ERI CORPORATION
ENERGY RECOVERY AND VENTILATION COMPONENTS

SAVE ENERGY TODAY FOR A BRIGHTER TOMORROW

PRODUCT OVERVIEW

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ErP 2016-2018 Compliant

CONTENT TABLE

OUR CONCEPT

TAKE ADVANTAGE OF OUR EXPERIENCE AND GIVE US A CHALLENGE

WHEN WE STARTED

The company ERI Corporation was established in the year 2010.

TRANSPARENT PARTNERSHIP

Since 2010 we decided to offer our experience at customer disposal.

OUR EXPERIENCE

Despite the young age our trade mark, we have an experience of more than 15 years in air to air exchangers systems behind us.

MODERN TECHNOLOGIES

The innovation become today a necessity for all those companies which want to compete in the global market.

OUR PHILOSOPHY

We believe that the loyalty our customers have shown us has built ERI into the fast growing player it is today.

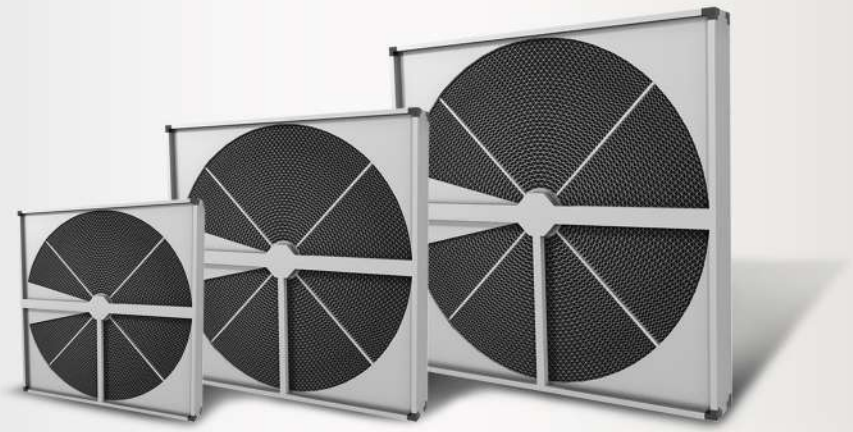
CONFIDENTIALITY

A key point to produce innovation is to connect our ideas with customers ideas on a secure base

WHY US?

We are proud that a great many of our customers have stayed with us for so many years and have chosen us as their exclusive supplier.

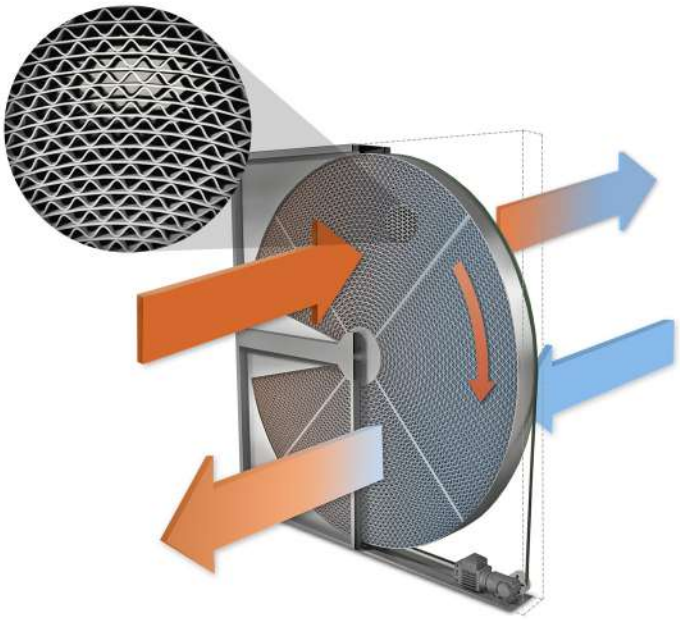
ROTARY HEAT EXCHANGER WORKING PRINCIPLE



HOW IT WORKS

WINTER TIME

The rotary heat exchanger is heated from the exaust air coming from the inside. Meanwhile the outside air is heated from the heat exchanger and enriched from the humidity released from the hygroscopic treatment.



SUMMER TIME

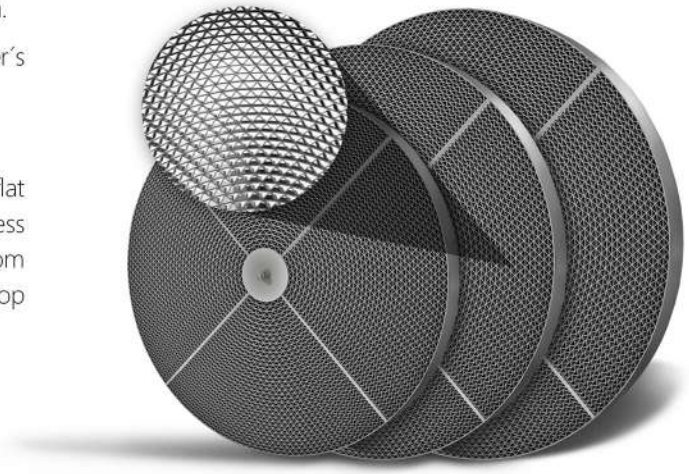
The rotary heat exchanger is cooled by air exhausted from the inside. The air ventilation, from the outside, and cool impoverishing even moisture adsorbed by the coating layer hygroscopic energy recovery is based on a transfer of sensible heat, related to the temperature difference between exterior and interior, and a transfer of latent heat, related to the condensation-evaporation of moisture adsorption-desorption of air from the paint that covers the hygroscopic metal.

- Through the rotation of a honeycomb-shaped wheel between two air volume currents, heats the warmer Air volume the Honeycomb wheel, in order to carry the heat in the colder current density, enabling to reach a heat recovery rate of above 85%.

- Through special coatings applied on the foil of the wheels, is possible to adsorb humidity and release humidity.

ROTOR MATRIX

- The standard width of the rotor can be supplied 200 mm or 250 mm.
- The diameter of our rotors can be produced according the customer´s requirement, even in every mm.
- Our standard diameter start from 260 mm up to 5000 mm.
- The construction of the rotor is made trough an alternating flat aluminium or steel foil merged with a corrugated one. This process creates small air channels. Depending from the wave height and from the geometry of the corrugation, the efficiency and the pressure drop can be influenced or adjusted.



ROTORS TYPES

CONDENSATION ROTORS CON

The condensation rotor is made of Aluminium structure and above the dew point does not transmit humidity. This is perfect for DEC applications or normal air conditioning units.

ENTHALPY ROTORS ENT

This rotor has a hygroscopic coating, and is able to adsorb and release partially humidity. Optimal to recover in transictional periods and in the winter time heat and humidity.

STEEL ROTORS

Suitable for temperatures till 550°C and extremely resistant against corrosion attacks. Wave height on request.

GOLD EPOXY TYPE GE

In presence of a high demanding condition, or corrosive air, we recommend to use this coated rotor, suitable against marine corrosion and with a special matrix the perfect solution for DEC equipment, paint booths, ships and coastal regions.

SORPTIONS ROTOR TYPE SOR

Desiccant wheel to transfer sensible and latent heat energy. Coated aluminium matrix for the transmission of moisture in winter and in summer.

ANTI BACTERIA

On all kind of rotors, we can apply an antibacterical treatment against Legionella Pneumophila, Pseudomas Aueruginosa, Escherichia Coli, Staffilococcus Aureus, Aspergillus Niger, Candida Albicans and Bordetella Bronchispetica, the perfect solution for hospitals, schools, housing, ships and all those ambiences where the bacteria could attcack through the air in flow.

MARINE-APPLICATION TYPE MA

Manufactured using instead of traditional alloys as 1200, 3003, the alloy 5005 or the alloy 5052, which are both Magnesium alloys.

SPECIAL ROTORS FOT SERVER ROOMS TYPE IT

Rotors with a high corrosion resistance. Outside gasket.

SPECIAL ROTORS FOR PAINTH BOOTH TYPE CL

Rotors with high resistance to corrosion and special Magnesium alloy, Al foil 0.12 mm incl. High pressure Waterr-Air cleaning device.

ROTOR FRAMES

DESIGN ACCORDING TO YOUR WISHES...

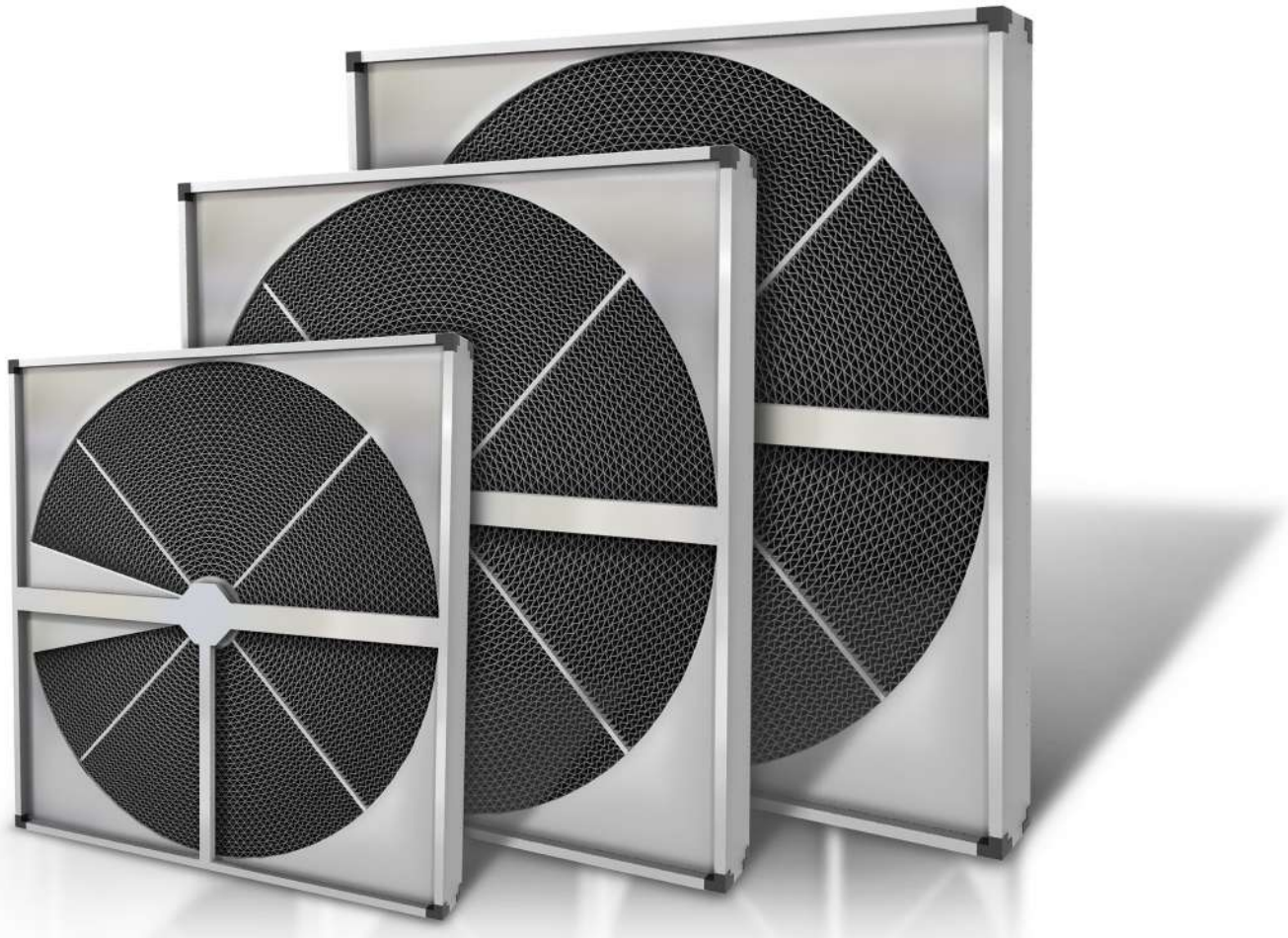
To cover the wide spectrum of different applications, we provide not only different coatings of the thermal wheel, but also the rotor housing manufactured specifically to your needs.

ROTOR FRAMES

- Offshore Frames
- Pushing Frame
- Stable casing
- Steel Frame
- IT-Rotor (Server rooms)
- Marine V4A Frame
- Waterproof Frames (Roof units)

EVERY FRAME/ROTOR CAN HAVE THE FOLLOWING OPTIONS

- Insulated
- Drip pan
- Lacquered according customer wish
- Connectors according customer wish
- Cleaning device
- Clenaing device high pressure water/Air
- Crane eyelets



ACCUAIR ENTHALPY SYSTEM

ACCUAIR FOR AIR TREATMENT UNITS

Accuair, system heat recovery, thanks to its mass high thermal sensitivity, has an efficiency of 90% which allows almost the full energy recovery of the exhausted air.

MOISTURE RECOVERY

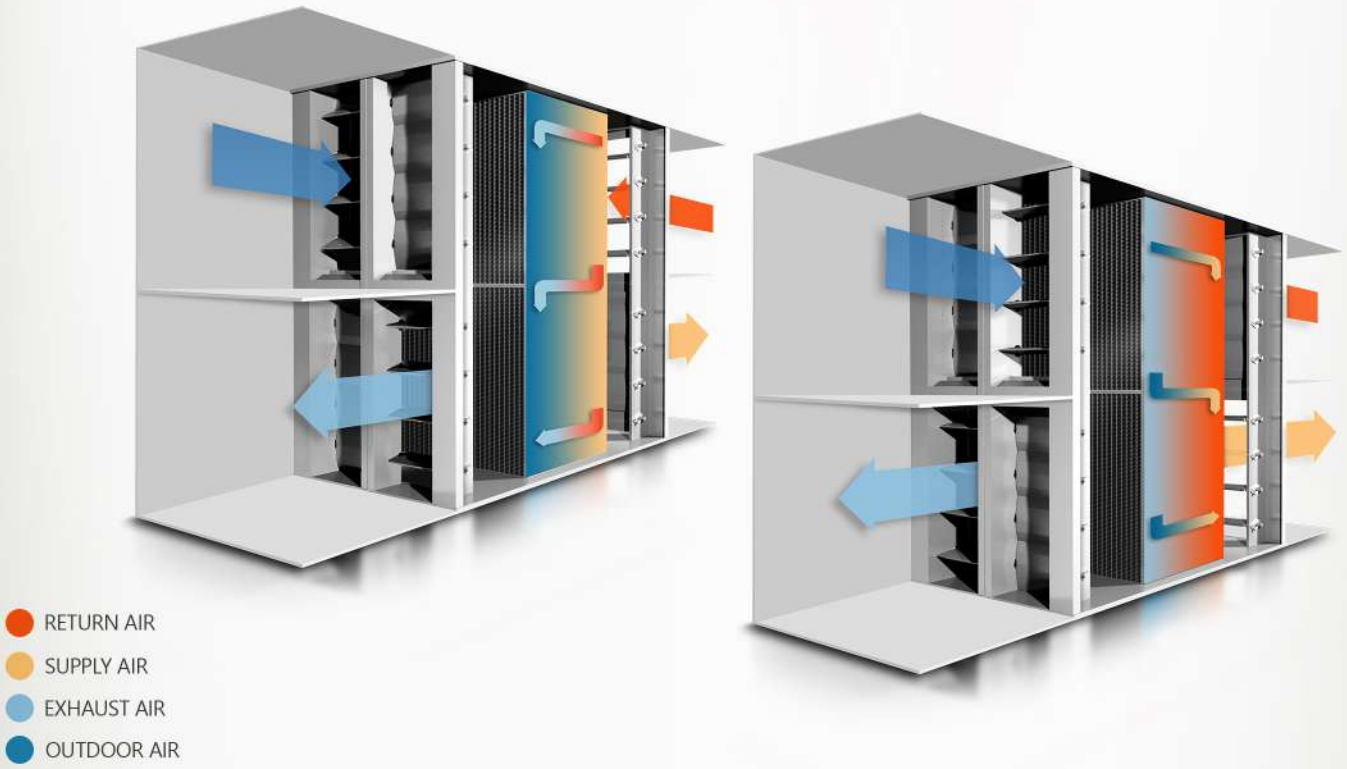
Thanks to its specific enthalpy storage structure the system is able to recover the moisture contained in the exhaust air in the winter months. The value of the recovery of moisture exceeds 70%, avoiding in this way in the winter months a too dry air in the room.

ANTIFREEZE

The heat recovery system Accuair is frost resistant up to a temperature of -25°C. Therefore there is no need of expensive bypass systems or preheating. The system guarantees a high degree of efficiency for the whole year.

The high performance heat accumulator Accuair represents today the most efficient system in the heat recovery world for air treatment systems. It improves comfort without the addition of further humidification systems.

PRINCIPLE OF OPERATION OF THE ACCUAIR SYSTEM



OPERATION

The Accuair system consists of 2 static accumulation masses that alternately are heated by the exhausted warm air. The damper system serves to direct the flow of air in and out in the relevant areas of accumulation. The sector loaded with warm exhaust air is used in the next cycle for the incoming air. This is heated almost to the temperature of the indoor environment and is introduced into the building through the air entrance. At the same time after that the sector with the air inlet has been discharged, it is automatically converted on the flow of exhausted air, in this way the sector is again heated in the next cycle.

POWER CONTROL

The adjustment of the performance occurs through the variation on the time interval of the frequency deviation of the dampers, which can be adjusted from 100% to 0%.
With 0% value, the dampers are no longer changed and it enable a free cooling of the building through the air entrance.
The gradual adjustment of the system is regulated through a 0-10 V external signal.

ACCUAIR ECO DESIGN DIRECTIVE 1253

ECO DESIGN DIRECTIVE 1253

Starting from 01.01.2016 will enter into force the ECO Design directive 1253 of the European Commission for AHU installations. These directives will be even more restrictive starting from 01.01.2018.

DESIGN AND PROJECT WARRANTY

Accuair heat recovery system already meets without difficulty ECO Design Directive 1253 of 2018. The directive provides that the high values of efficiency by heat recovery go to offset the power consumption of the fans. In this way, with an efficiency of 90%, producers can build much more compact air handling units. Slightly higher pressure drop values, due to the filters, are compensated by the high efficiency.

REQUIREMENT EFFICIENCY

2016 Min. efficiency requested 67%
2018 Min. efficiency requested 73%

REQUIREMENTS SFP

2016
FORMULA E

E = (Efficiency - 0,67) * 3000

SFP calculation formula
max. SVLint_limit

1200 + E - 300 * q_{nom} / 2 - F, if q_{nom} < 2 m^3/s and
900 + E - F, if q_{nom} > 2 m^3/s;

2018
FORMULA E

E = (Efficiency - 0,73) * 3000

SFP calculation formula
max. SVLint_limit

1100 + E - 300 * q_{nom} / 2 - F, if q_{nom} < 2 m^3/s and
800 + E - F, if q_{nom} > 2 m^3/s;

CALCULATION WITH ACCUAIR BONUS CALCULATION 2018

E = (0.93 - 0.73) * 3000
E = 600 $W/m^3/s$

Maximum SFP unit
1100 + 600 - 300 * 1,12 / 2
SFP_{max} = 1532 $W/m^3/s$

RLT Unit SFPint

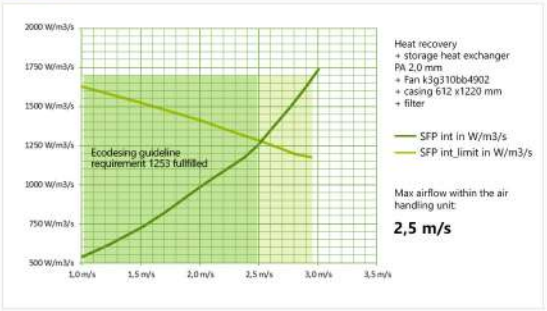
$$SFPint = \frac{\Delta P \text{ supply}}{\eta \text{fan supply}} + \frac{\Delta P \text{ exhaust}}{\eta \text{fan exhaust}}$$

$$SFPint = \frac{220 \text{ Pa}}{0.59} + \frac{200 \text{ Pa}}{0.58}$$

SFPint = 718 $W/m^3/s$

E = Bonus EFF
F = O when both filters has been taken into consideration
q_{nom} = Airflow in m^3/s

ECO DESIGN DIAGRAM



ACCUAIR SIZES

UNIT ON TOP OF EACH OTHER

Height	Width	Lenght
1135 mm	600 - 2400 mm	1510-1810 mm
1465 mm	600 - 2400 mm	1510-1810 mm
1795 mm	600 - 2400 mm	1510-1810 mm
2125 mm	600 - 2400 mm	1510-1810 mm
2455 mm	600 - 2400 mm	1510-1810 mm
2505 mm	600 - 2400 mm	1510-1810 mm

OTHER SIZES ON REQUEST

UNIT SIDE BY SIDE

Height	Width	Lenght
1135 mm	600 - 2400 mm	1510-1810 mm
1465 mm	600 - 2400 mm	1510-1810 mm
1795 mm	600 - 2400 mm	1510-1810 mm
2125 mm	600 - 2400 mm	1510-1810 mm
2455 mm	600 - 2400 mm	1510-1810 mm
2505 mm	600 - 2400 mm	1510-1810 mm

OTHER SIZES ON REQUEST

ALUMINIUM COUNTERFLOW HEAT EXCHANGER

PCF 18 | PCF 25 | PCF 30 | PCF 35 | PCF 45 | PCF 55 | PCF 62

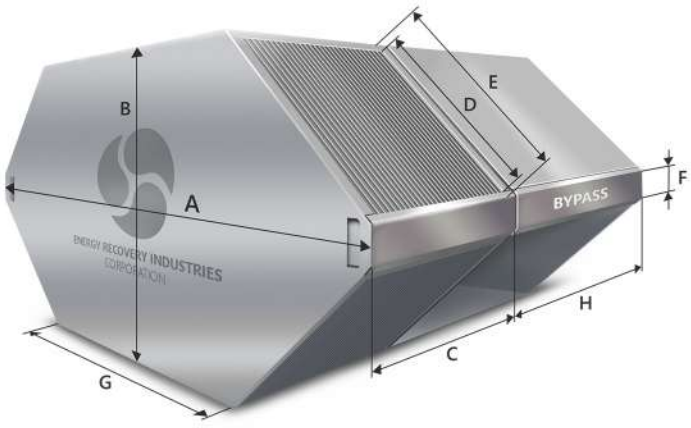
PCF SIZES

Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
PCF 18	397	172	100-1000	93	106	22 ★	248	110-1000
PCF 25	454	230	100-1000	134	147	22 ★	248	110-1000
PCF 30	496	271	100-1000	163	176	22 ★	248	110-1000
PCF 35	537	312	100-1000	193	205	22 ★	248	110-1000
PCF 45	619	394	100-1000	249	263	22 ★	248	110-1000
PCF 55	703	480	100-1000	306	322	22 ★	248	110-1000
PCF 62	758	534	100-1000	347	362	22 ★	248	110-1000

★ Tolerance: -1 mm +1 mm

MAIN ADVANTAGES

- Corrosion resistant aluminium
- No odor transfer
- No moisture transfer
- High efficiency by small sizes
- High stability
- High density
- No fire danger



COUNTERFLOW AIR LEAKAGE

Our mission is to provide the ventilation controlled unit producers, air tight exchanger. Therefor we are grant our aluminium counteflow heat exchangers with less than 0.2% air leakage.

DECLARATION

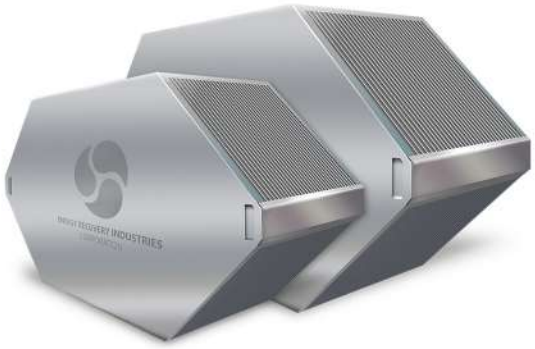
Herewith we declare that our counterflow heat exchanger described with code PCF are produced and tested in order to grant leakage below 0.2%.

PROCEDURE

Every 10 produced PCF we test random the PCF Counterflow before they are sent to customers.

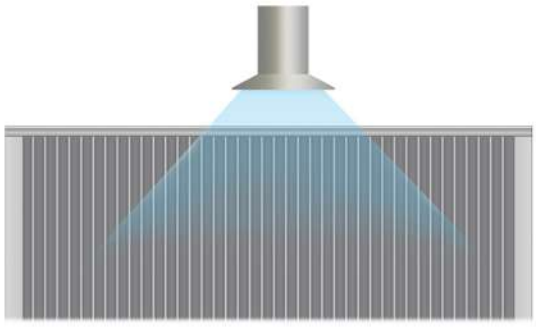
1. TESTING AND CERTIFICATION

In the optic of improving our products, our counterflow are tested to offer the lowest leakage possible.
Our PCF are tested for the tightness before dispatching the goods to final customer. Tightness test is inspired to the requirements of Eurovent certification.



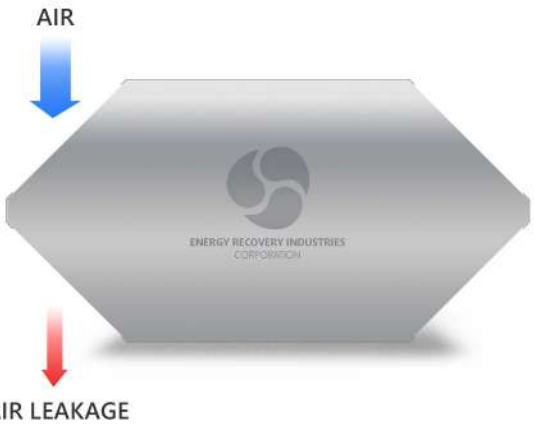
2. LEAKAGE TESTING

After the gluing process, we test random 1 of 10 exchangers and test the specimen on both sides with air pressure difference from 400 Pa for internal leakage (folding and separators)and with the same pressure for external leakage from the casing.

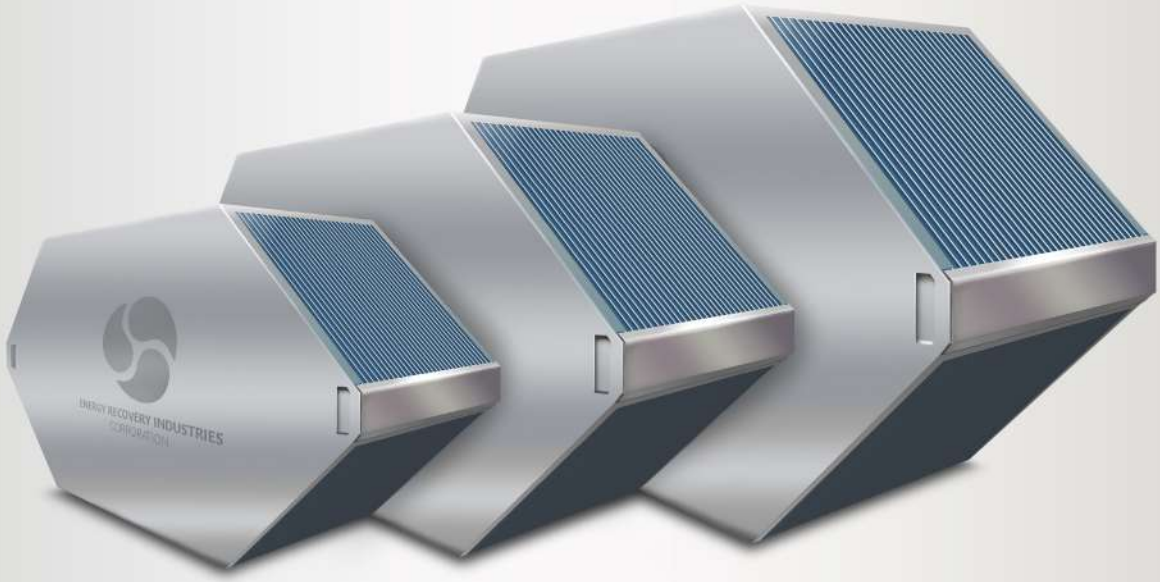


3. AIR LEAKAGE

Our pursuit of maximum leakage at pressure differance from 400 Pa is standardized on 0.2% from nominal air volume in m^3/h.



PCF HYDRO COUNTERFLOW HEAT EXCHANGER



PCF HYDRO

PCF Hydro series model can be used in winter as counterflow heat exchangers with an efficiency of 90%, as well in summer for an active evaporation cooling process.

COOLING LOAD IN BUILDINGS

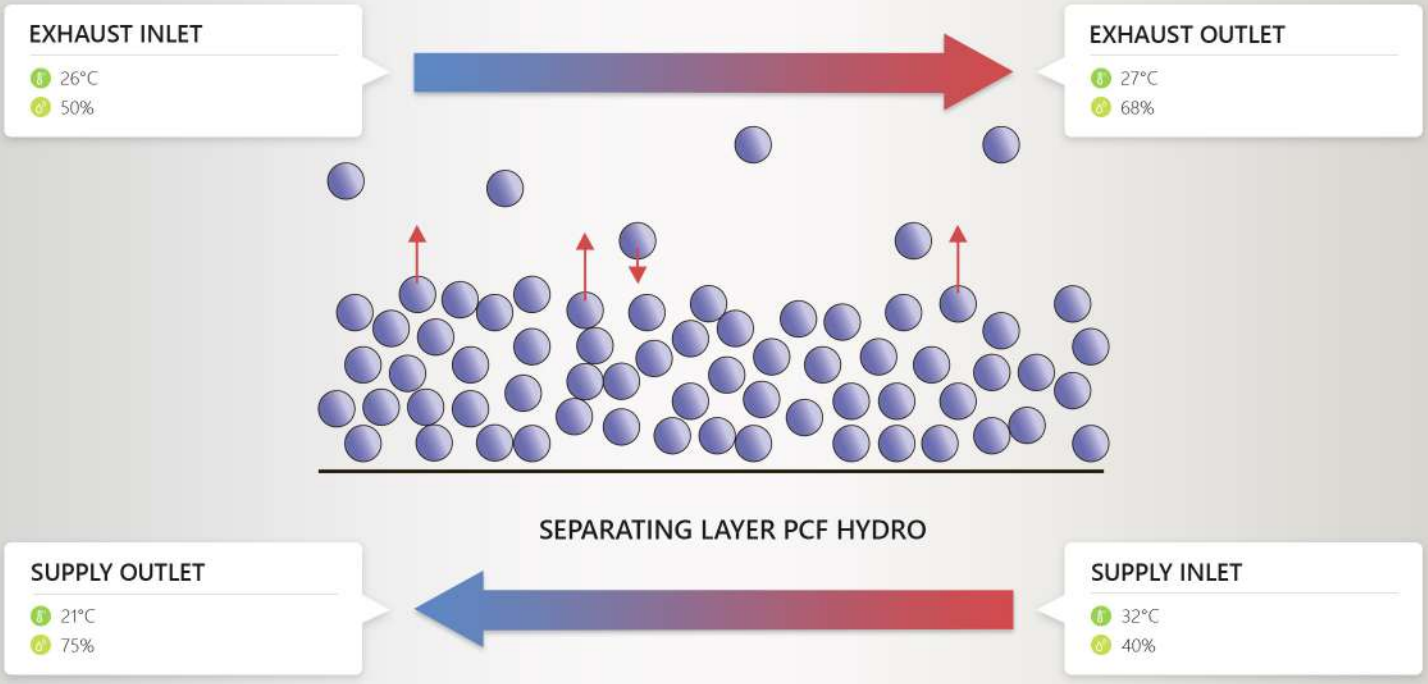
Due to the thicker building envelope we have more and more application of ventilation systems. But in the small and medium air ventilation systems there are no active cooling systems. The warm load during hot summer days can not be compensated through the passive cooling of the counterflow heat exchanger. The consequence is that rooms are overheated air ventilation system doesn't work correctly with a negative impact on people. This situation is typical in offices with negative consequences on concentration and work capacities.

SOLUTION WITH PCF HYDRO

PCF Hydro exchangers have a special coating that allow in summer to be sprayed with water on the exhaust air side of the plate. In this way we have a condensation effect that cool the supply air till 11°C. Since ancient times the condensation effect of water have been used for cooling proposes.

The biggest advantage is there is almost no consumption of electrical power. This allows using these systems also in older buildings without the necessity to change the previous electrical system.

PCF HYDRO WORKING PRINCIPLE



DIRECT EVAPORATING COOLING

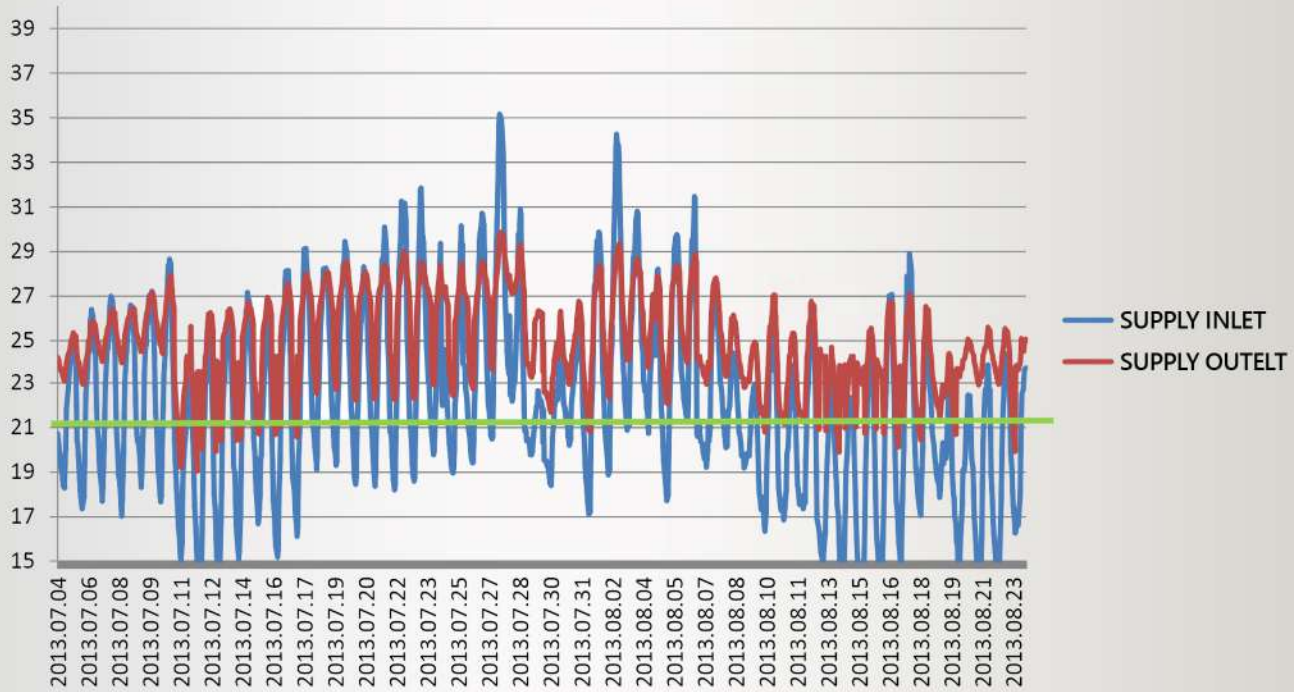
The evaporating cooling works on a very simple principle. The water sprayed on the exhaust side evaporates as it is heated from the very warm outside air. During the transformation from water in steam with 19 liter water it's possible to reach a cooling performance of 1 kW.

HYGIENE

Applying cooling water on the exhaust side, thanks to the waterproofed PCF Hydro counterflow plates there is no possibility that water arrives on the supply side.
Water remaining is canalized in a condensation tub and then hygienically removed through a sewage system.

PCF HYDRO FOR DOMESTIC AIR VENTILATION SYSTEMS

TEMPERATURE CURVE OF A DOMESTIC VENTILATIONS SYSTEM WITH 85% EFFICIENCY



SUMMER AND WINTER AIR COMFORT

In traditional domestic ventilation systems with counterflow plates, with outside temperatures of 35°C the supply air temperatures reaches peaks of 30°C (red line).

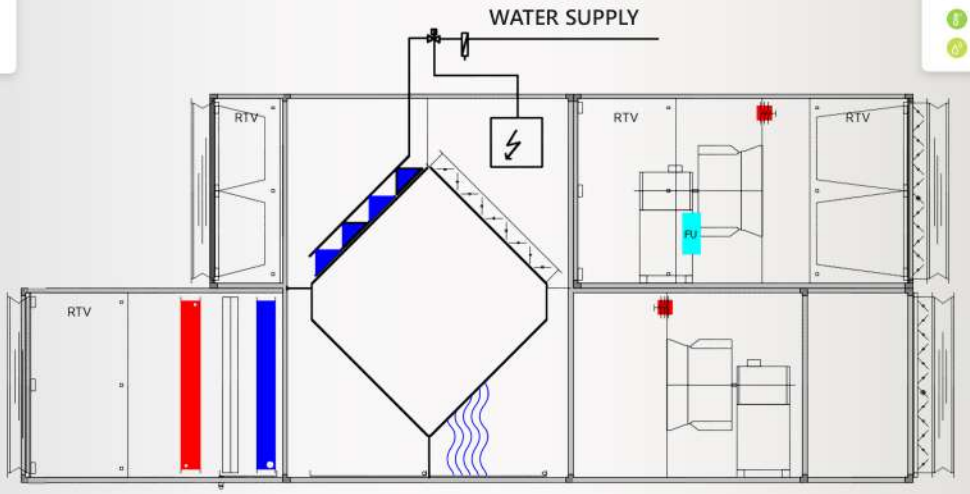
PCF HYDRO ACTIVE COOLING

Spraying water on the exhaust air it's possible to keep the supply air temperatures on a constant value 21°C (green line). In this way it's possible to bring fresh and comfort air in the buildings even during hot summer days.

PCF HYDRO FOR VENTILATION SYSTEMS TILL 5000 M³/H

EXHAUST SIDE
- 26°C
- 50%

SUPPLY INLET
- 32°C
- 40%



SUPPLY SIDE
- 16°C
- 99%

SUPPLY OUTLET
- 21°C
- 75%

EXHAUST OUTLET
- 27°C
- 68%

PCF HYDRO FOR HVAC

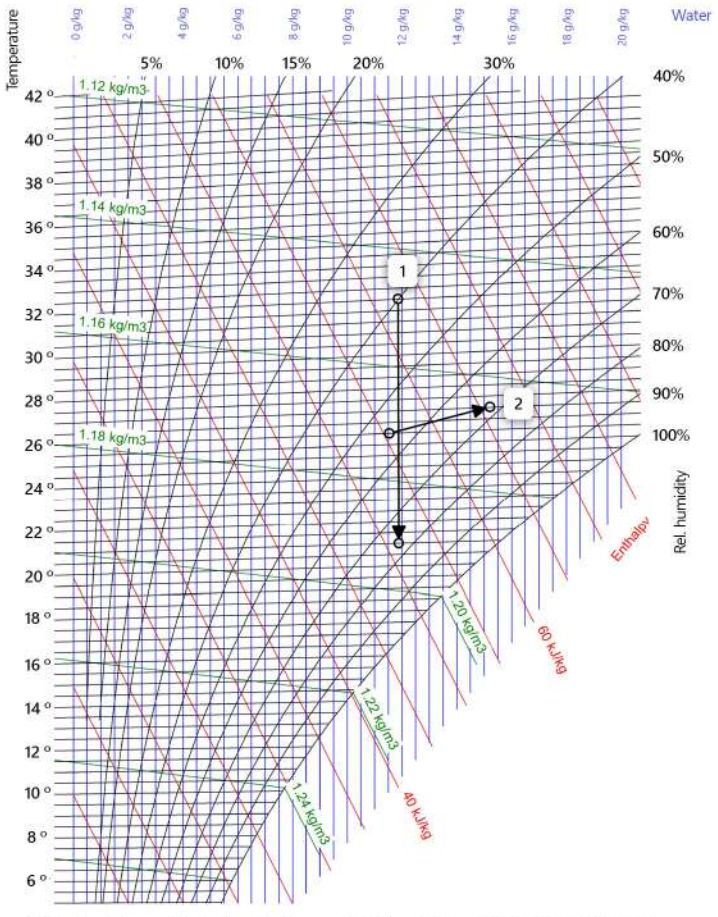
In big air ventilation systems the counterflow plates are sprayed with water through fix nozzles. An electronical device assures the correct application of water quantity on the plate's surface according specific necessities.

PCF HYDRO IN HX DIAGRAM

In the hx diagram the PCF Hydro on the supply side behaves like a cooler. In main cases the active evaporative cooling is more than sufficient to grant a comfort supply air even in very hot summer days.

EXTREME OUTSIDE TEMPERATURES

A very important advantage of this system is that in extreme outside temperature conditions over 38°C, it's possible to improve the cooling performances simply adding more water.



Mollier-h-x-Diagram for air humid - Pressure 1.013 bar (0.000 m / 20.000 °C / 40.000 % rH)

PCF KOMBI SIZES UP TO 40,000 M³/H

PCF-K 35 | PCF-K 45 | PCF-K 55 | PCF-K 62 | PCF-K 80 | PCF-K 95 | PCF-K 110

ABOUT PCF KOMBI

Nowdays the market tendency request more and more high efficiency unit to fulfill the increasing demand. We have developed a system which enable to increase the air volume reducing the space. In our kombi unit the air distribution makes it possible to connect 2 same types of heat exchanger in parallel. The air flow rate is doubled for the parallel circuit. The whole combination package is made of seawater resistant aluminium. The sides are completely smooth and therefore easy to build a side by side. On request a program for efficiency calculation is available.

PCF KOMBI SIZES

Type	A (mm)	B (mm)	C max.	D (mm)	E (mm)	F (mm)	G (mm)
PCF-K 35	899	674	1000	444	458	30 ★	254
PCF-K 45	1040	815	1000	542	556	30 ★	254
PCF-K 55	1182	959	1000	642	656	30 ★	254
PCF-K 62	1314	1089	1000	739	753	30 ★	254
PCF-K 80	1600	1376	1000	938	952	30 ★	254
PCF-K 95	1887	1662	1000	1141	1155	30 ★	254
PCF-K 110	2165	1945	1000	1339	1353	30 ★	254

☆ Tolerance: -1 mm +2 mm ★ Tolerance: -1 mm +3 mm

NEW IN 2016

New in 2016 the Counterflow Kombi Heat Exchanger with Bypass and Damper System. The complete system, ready to install into the air handling unit.

KOMBI COUNTERFLOW HEAT EXCHANGERS FOR HVAC VENTILATION SYSTEMS

HVAC VENTILATION SYSTEMS UP TO 40.000 M³/H

HVAC VENTILATION SYSTEM WITH KOMBI COUNTERFLOW HEAT EXCHANGER

The kombi counterflow heat exchanger from company ERI Corporation has been specifically designed to use the advantages of the counterflow exchanger principle in large ventilation systems.

PLANNING AND PRODUCT SAFETY

With our PCF Kombi counterflow heat exchangers we already fulfill easily all the guideline of ECO design 2018.

The directive allows through the high efficiency values of the heat exchangers to compensate with the electrical consumption values of the fans. In this way, with a dry efficiency of 80%, it's possible to design compact air handling units.

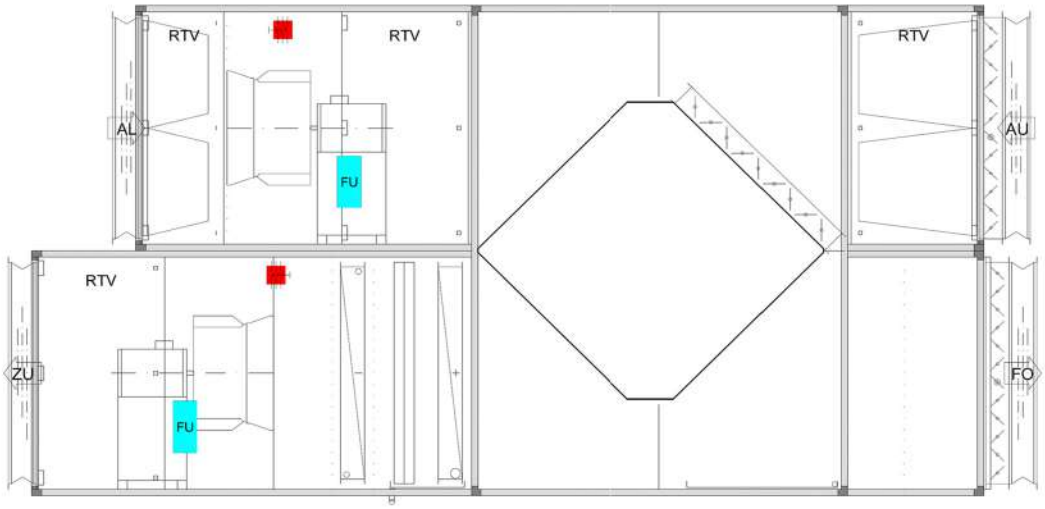
ECO DESIGN GUIDELINE 1253

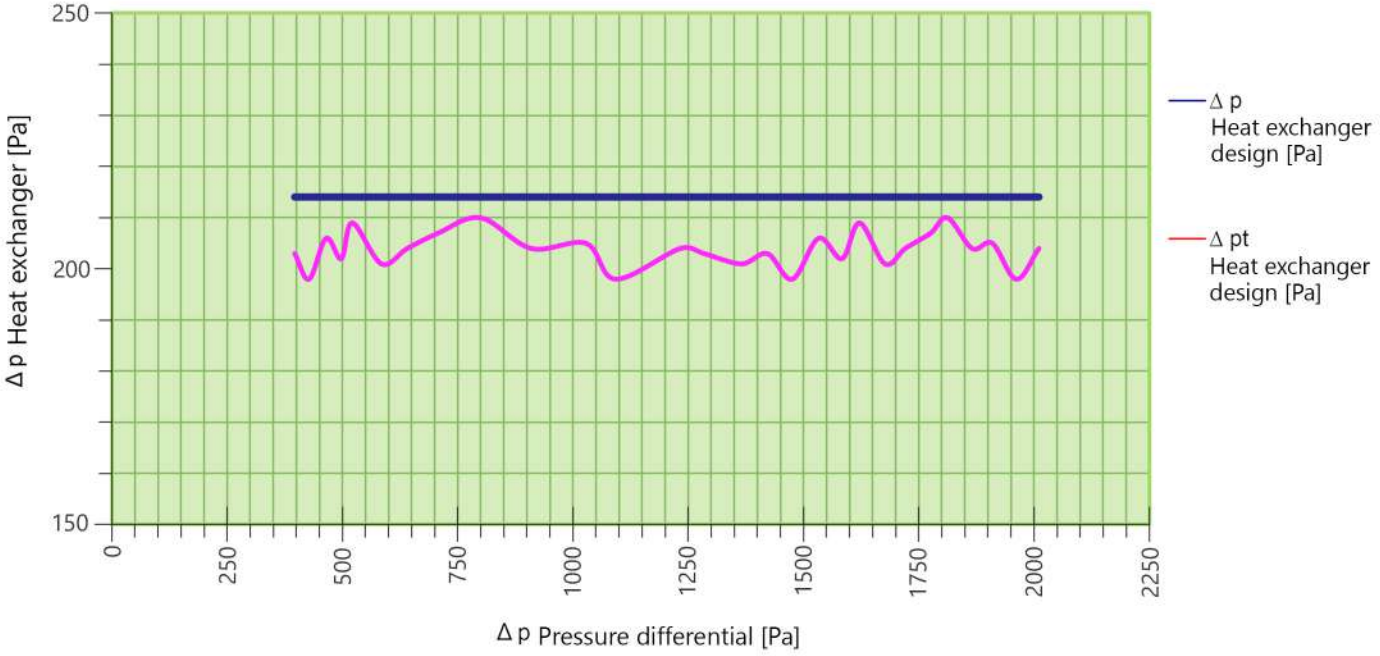
Starting from 01.01.2016 will enter into force the ECO design directive of the European Commission for the HVAC ventilation systems. These directives will be even more restrictive starting from 01.01.2018.

REQUIREMENTS EFFICIENCY

2016 Minimum efficiency value 67%
2018 Minimum efficiency value 73%

DIFFERENTIAL PRESSURE RESISTANCE





DIFFERENTIAL PRESSURE MEASURES FOR COUNTERFLOW KOMBI HEAT EXCHANGERS

In order to be used for large ventilation systems the heat exchangers have to withstand to the high pressure differential of the fans. With test measurements till 2000 Pa our kombi heat exchangers had not structure deformation. The pressure drop of the heat exchanger was measured constant at 2500 m^3/h.

TECHNICAL SELECTION ACCORDING ECO DESIGN DIRECTIVE 1253

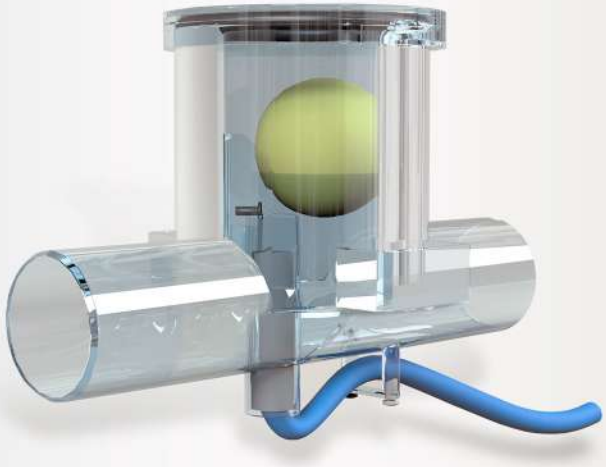
Casing dimension B x H	Collocation	Nominal air flow In m^3/h	Requirement SVL int Limit	Equipment value SVL int	Type	Height In mm	Lenght In mm	Width In mm
610 x 610	One above the other	2700	1116 W/m^3s	988 W/m^3s	PCF-K-62	1089	1314	500
915 x 610	One above the other	4000	1053 W/m^3s	1021 W/m^3s	PCF-K-62	1089	1314	800
1220 x 610	One above the other	5300	1014 W/m^3s	987 W/m^3s	PCF-K-62	1089	1314	1100
915 x 915	One above the other	5500	1010 W/m^3s	981 W/m^3s	PCF-K-95	1662	1887	800
1220 x 915	One above the other	7500	988 W/m^3s	933 W/m^3s	PCF-K-110	1945	2165	800
1525 x 915	One above the other	9000	1018 W/m^3s	922 W/m^3s	PCF-K-110	1945	2165	1350
1830 x 915	One above the other	11500	1059 W/m^3s	981 W/m^3s	PCF-K-110	1945	2165	1600
2135 x 1220	One above the other	14000	1059 W/m^3s	993 W/m^3s	PCF-K-110	1945	2165	1850
2440 x 1220	One above the other	17000	1161 W/m^3s	1006 W/m^3s	PCF-K-110	1945	2165	2200
3000 x 1220	One above the other	20000	1224 W/m^3s	996 W/m^3s	PCF-K-110	1945	2165	2700

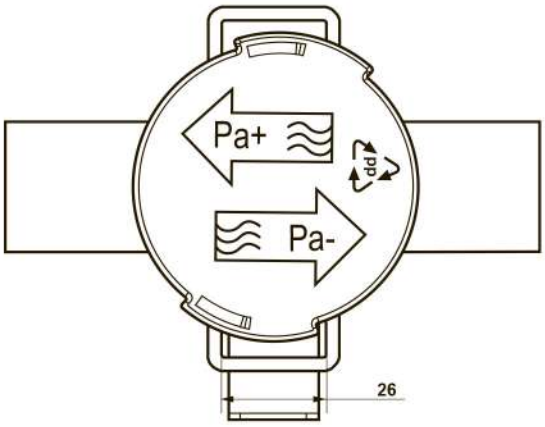
Basics: Fan efficiency static 58.3%. Duct pressure loss 300 Pa, Pannel Filter F5 and F7

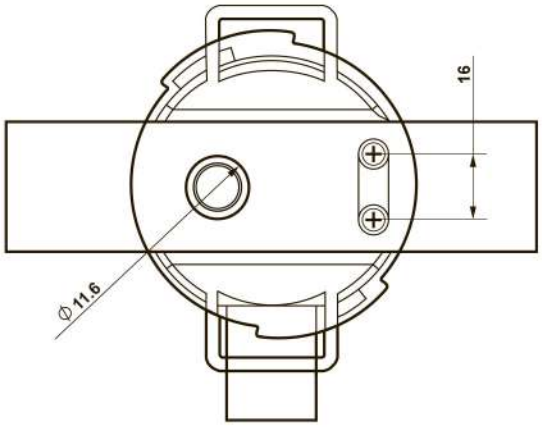
Casing dimension B x H	Collocation	Nominal air flow In m^3/h	Requirement SVL int Limit	Equipment value SVL int	Type	Height In mm	Lenght In mm	Width In mm
1830 x 1220	Side by side	16.000	950 W/m^3s	868 W/m^3s	PCF-K-62	1089	1314	3500
2135 x 1220	Side by side	17.000	956 W/m^3s	858 W/m^3s	PCF-K-62	1089	1314	4000
2440 x 1220	Side by side	20.000	944 W/m^3s	870 W/m^3s	PCF-K-62	1089	1314	4600
1525 x 1525	Side by side	15.000	956 W/m^3s	870 W/m^3s	PCF-K-80	1376	1600	2900
1830 x 1525	Side by side	18.000	959 W/m^3s	908 W/m^3s	PCF-K-80	1376	1600	3500
2135 x 2135	Side by side	22.000	953 W/m^3s	936 W/m^3s	PCF-K-80	1376	1600	4100
2440 x 1525	Side by side	25.000	956 W/m^3s	933 W/m^3s	PCF-K-80	1376	1600	4700
3100 x 1525	Side by side	32.000	953 W/m^3s	940 W/m^3s	PCF-K-80	1376	1800	6000
1830 x 1830	Side by side	23.000	953 W/m^3s	937 W/m^3s	PCF-K-95	1662	1887	3500
2185 x 1830	Side by side	27.000	956 W/m^3s	936 W/m^3s	PCF-K-95	1662	1887	4200
2440 x 1830	Side by side	30.000	953 W/m^3s	930 W/m^3s	PCF-K-95	1662	1887	4600
3100 x 1830	Side by side	38.000	959 W/m^3s	895 W/m^3s	PCF-K-95	1862	1887	6000
2440 x 2135	Side by side	34.000	962 W/m^3s	951 W/m^3s	PCF-K-110	1945	2165	4600
2440 x 2440	Side by side	40.000	963 W/m^3s	933 W/m^3s	PCF-K-110	1945	2165	4600

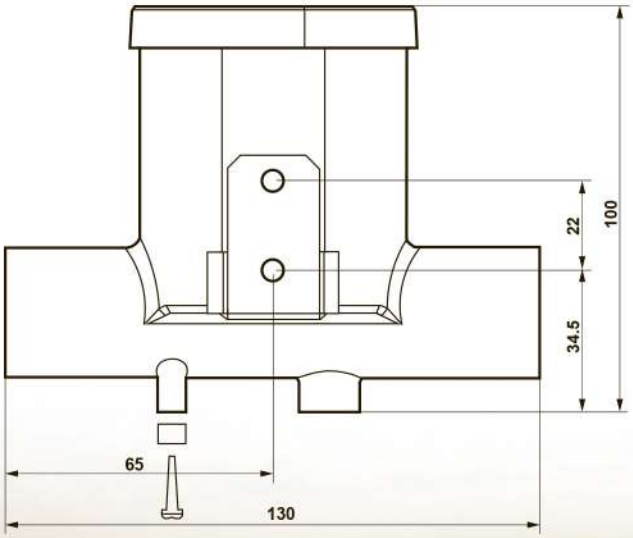
Basics: Fan efficiency static till 20.000 m^3/h 58.3 %, till 38.000 m^3/h 60 %, 40.000 m^3/h 62%
Duct pressure loss 300 Pa, Panel Filter F5 and F7

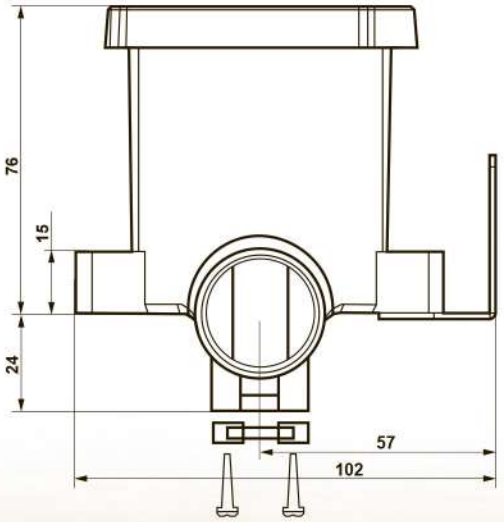
BALL SIPHON











BALL SIPHON

ADVANTAGES

The size is very compact, the valve, in absence of condense water close the passage, avoiding bacteria and dirty air coming into the unit.

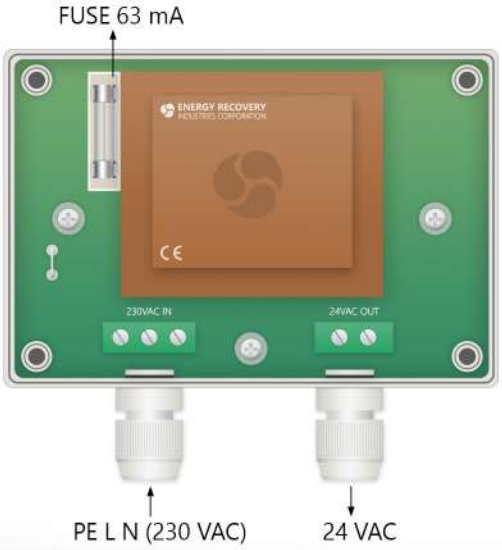
It works in both conditions Pa+ or even Pa- Pressure higher than 600 Pa. It is the perfect solution for compact unit. It is possible to add a heater at 230 V or 24 V in case the units are projected for external application to avoid the frost danger.

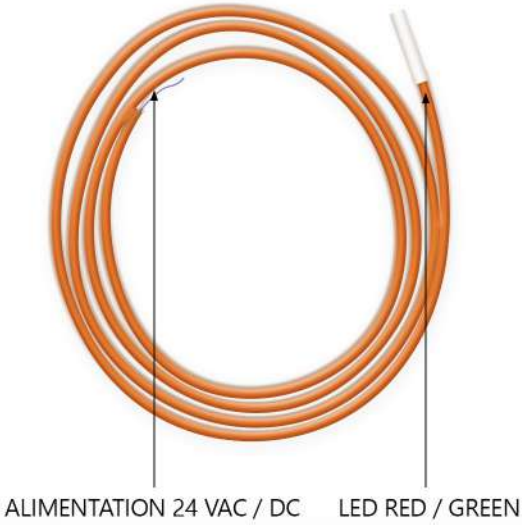
TECHNICAL DATA:

BIE5080		
Supply voltage	230	VAC
Output voltage	20-32	VAC

BIE5070		
Supply voltage	24	VAC / DC
Heating resistors	100	OHM

Switching temperature into at 3°C and at 7°C
Green LED = on
Red = warm





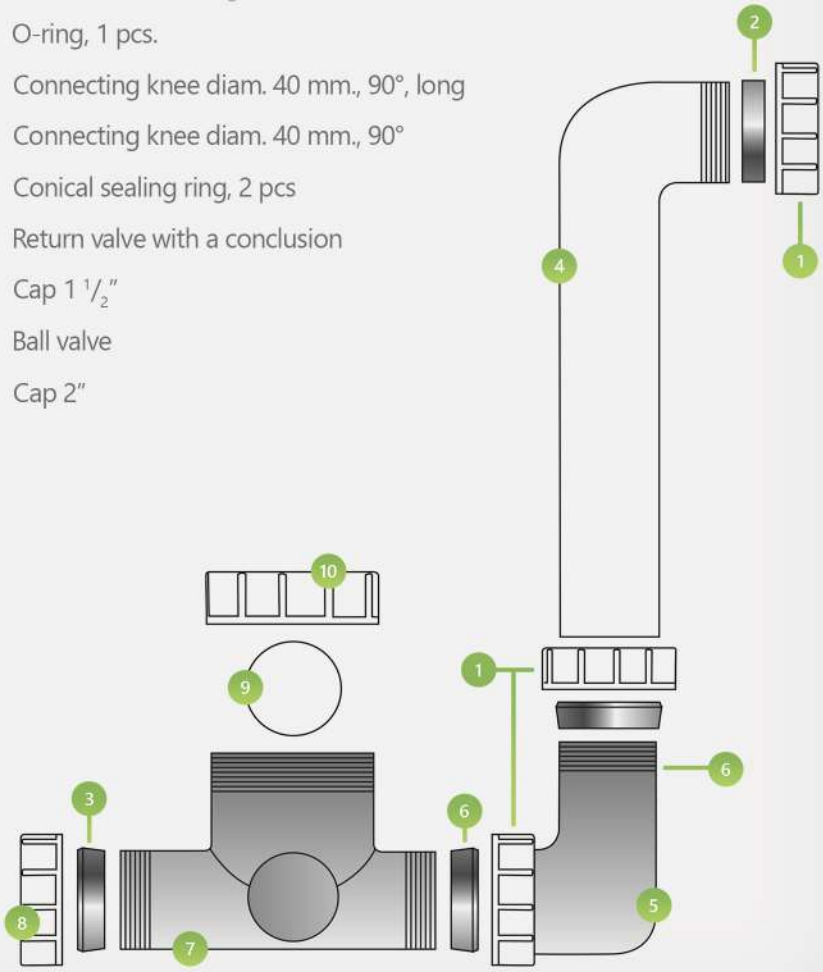
MK SIPHON

A connector made from propylene, resistant to corrosion and decay is used to drain the condensate in the air conditioning systems of low pressure. The product in the standard package is designed for the maximum pressure 2200 Pa. In the case of extremely low pressure, extension tube or knee can be shortened, or may be placed in inclined position (see size table). Built-in ball valve prevents the suction of air through the conclusion in the absence of condensate. This connector is easy to maintain and care. When connect socket with connector, socket should be moisten with water and soap. Each condensate drain system should be provided with a separate siphon. Pipes after the connector may be mounted on the market range tubes.

MK SIPHON SCHEMA

Special connector is used to draincondensate in air conditioning and ventilation systems

1. Internal screw 1 1 $^1/_2$ - 2 pcs.
2. Rubber adapter 1 $^1/_2$" - 1" - 1pcs.
3. O-ring, 1 pcs.
4. Connecting knee diam. 40 mm., 90°, long
5. Connecting knee diam. 40 mm., 90°
6. Conical sealing ring, 2 pcs
7. Return valve with a conclusion
8. Cap 1 $^1/_2$"
9. Ball valve
10. Cap 2"



SIZE TABLE

The height of the connector is set depending on the pressure in the system. Extension tube or connecting knee can be shortened in accordance with this table.

PRESSURE IN THE SYSTEM	HEIGHT OF CONNECTOR
2200 Pa	280 mm
2100 Pa	270 mm
2000 Pa	260 mm
1900 Pa	250 mm
1800 Pa	240 mm
1700 Pa	230 mm
1600 Pa	220 mm
1500 Pa	210 mm
1400 Pa	200 mm
1300 Pa	190 mm
1200 Pa	180 mm
1100 Pa	170 mm
1000 Pa	160 mm
800 Pa	140 mm
600 Pa	120 mm
400 Pa	100 mm

MK SIPHON - SECTION SIDE TYPE AK (AK-S)

Item No.: 32 404 00 S 004 / 10 (white)
Item No.: 32 404 22 S 001 / 12 (transparent)

DESCRIPTION

1. To ensure an undisturbed water outlet and prevent the suction of false air all condensate outlets and other drainage points must be provided with siphons. Each siphon must end in a funnel.

2. The AK-S type Siphon is only suitable for draining areas with negative pressure. It fills and closes automatically and prevents sucking itself empty in case of pressure surges.

3. The max. height of the standpipe that consists of elbow (5) and immersion pipe (6) is 300 mm (Fig. 1). This allows a max. negative pressure of ca. 2.900 Pa at the drainage nozzle of the unit. If the negative pressure is less than that the lenght of the immersion pipe (6) can be shortened appropriately (Table 2).

4. The construction height can also be reduced by installing the standpipe in a sloped position.

5. The distance between the middle of the intake of the siphon and the floor must be ≥ R (min. 140 mm) (Fig. 4).

6. The intake to the siphon is carried out at one of the two threaded connections (1½") of the non-return valve (9). The unused threaded connection must be closed using the rubber disk (10) and end cap (11).

7. The siphon is connected to the drainage nozzle using the provided connection piece (2) and one of the two rubber sleeves (1a or 1b). Condensate outlets of 40 mm diameter are directly connected to the crimp screwing of elbow (5).

8. The second immersion pipe (6) can be used to provide an extension of the outlet. To be ordered separately, if required.

9. Attention must be paid (at the pipes between the siphon and the outlet) that ventilation, diameter and slope are sufficient and in accordance with the standards of the sanitary engineering. The outlet must not be connected directly to a sewage pipe but shall be able to drain freely.

10. The siphon can be drained via the end cap (11), if required.

ATTENTION: When the end cap is closed again later, rubber disk (10) must be put in again.

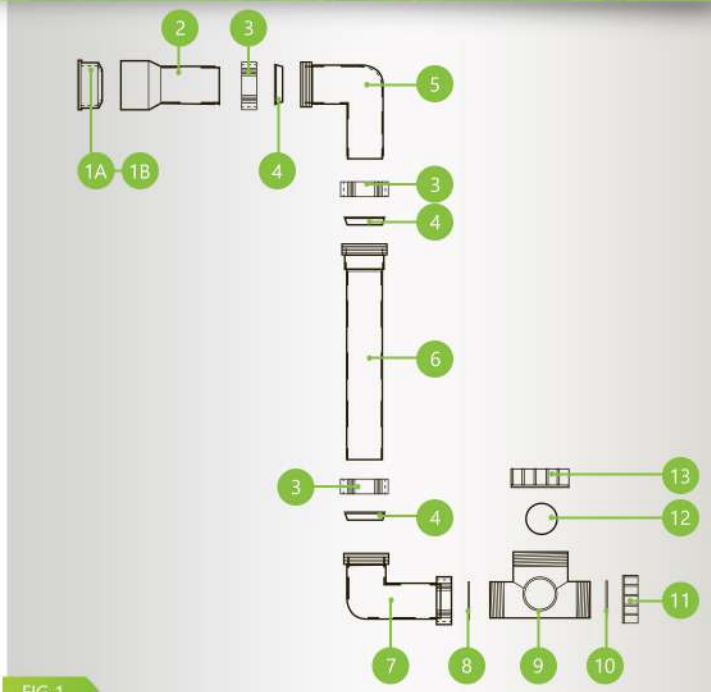


FIG 1

1A. RUBBER SLEEVE DN 30 / 50
1B. IBRUBBER SLEEVE DN 40 / 50
2. CONNECTION PIECE DN 40 / 40
3. UNION NUT V/2"
4. COMPOSITE SEALING D = 40 (CONICAL)
5. ELBOW D = 40
6. IMMERSION PIPE D = 40, L = 250 MM
7. CONNECTION ELBOW D = 40
8. SEALING 1½" (FLAT)
9. NON-RETURN VALVE
10. RUBBER DISK D = 48
11. END CAP 1½"
12. NON-RETURN BALL
13. END CAP 2"

11. A connection to outlets with a threaded pipe according to DIN 2240 is possible when the provided connection pieces are used (Table 1).

12. Before the plug connection is screwed, the union nuts with sliding ring and sealing must be installed on the respective pipe sections. Then screwing is possible (do not put the pipe sections in the preassembled union nuts first).

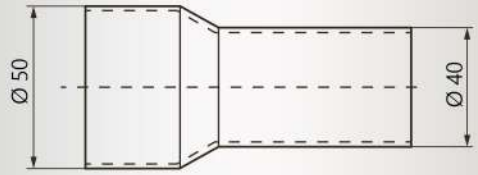
ASSEMBLY / CALCULATION

For assembly (see Fig. 1). Attention must be paid dur-ing assembly that the pipes are always inserted into the nozzle as far as they will go.
The base frame height (GR) can be calculated auto-matically on our homepage.

MK SIPHON - SUCTION SIDE TYPE AK (AK-S)

Item No.: 32 404 00 S 004 / 10 (white)
Item No.: 32 404 22 S 001 / 12 (transparent)

CONNECTION PIECE (2)



RUBBER SLEEVE (1A) (1B)

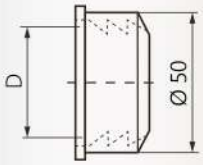


FIG 2

OUTLET	D (MM)	RUBBER SLEEVE
3/4"	28 - 34	1b
1"	28 - 34	1b
1 1/4"	38 - 44	1a
1 1/2"	*	*

Table 1 * Without adapter. Sealing with permanent elastic silicone material.

NEGATIVE PRESSURE (P) IN DRAINAGE NOZZLE [PA]	SHORTENING OF	
	IMMERSION PIPE (6) [MM]	ELBOW (5) [MM]
2900	-	-
2400	50	-
2300	60	-
2200	70	-
2100	80	-
2000	90	-
1900	100	-
1800	110	-
1700	120	-
1600	130	-
1500	140	-
1400	150	-
1300	160	-
1200	170	-
1100	180	-
1000	180	10
900	180	20
700	without	-
600	without	10
500	without	20

Table 2

EXAMPLE:

Negative pressure at drainage nozzle = 1.500 Pa and distance A = 70 mm (owing to the design dimension R must be min. 140 mm).

$$R = \frac{P}{10} + A = \frac{1.500}{10} + 70 = 220 \text{ (mm)}$$

$$GR = R - A = 220 - 70 = 150 \text{ (mm)}$$

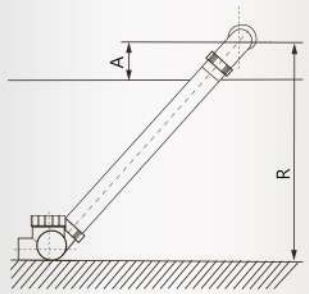


FIG 3

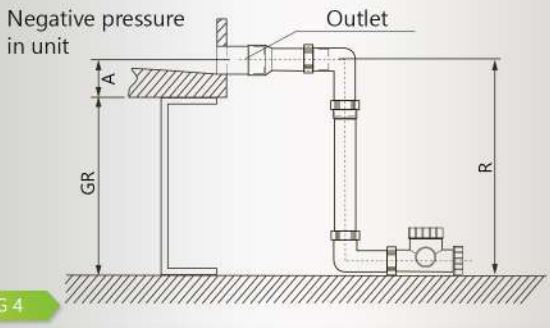


FIG 4

NOTE: If the drainage nozzle is led through the bottom of the unit, distance A must have a negative sign when entered in the formula for calculating the base frame height.

SPECIAL SIPHON - PRESSURE SIDE TYPE AK (AK-D)

The special siphon Type AK-D - is a manually filled siphon for draining condensate from the chiller, humidifier or other wet areas in air-handling units (AH units) that operate at positive pressure compared to the environment. Considering a safety factor of 1.5 for pressure surges during plant operation (quick release flaps etc.), the height of the pipes is sufficient for a max. positive pressure of 1630 Pa. An extension of the two immersion pipes (6) and (9) for higher pressures is possible. To be ordered separately, if required (Fig. 1).
The two immersion pipes (6) and (9) can be shortened accordingly for lower pressures.
For draining the components during the shutdown of the plant the outlet must be at a lower position than the intake.

DESCRIPTION

- Siphon AK-D type with end cap for filling and inspection purposes
- For draining components of AH units that operate at positive pressure compared to the environment
- Individual outlet construction and variable installation height
- Suitable for a max. positive pressure of P = 1630 Pa considering a safety factor of 1.5 for pressure fluctuations in the system
- Made of polypropylene (PP)
- Max. construction height 400 mm / outlet diameter 40 mm
- Water intake connection via crimp screwing or rubber sleeve for outlets of ¾", 1", 1¼" or 1½"

The foundation or base frame height (mm) must be adapted to the structure of the unit near the draining nozzle, the positive pressure P (Pa) and the pressure height H (mm) resulting from this.

EXAMPLE

Positive pressure at draining nozzle = 1000 Pa and distance A = 70 mm

$$H = \frac{P}{10} = \frac{1000}{10} = 100 \text{ (mm)}$$

The distance between the middle of the intake of the siphon and the floor must be ≥ R (min. 215 mm)

$$R = \frac{P \times 1{,}5}{10} + 115 \text{ mm (75 + 40 mm, Bild 3)}$$

$$R = \frac{1000 \times 1{,}5}{10} + 115 \text{ mm} = 265 \text{ mm}$$

This results in a minimum base frame height GR:

GR = R - A = 265 mm - 70 mm = 195 mm

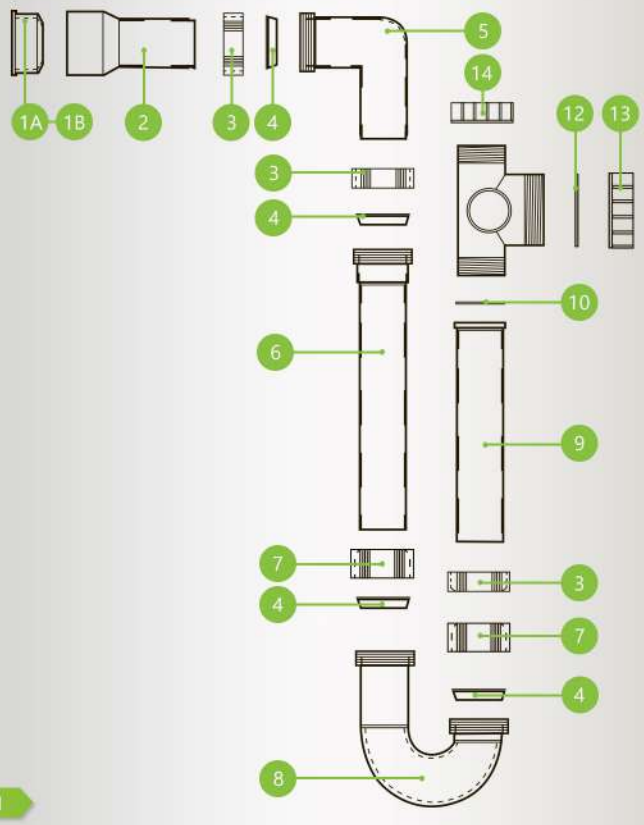


FIG 1

1A. 1A RUBBER SLEEVE DN 30 / 50
1B. IBRUBBER SLEEVE DN 40 / 50
2. CONNECTION PIECE DN 40 / 40
3. UNION NUT 1½"
4. COMPOSITE SEALING D = 40 (CONICAL)
5. ELBOW D = 40
6. IMMERSION PIPE D = 40, L = 250 MM
7. UNION NUT 1½" (LONG)
8. ELBOW 180°
9. IMMERSION PIPE D = 40, L = 200 MM
10. SEALING V/2" (FLAT)
11. T-PIECE WITH OUTLET
12. RUBBER DISK D = 58
13. END CAP 2"
14. END CAP 1½" FOR FILLING HOLE

ASSEMBLY / CALCULATION

One AK-D type siphon must be provided at each outlet on the pressure side of the unit.
For assembly (see Fig. 1). Attention must be paid during assembly that the pipes are always inserted into the nozzle as far as they will go.
The base frame height (GR) can be calculated automatically on our homepage.

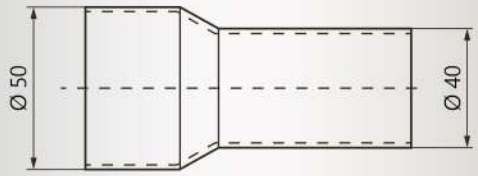
SPECIAL SIPHON - PRESSURE SIDE TYPE AK (AK-D)

The elbow (5) and the immersion pipes (6) and (9) must be adapted to the existing positive pressure. The connection piece (2) and the rubber sleeves (1a and 1b) for the ¾" to 1½" draining nozzles are included in the scope of supply. Do not connect the siphon directly to a drainage pipe, it shall be able to drain freely. If longer pipes are used between the siphon and the outlet, attention must be paid that ventilation, diameter and slope are sufficient and in accordance with the standards of the sanitary engineering. Before taking the VAC plant into operation, the siphon must be filled with water through the filling hole (end cap 14).

MAINTENANCE

The siphon must be checked in appropriate time intervals to prevent air losses in the VAC plant and should be refilled, if applicable.
The filling hole can also be used for cleaning purposes. The water outlet in the AH unit must be cleaned regularly. The drainage function must be checked in plants where condensate is produced.

CONNECTION PIECE (2)



RUBBER SLEEVE (1A) (1B)

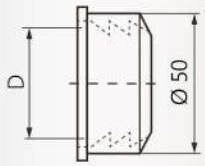


FIG 2

OUTLET	D (MM)	RUBBER SLEEVE
¾"	28 - 34	1b
1"	28 - 34	1b
1 ¼"	38 - 44	1a
1 ½"	*	*

Table 1 * Without adapter. Sealing with permanent elastic silicone material.

ATTENTION:

Immersion pipes (6) and (9) must always be shortened and extended equally! (max. shortening by 155 mm, therefore dimension R min.

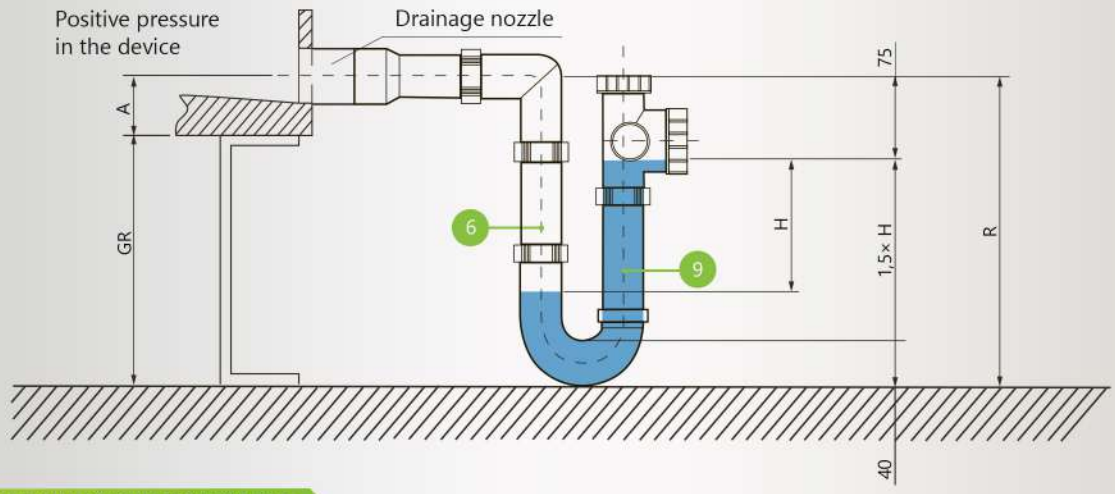


FIG 3 (TO SCALE WITH CALCULATION EXAMPLE)

NOTE: If the drainage nozzle is led through the bottom of the unit, distance A must have a negative sign when entered in the formula for calculating the base frame height.

SELECTION SOFTWARE

WE ARE CERTIFIED

EUROVENT CERTIFIED PERFORMANCE

COUNTERFLOW HEAT EXCHANGER CALCULATOR

COUNTERFLOW COMBI HEAT EXCHANGER CALCULATOR

DLL INSIDE airCalc AHU SELECTION SOFTWARE · CCSI HVAC Selection Software

SELECTION SOFTWARE

The calculation software calculates the necessary technical operating data of the AHU and is also available as stand alone Black Box or as dll which ready for integration into your running calculation system.

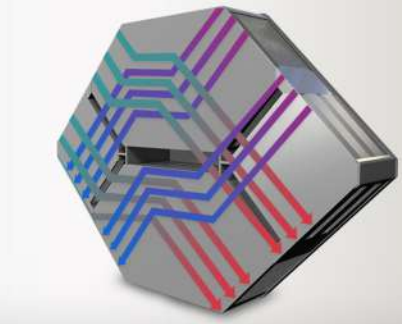
READY TO INTEGRATION

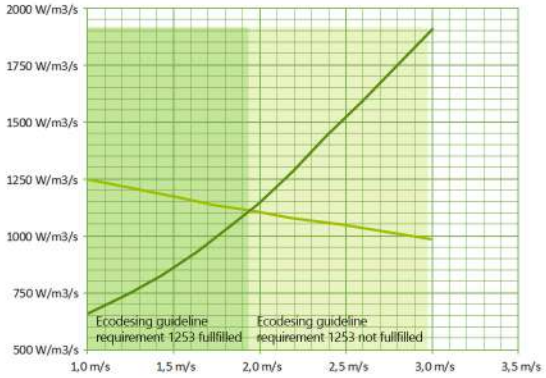
C++ · WPF · Microsoft Excel VBA · Microsoft .NET · Embarcadero Delphi 10.1 Berlin · NATIONAL INSTRUMENTS

AIRFLOW IN HVAC VENTILATION SYSTEM FROM 2018

COMPARISON AIRFLOWS IN DIFFERENT HEAT EXCHANGERS ACCORDING ECO DESIGN DIRECTIVE **1253**

COUNTERFLOW KOMBI HEAT EXCHANGER





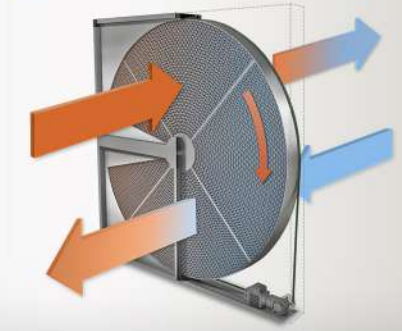
Heat recovery
+ Kombi counterflow heat exchangers Type 62/500
+ Fan k3g310bb4902
+ casing 612 x1220 mm
+ filter

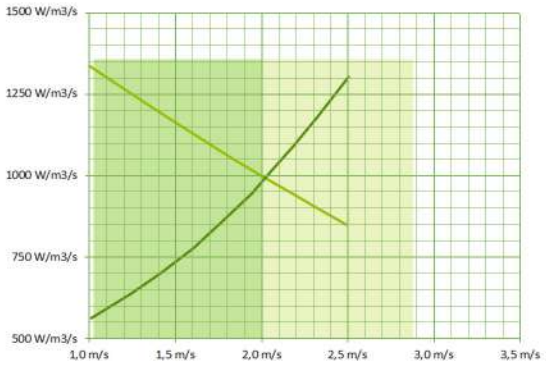
SVLint in W/m³/s
SVLint_limit in W/m³/s

Max airflow within the air handling unit:

1,97 m/s

ROTARY HEAT EXCHANGER





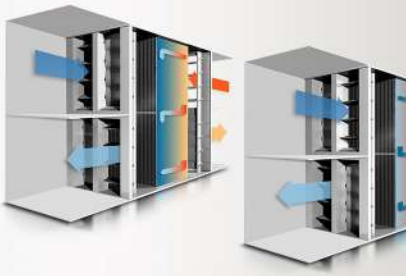
Heat recovery
+ Rotor heat recovery wheel PA 1,5 mm
+ Fan k3g310bb4902
+ casing 612 x1220 mm
+ filter

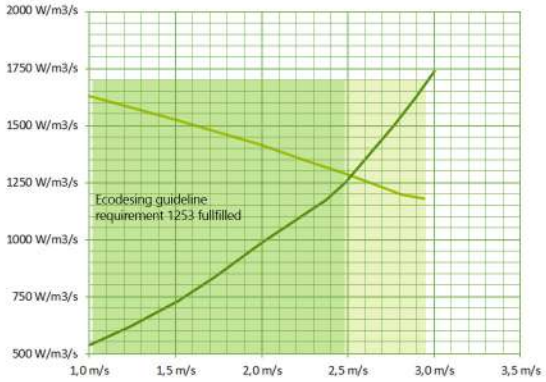
SVLint in W/m³/s
SVLint_limit in W/m³/s

Max airflow within the air handling unit:

2,10 m/s

ACCUAIR





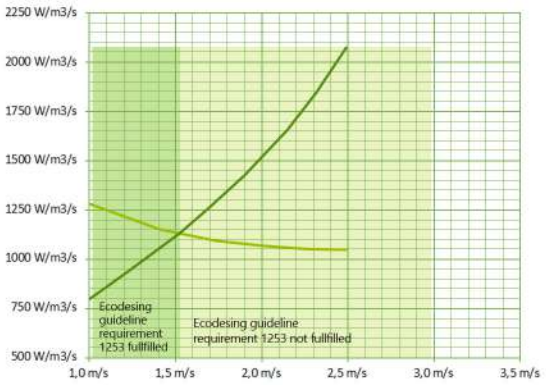
Heat recovery
+ storage heat exchanger PA 2,0 mm
+ Fan k3g310bb4902
+ casing 612 x1220 mm
+ filter

SVLint in W/m³/s
SVLint_limit in W/m³/s

Max airflow within the air handling unit:

2,50 m/s

CROSSFLOW HEAT EXCHANGER



Heat recovery
Crossflow heat exchanger type 850 x 850 PA 2 m, Type H2
+ Fan k3g310bb4902
+ casing 612 x1220 mm
+ filter

SVLint in W/m³/s
SVLint_limit in W/m³/s

Max airflow within the air handling unit:

1,55 m/s

CONTACTS

OUR SALES OFFICES AND REPRESENTATIVES ARE PLEASED TO HANDLE YOUR QUESTIONS AND ADVISE YOU.

PLEASE CONTACT US DIRECTLY

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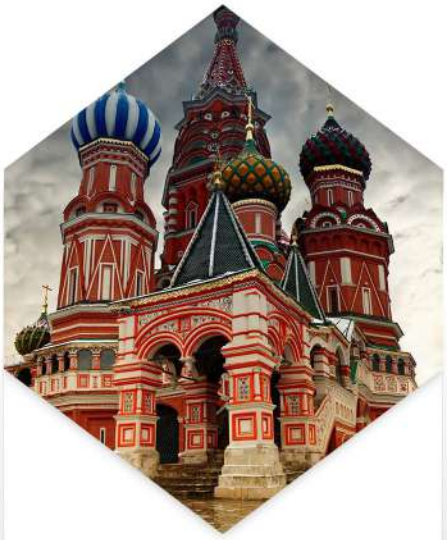

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ENERGY RECOVERY
INDUSTRIES CORPORATION