 x 400 V / 50 Hz · 6.5 A	962 x 1,413 x 2,110	590
81 0450 250	4,500 m ³ /h	4.0 kW · 3 x 400 V / 50 Hz · 7.8 A	1,413 x 1,413 x 2,110	620
81 0500 250	5,000 m ³ /h	4.0 kW · 3 x 400 V / 50 Hz · 7.8 A	1,413 x 1,413 x 2,110	620
81 0550 250	5,500 m ³ /h	5.5 kW · 3 x 400 V / 50 Hz · 10.7 A	1,413 x 1,413 x 2,110	620
81 0600 250	6,000 m ³ /h	5.5 kW · 3 x 400 V / 50 Hz · 10.7 A	1,413 x 1,413 x 2,110	620
81 0650 250	6,500 m ³ /h	5.5 kW · 3 x 400 V / 50 Hz · 10.7 A	1,413 x 1,864 x 2,110	750
81 0700 250	7,000 m ³ /h	5.5 kW · 3 x 400 V / 50 Hz · 10.7 A	1,413 x 1,864 x 2,110	750
81 0800 250	8,000 m ³ /h	7.5 kW · 3 x 400 V / 50 Hz · 13.8 A	1,413 x 1,864 x 2,110	770
81 0900 250	9,000 m ³ /h	7.5 kW · 3 x 400 V / 50 Hz · 13.8 A	1,413 x 1,864 x 2,110	790
81 1000 250	10,000 m ³ /h	7.5 kW · 3 x 400 V / 50 Hz · 13.8 A	1,864 x 2,378 x 2,110	1,160
81 1100 250	11,000 m ³ /h	7.5 kW · 3 x 400 V / 50 Hz · 13.8 A	1,864 x 2,378 x 2,110	1,180
81 1200 250	12,000 m ³ /h	11.0 kW · 3 x 400 V / 50 Hz · 20.6 A	1,864 x 2,378 x 2,110	1,210
81 1300 250	13,000 m ³ /h	11.0 kW · 3 x 400 V / 50 Hz · 20.6 A	1,864 x 2,378 x 2,110	1,230

Units for the Design Production Systems

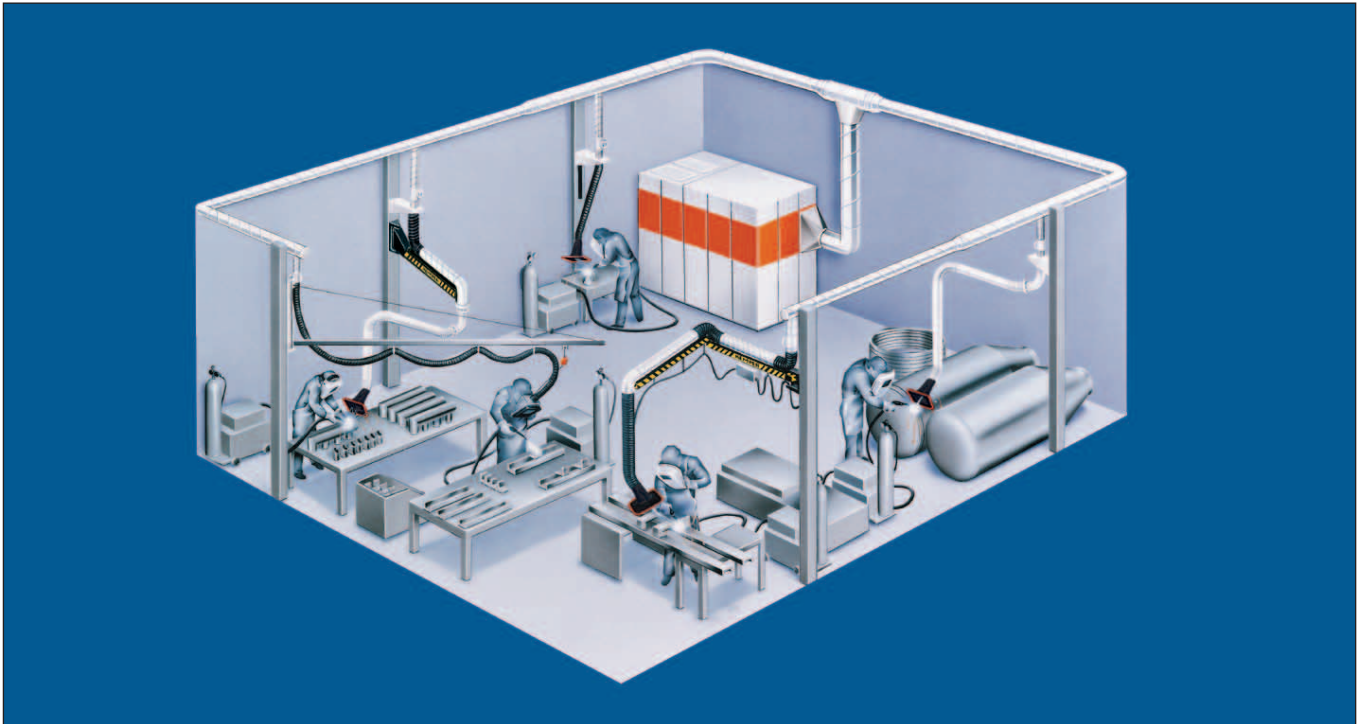


Table System 9000

The following table shows an extract of the standard product range of the system 9000.
Further details on filter systems with higher capacity are available on request.

Part No.	Extraction capacity (max.)	Motor capacity	Width x Depth x Height (in mm)	Weight (in kg)
91 1300 250	13,000 m ³ /h	11 kW · 3 x 400 V / 50 Hz · 20 A	2,826 x 1,864 x 2,670	1,525
91 1400 250	14,000 m ³ /h	15 kW · 3 x 400 V / 50 Hz · 27 A	2,826 x 1,864 x 2,670	1,560
91 1500 250	15,000 m ³ /h	15 kW · 3 x 400 V / 50 Hz · 27 A	2,826 x 1,864 x 2,670	1,560
91 1600 250	16,000 m ³ /h	15 kW · 3 x 400 V / 50 Hz · 27 A	2,826 x 1,864 x 2,670	1,575
91 1700 250	17,000 m ³ /h	15 kW · 3 x 400 V / 50 Hz · 27 A	2,826 x 1,864 x 2,670	1,595
91 1800 250	18,000 m ³ /h	19 kW · 3 x 400 V / 50 Hz · 33 A	2,826 x 1,864 x 2,670	1,630
91 1900 250	19,000 m ³ /h	19 kW · 3 x 400 V / 50 Hz · 33 A	2,826 x 1,864 x 2,670	1,630
91 2000 250	20,000 m ³ /h	19 kW · 3 x 400 V / 50 Hz · 33 A	4,239 x 1,864 x 2,670	2,250
91 2100 250	21,000 m ³ /h	19 kW · 3 x 400 V / 50 Hz · 33 A	4,239 x 1,864 x 2,670	2,250
91 2200 250	22,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,285
91 2300 250	23,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,285
91 2400 250	24,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,300
91 2500 250	25,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,300
91 2600 250	26,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,315
91 2700 250	27,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,315
91 2800 250	28,000 m ³ /h	22 kW · 3 x 400 V / 50 Hz · 40 A	4,239 x 1,864 x 2,670	2,330
91 2900 250	29,000 m ³ /h	30 kW · 3 x 400 V / 50 Hz · 53 A	4,239 x 1,864 x 2,670	2,360
91 3000 250	30,000 m ³ /h	30 kW · 3 x 400 V / 50 Hz · 53 A	4,239 x 1,864 x 2,670	2,375
91 3100 250	31,000 m ³ /h	30 kW · 3 x 400 V / 50 Hz · 53 A	4,239 x 1,864 x 2,670	2,375
91 3200 250	32,000 m ³ /h	30 kW · 3 x 400 V / 50 Hz · 53 A	4,239 x 1,864 x 2,670	2,390
91 3300 250	33,000 m ³ /h	37 kW · 3 x 400 V / 50 Hz · 64 A	4,239 x 1,864 x 2,670	2,410
91 3400 250	34,000 m ³ /h	37 kW · 3 x 400 V / 50 Hz · 64 A	4,239 x 1,864 x 2,670	2,425