

☛ Main features
of the units:



1

1.6.1. Complementary Systems

◆ Fan Units with Energy Recovery, KPI

– What is a KPI

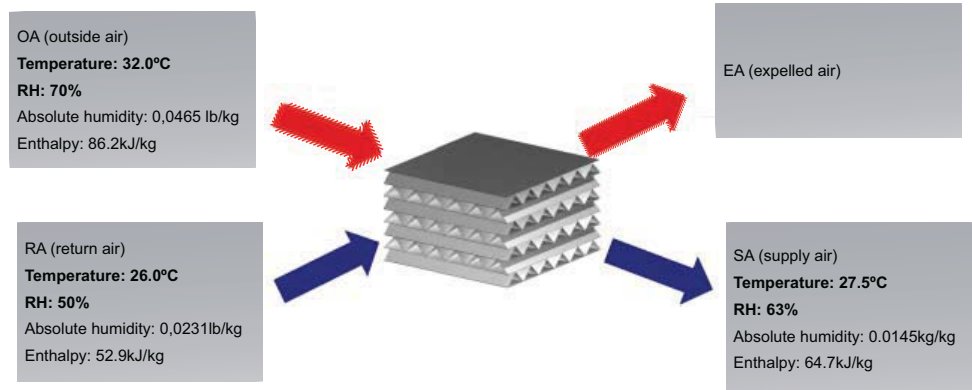
A KPI is a ventilation unit designed to renew the air from a room or area taking out the exhaust air and supplying fresh outdoor air. To reduce the effect of supplying outdoor air in a conditioned room with a big temperature gap between them, the KPI exchange temperature and humidity between both streams, which will make that the outdoor air had a temperature and humidity levels more similar to indoor conditions. The air treatment over outdoor fresh air before supplying leads to a reduction of the air conditioner system load requirement.

The part responsible of the exchange between both streams is the heat exchanger. The heat exchanger is a cross-flow sheet made of ultra-thin celluloid material that allows an energy exchange by crossing both streams without mixing.

The main benefit of a KPI unit versus other ventilation systems is the possibility to income outdoor air already processed to reduce its temperature and humidity differences with indoor conditions. This treatment reduces the air conditioner system load, which could mean a reduction up to 20% in the whole system power input.

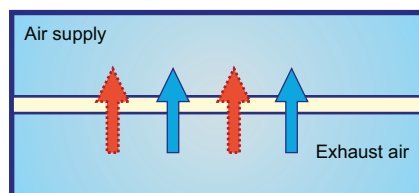
– High efficiency heat exchanger

The heat exchanger is a combination of celluloid ultra-thin plates of 46 µm. Between each plate there are fins of the same material that prevent of mixing both streams. The result is a cross flow of incoming and outgoing streams.

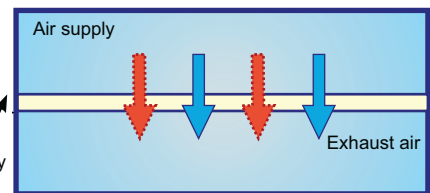


Being separated by the celluloid material, there is an enthalpy exchange between both streams by convection, always from the one with higher level, approaching the fresh air to indoor conditions.

Winter operation



Summer operation



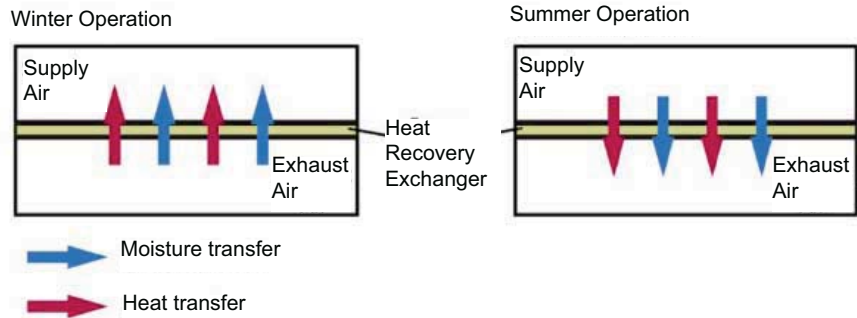
- Humidity transfer (KPI-(502~2002)E1E units)
- Heat transfer

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KPI units from 500 m³/h to 2000 m³/h have been designed considering the possibility of using them also with an aluminium heat exchanger instead of the factory supplied one in order to fulfil any installation requirement. On the other hand, the biggest unit of 3000 m³/h air flow has been designed only for using it with an aluminium heat exchanger.

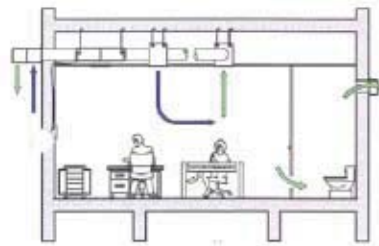
The aluminium heat exchanger principle is the same than for celluloid heat exchangers, but by changing the material the exchange of humidity is not performed, so only the temperature will be exchanged.



The fact of not exchanging humidity and the different properties of aluminium makes that the efficiency of the unit decreases in case of using the aluminium heat exchanger.

- Overload option

If the area to ventilate is a room with different uses depending the zone (dinner areas besides kitchens, rooms next to wet rooms,...) the KPI units can be set to perform an overload on the supplied air that avoids the flow of polluted air or smells.



By setting the remote controller the user could increase one tap the speed of the supplied air fan versus the exhausted air fan. The result is a higher supplying air flow versus the exhausted flow increasing the pressure of the room. This option could be also used in installations where additional extraction systems must be installed to fulfil local regulations. The increased supplied air flow would be able to balance the effect of these extraction systems looking for the best comfort conditions.

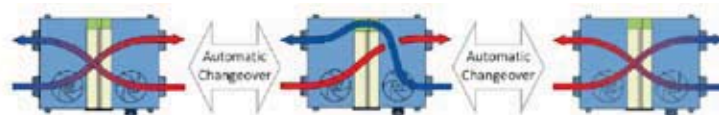
- Operation modes

The units from 500 m³/h to 2000 m³/h have two different operation modes: heat exchange mode and bypass mode.

- If the unit is set in heat exchange mode both streams will cross the heat exchanger element. All features of the unit are performed obtaining the maximum efficiency.
- In case of having an outdoor temperature very close to set indoor temperature, it could be better to avoid the exchange between both streams. For this situation, KPI units have a damper in exhausted stream that bypasses the heat exchanger element. The outdoor air is then supplied directly from outside.

For choosing between the two operation modes there are three options:

- Automatic mode: Depending indoor and outdoor air sensed temperature and set indoor temperature, it is the control itself that decides which mode is the most appropriate one.



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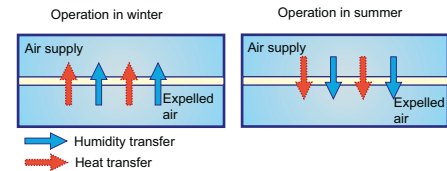
- Forced exchange mode: The dumper is always closed with no incidence of indoor and outdoor air temperatures.
- Free ventilation mode: The dumper will be always open, so the outdoor air will be introduced directly into the room at any temperature it could be.

- Main features of KPI design

- Range of units

A large range of units are available from 500 m³/h to 3000 m³/h nominal air flows.

Model	Flow (m ³ /h)	Temperature Exchange Efficiency
KPI-502E1E	500	75
KPI-802E1E	800	75
KPI-1002E1E	1,000	78
KPI-1502E1E	1,500	78
KPI-2002E1E	2,000	78



• KPI models with heat recovery:

Model	Flow (m ³ /h)	Temperature Exchange Efficiency
KPI-3002H1E	3,000	54

- Installation

KPI units are very easy to install. It is only necessary the installation of the unit itself in the false ceiling or wherever considered and the installation of the air ducts. As this unit don't have any evaporator no piping work is required except for the drain connection (on the bottom of the unit).

Integrated in a system, the KPI could be connected to charge/discharge grilles or to indoor units available to work with outdoor air.

- Operation flexibility

KPI units have been designed looking for the highest operation flexibility:

- Possibility to change the celluloid heat exchanger by aluminium heat exchanger when it is necessary to avoid the humidity transfer or when the heat exchanger servicing must be reduced for any reason.
- There are three speeds selectable from the remote controller: high, medium and low. In units from 500 m³/h to 1500 m³/h there is also available an extra-high speed for installations where a higher pressure is required.
- Three operation modes: automatic mode, forced heat exchange and free ventilation mode.

i NOTE:

When the indoor unit air is supplied from a KPI unit the working range of the indoor unit should be considered.

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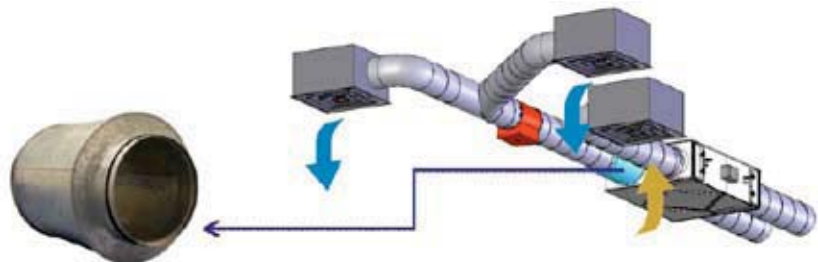
- Servicing:

All the parts subjected to servicing are completely accessible from outside the unit, with no necessity to uninstall it. The fan motors are accessible from the bottom of the unit, and the heat exchanger and air filter are accessible from one side of the unit, both of them by the same service cover. E-box is just next to heat exchanger/ air filters service cover



- Noise level. Sound attenuator accessory

Discharge sound level is very important in this kind of units because it is the sound introduced into the room that the people will sense. In addition to an accurate design for minimising the ventilation sound emitted from the unit, there is available a range of sound attenuators easily attachable to the unit with no need of an extra-installation work. The effect of the sound attenuator is a reduction of 7dB(A) on the pressure level sensed in the discharge side.



- Air Filters

KPI units have two air filters: one for outdoor air and another one for the exhausted air. The filters are located after the fan but before the heat exchanger, avoiding the pollution from outside/inside and the possible emissions by the fan motor to affect the heat exchanger efficiency and ensuring the supplied air quality.

Dodavatel:

AB KLIMATIZACE®

AB Klimatizace, s.r.o., Bráfova 9a, 616 00 Brno
tel.: 541 215 445, 737 285 067 fax: 541 240 799
www.abklimatizace.cz obchod@abklimatizace.cz