CLIVET

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EUROVENT CERTIFIED PERFORMANCE
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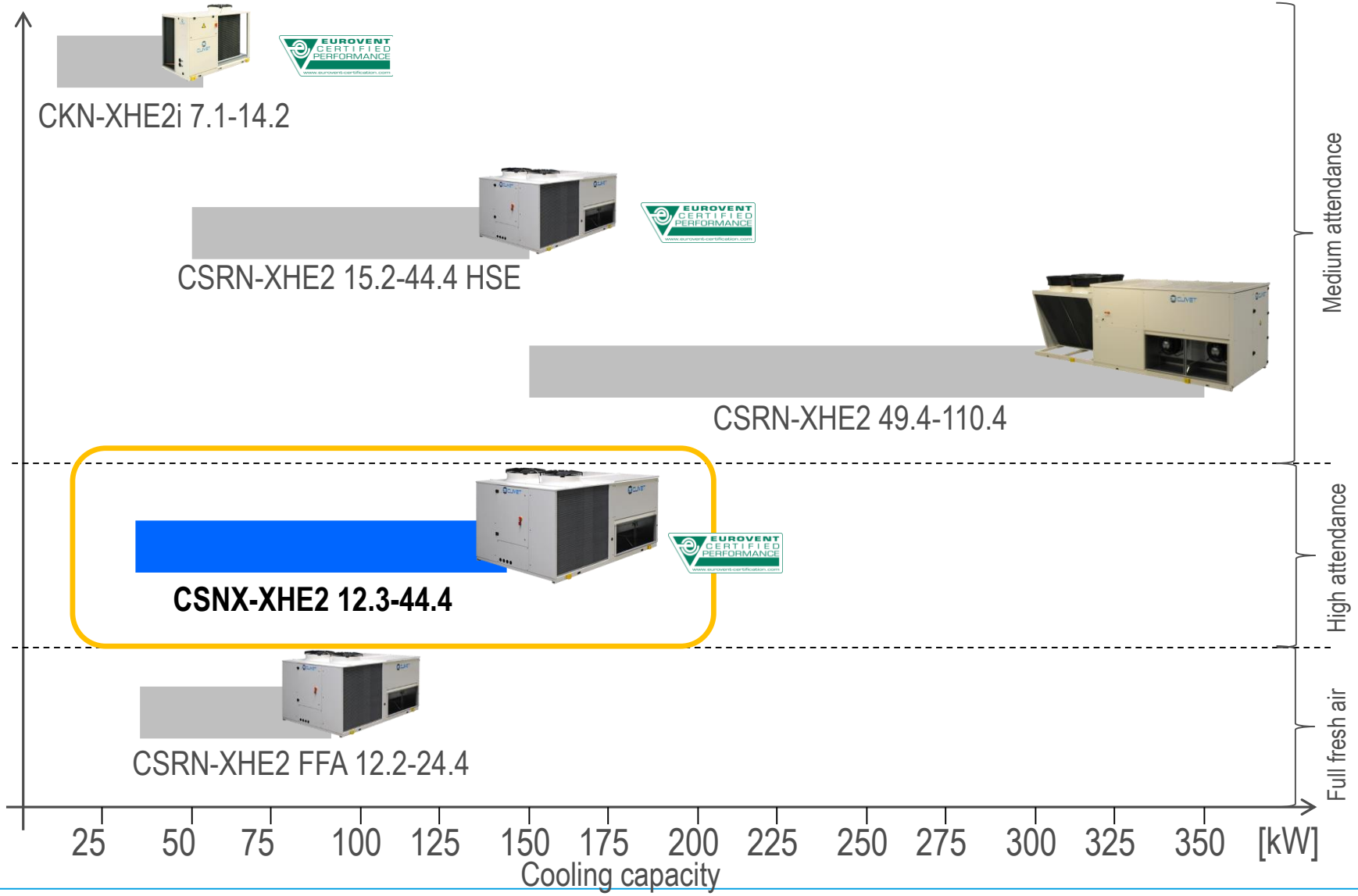
CSNX-XHE2 12.3-44.4

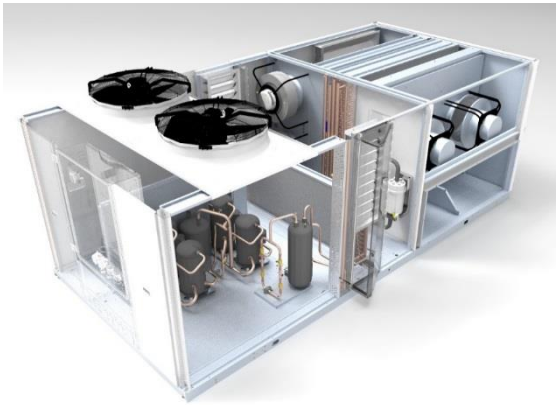
Air-air Rooftop for high attendance

A Group Company of Midea

ClivetPack2 heatpump rooftop specialized for application



CSNX-XHE2 can manage up to 80% of fresh air



High attendance application:

- Multiplex cinema,
- Theater,
- Congress all,
- Club and disco

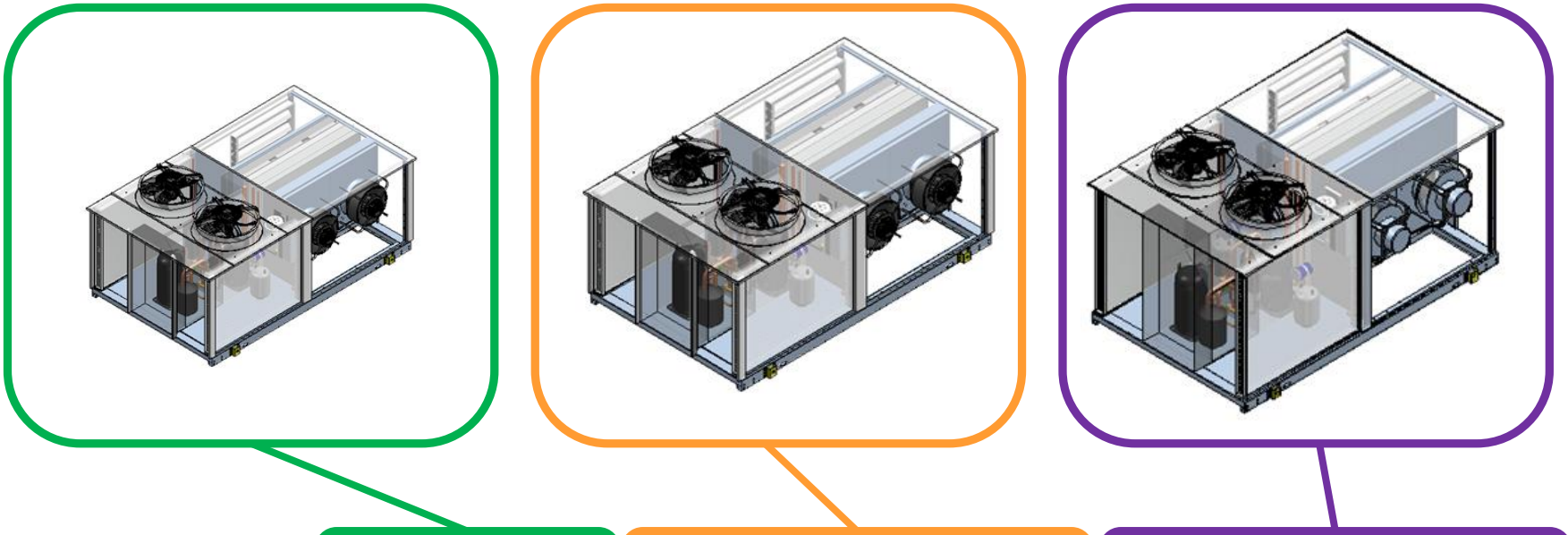
Main features of the serie:

- Double refrigeration circuit with tandem compressors, up to 3 step capacity management per each circuit
- Supply and exhaust air section with plug-fan connected to EC brushless motor
- Automatic management of fresh air with control of air quality
- Two stage of filtration
- Modulating freecooling
- Packaged design, all the plant engineering parts are contained inside the unit
- Eurovent certification

Two configuration available:

- CCK stale air exhaust on source coil with thermodynamic energy recovery effect
- CCKP stale air exhaust with THOR, thermodynamic energy recovery with dedicated coil exchanger

High attendance rooftop, it can manage up to 80% of fresh air

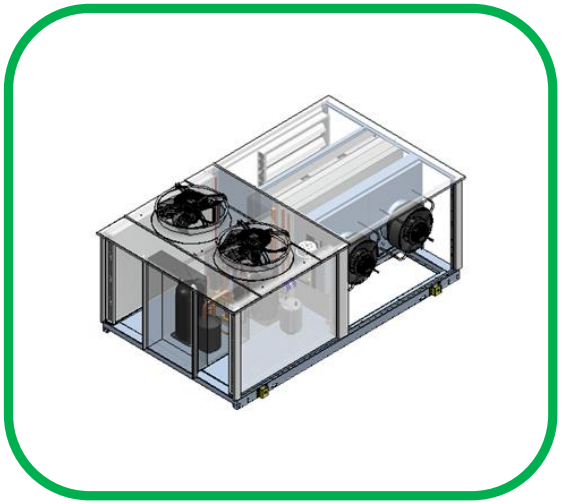


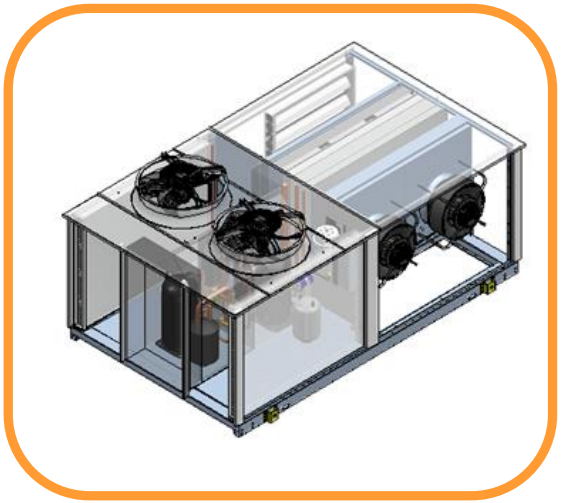
Sizes		12.3	15.3	20.4	25.4	30.4	33.4	40.4	44.4
Supply air	m^3/h	4500	6500	8000	9000	12000	14000	16000	18000
Cool.capacity	kW	46,3	57,1	75,4	87,6	106,7	134,4	158,3	173,9
Comp.Power In.	kW	9,2	12,3	15,5	19,4	22,8	28,0	35,2	39,5
EER-compress.	-	5,03	4,64	4,86	4,52	4,68	4,80	4,50	4,40

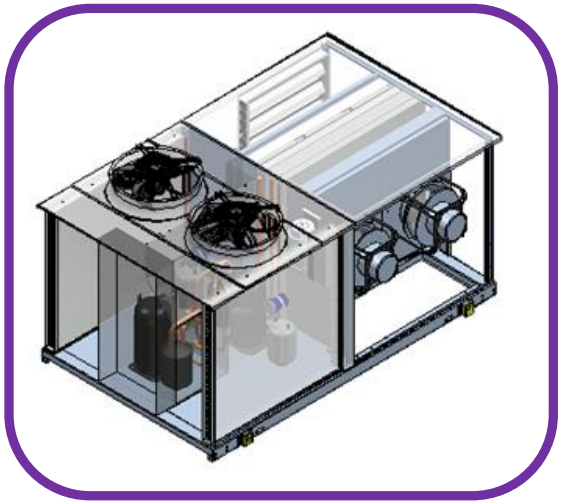
NEW SIZE

Performance with 80% of fresh air and energy recovery on exhaust air
Cooling: Tindoor 27°C d.b. / 19°C w.b., Toutdoor 35°C
Heating: Tindoor 20°C, Toutdoor 7°C d.b. / 6°C w.b.

Main features



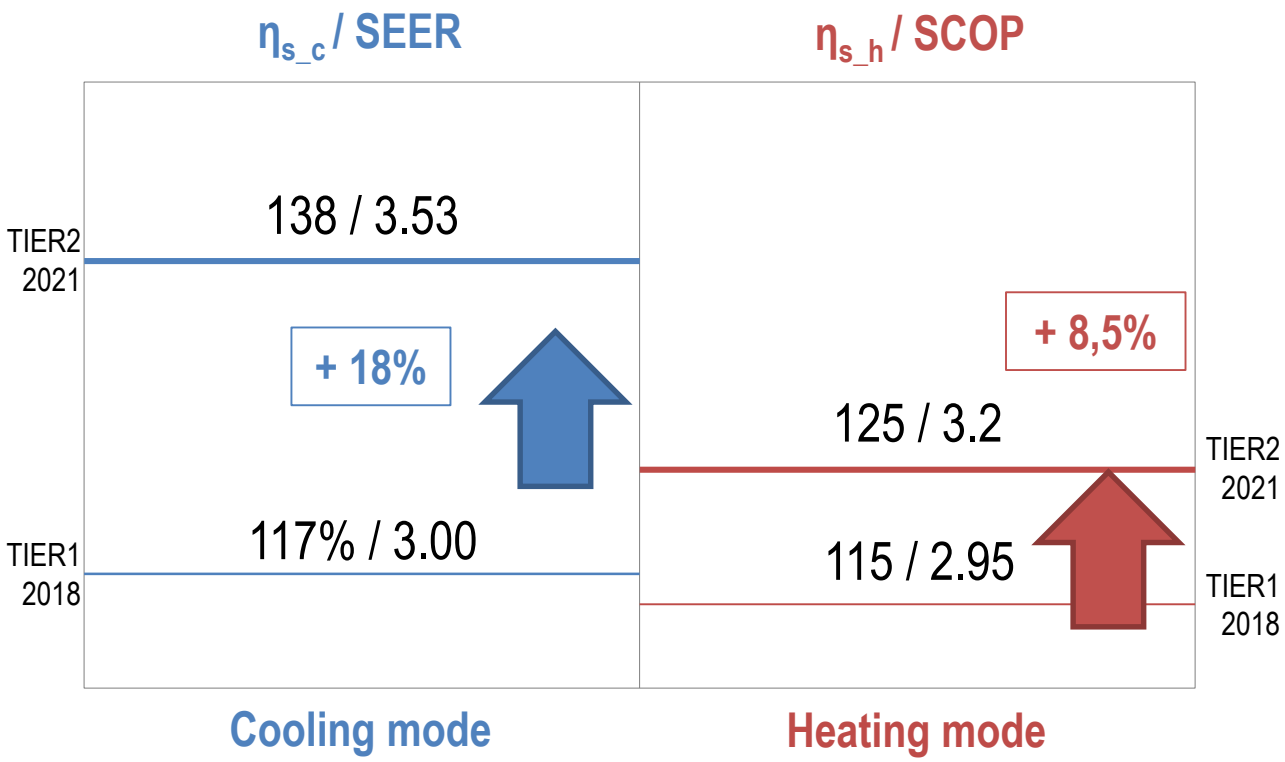




Sizes	12.3 - 15.3	20.4 – 25.4 – 30.4	33.4 – 40.4 – 44.4
N° refrigerant circuit	**2**	2	2
N° Compressors	**3 (Scroll ON/OFF)**	4 (Scroll ON/OFF)	4 (Scroll ON/OFF)
Expansion valve	Electronic	Electronic	Electronic
Supply fan	Radial plug-fan	Radial plug-fan	Radial plug-fan

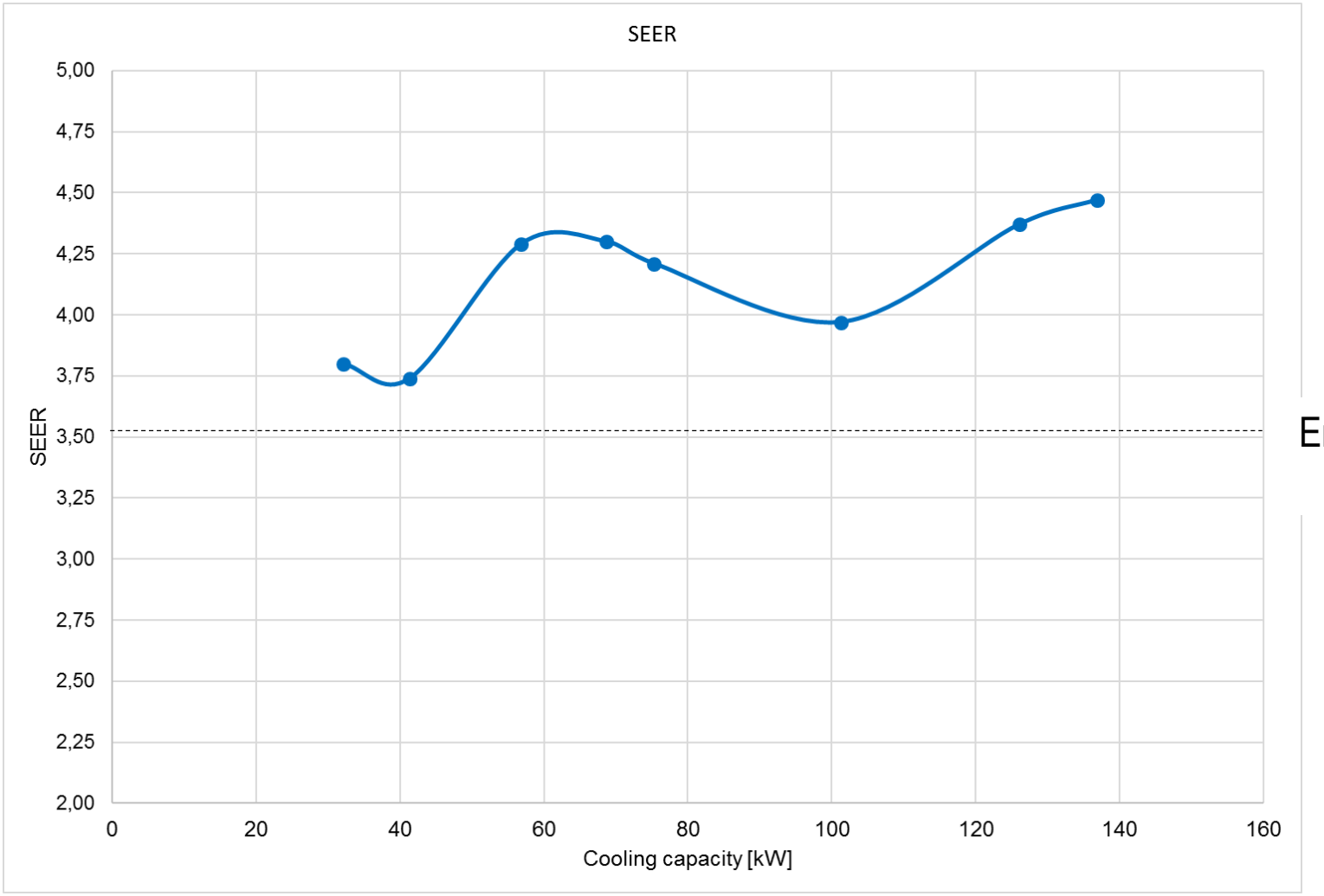
NEW SIZE

ErP 2016/2281 – New minimum seasonal efficiency from 1 January 2021



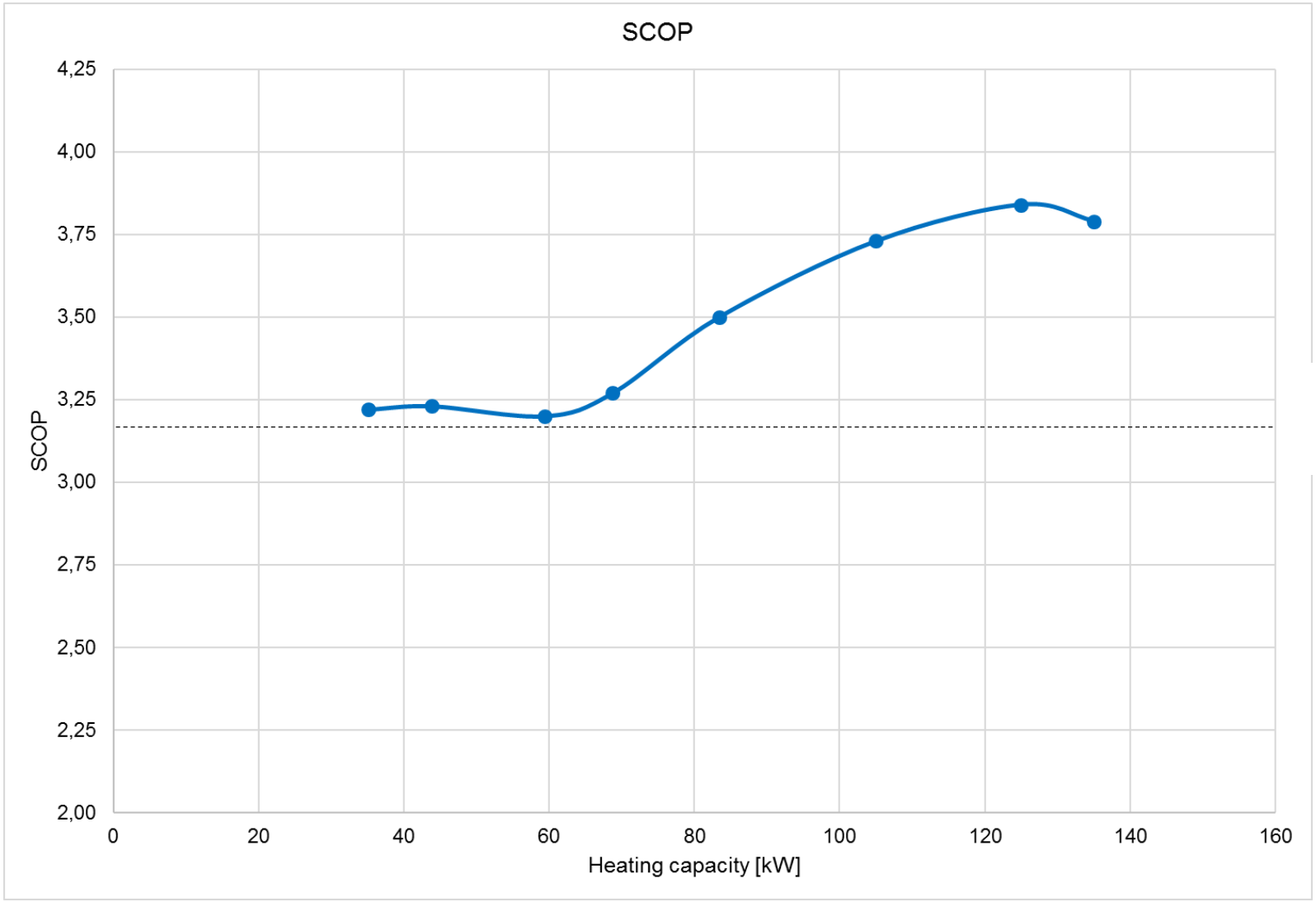
Seasonal efficiency according to EN 14825-2018

New cooling seasonal efficiency, ErP 2021 ready



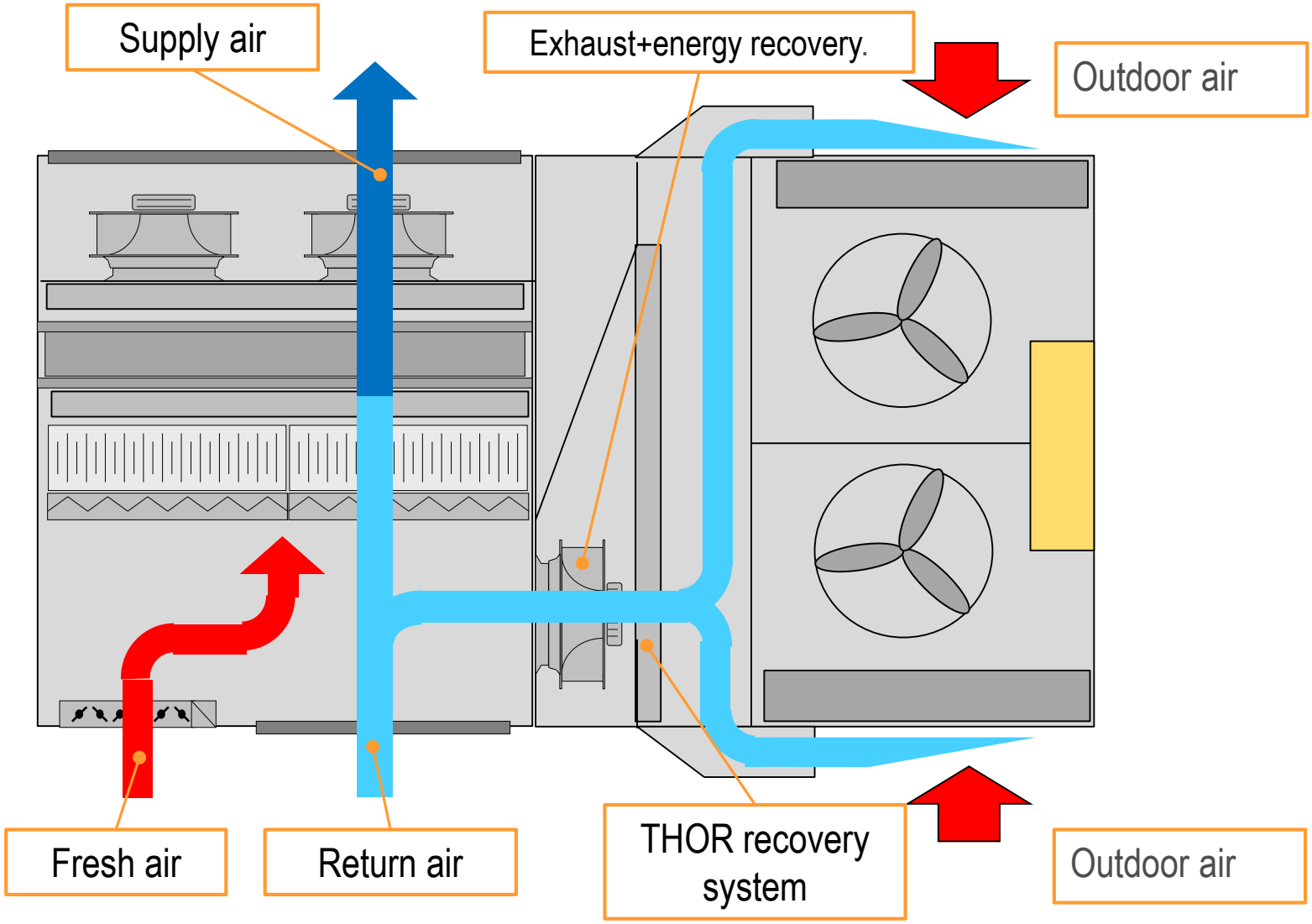
ErP 2021 limit

New heating seasonal efficiency, ErP 2021 ready

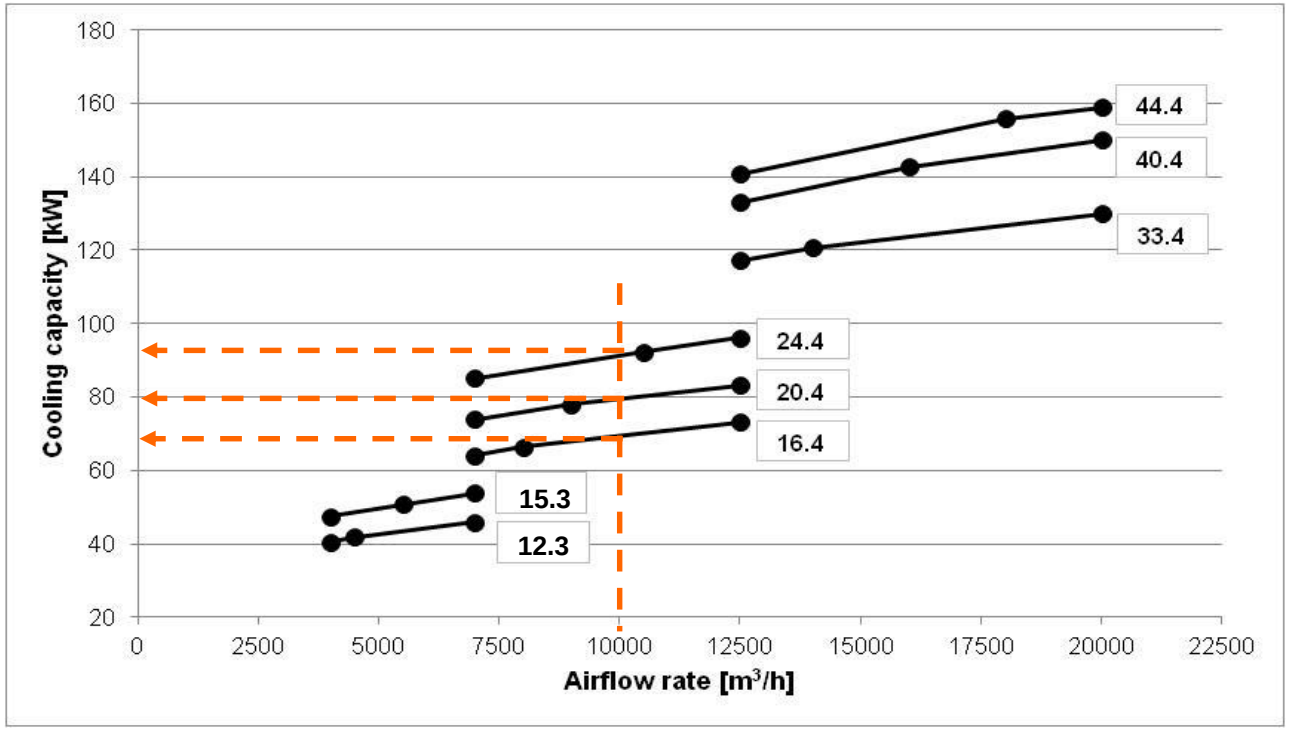


ErP 2021 limit

Two configurations: CCK e CCKP with ThOR



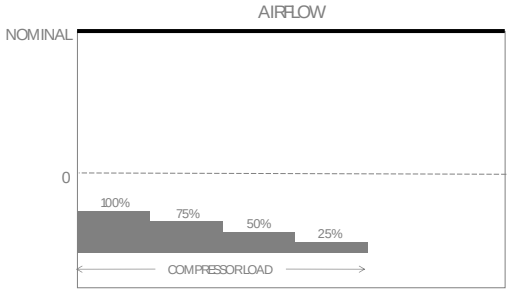
Selection of the unit in base of air flow rate



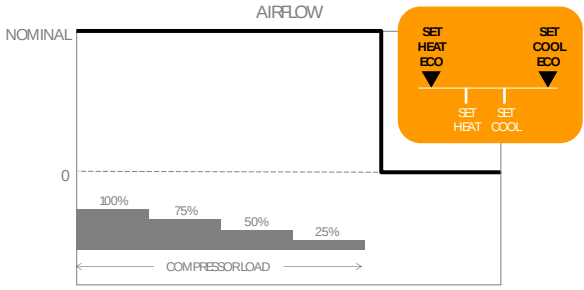
- EC brushless plug-fan: less time for commissioning
- It is possible to select the supply air flow rate between a min-max value directly from user interface
- At same air flow rate are available different sizes and capacity to achieve different needs

Effective air flow rate management

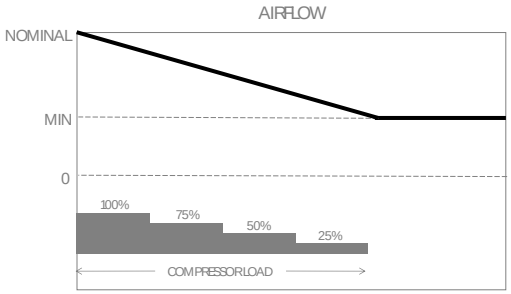
- **Constant airflow rate** (standard): fan varies speed also with progressive filter clogging.



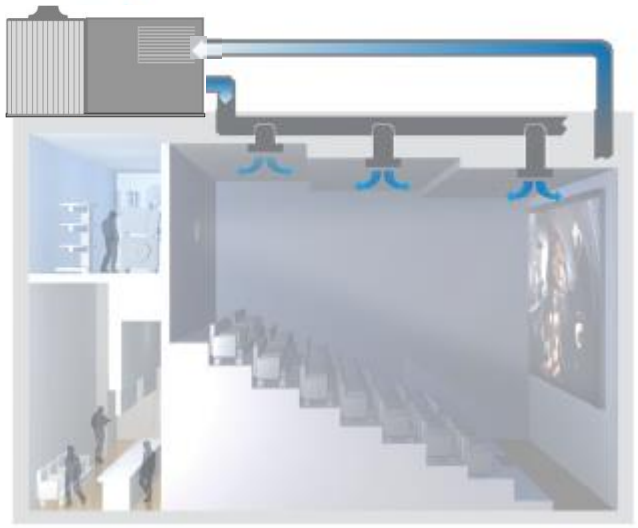
- **ECO mode**: airflow supply remains constant at varied thermal loads and is shutdown when the load is full filled



- **Variable airflow rate**: supply airflow varies depending on the thermal load up to a minimum compatible value with distribution system. 40% of Airflow reduction → **70% energy savings**



Automatic management of fresh air



The comfort of the customer is closed to the management of fresh air (Indoor Air Quality)

The filtration and treatment of fresh air is an important cost in the annual management

The controller regulates amount of outdoor air necessary for IAQ ventilation thus minimises energy used for treatment

This option is recommended for areas with highly variable crowding

Air quality even under control

First stage of filtration (standard): **G4** (ISO 16890 Coarse 60%), wide surface and low pressure drop

Second stage of filtration (optional):

- G4 (ISO 16890 Coarse 60%) + **Electronic filter FES** (ISO 16890 ePM1 90% - equivalent efficiency HEPA filter E10), offers the maximum purification of the air with very low pressure drop. Effective against bacteria, mould, viruses. Simple to clean, it can as the same life span of the unit.

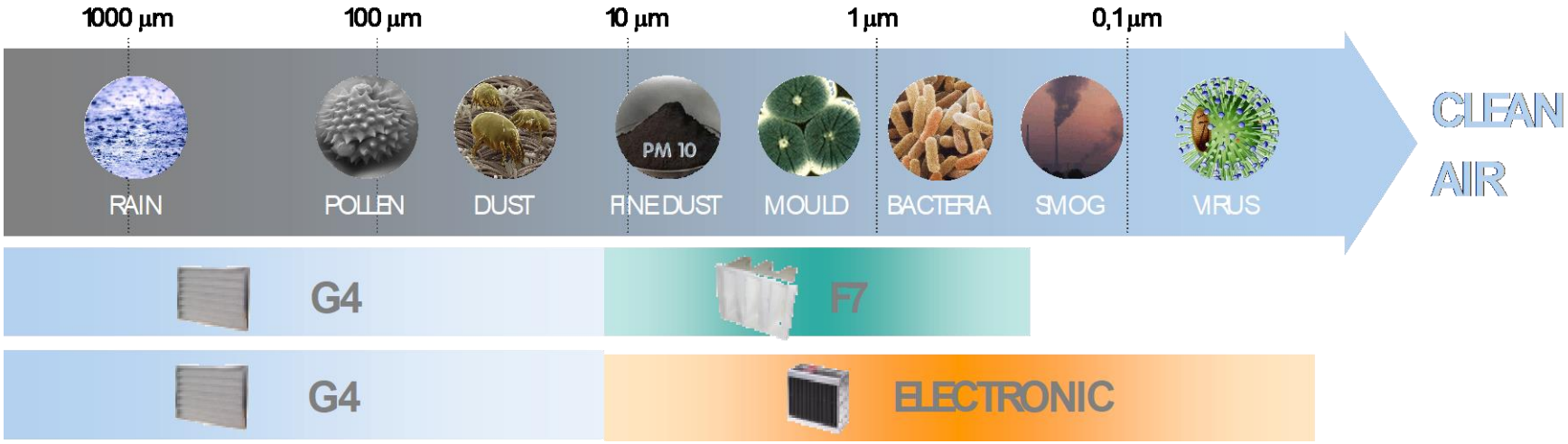
- G4 (ISO 16890 Coarse 60%) + **F7** (ISO 16890 ePM1 55%) plane filter, purification of the air, it needs periodical maintenance with substitution

- **Clogged filter differential pressure switch** air side, indicates the need of maintenance for filter

High efficiency on filtration

Thanks to **electronic filtration** (second stage)

- The equivalent filtration efficiency reaches the **E10 class** (ISO 16890 ePM1 90%)
- Reduction of fine dust, PM10, bacteria, mould and viruses



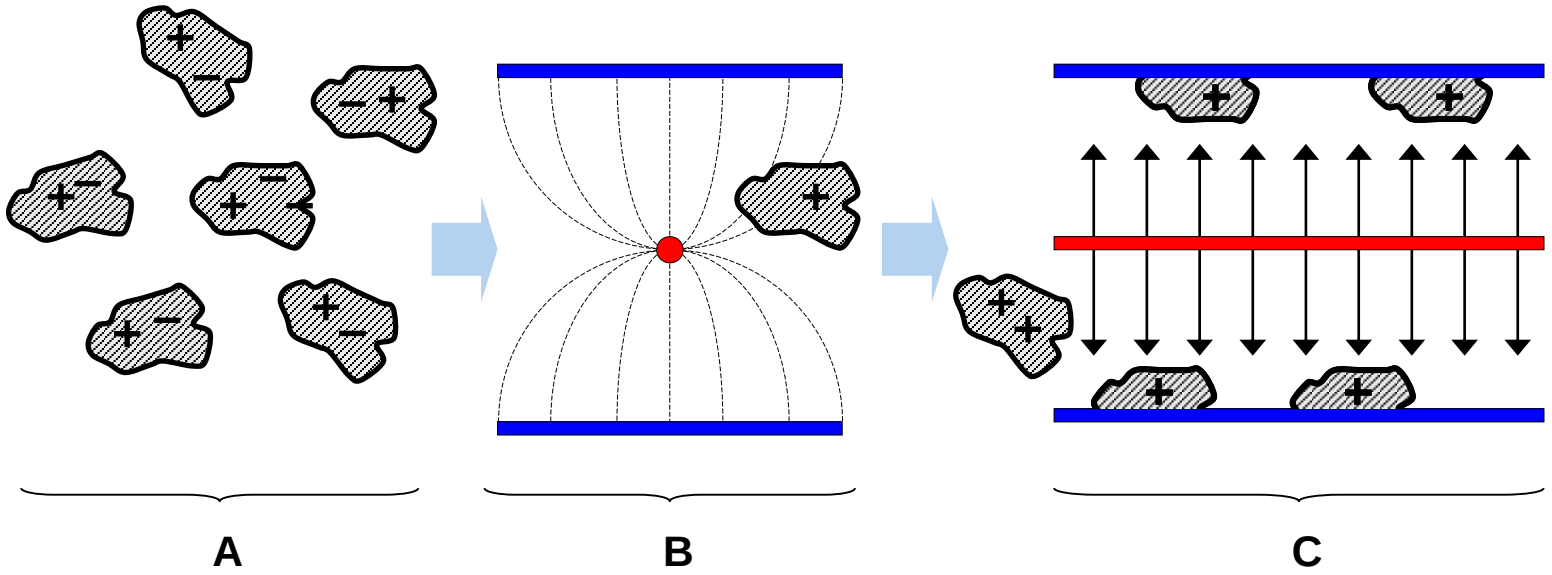
High efficiency on filtration

Electrostatic filtration

A) Polluted air enters the electronic filter

B) Pollutant particles are positively loaded

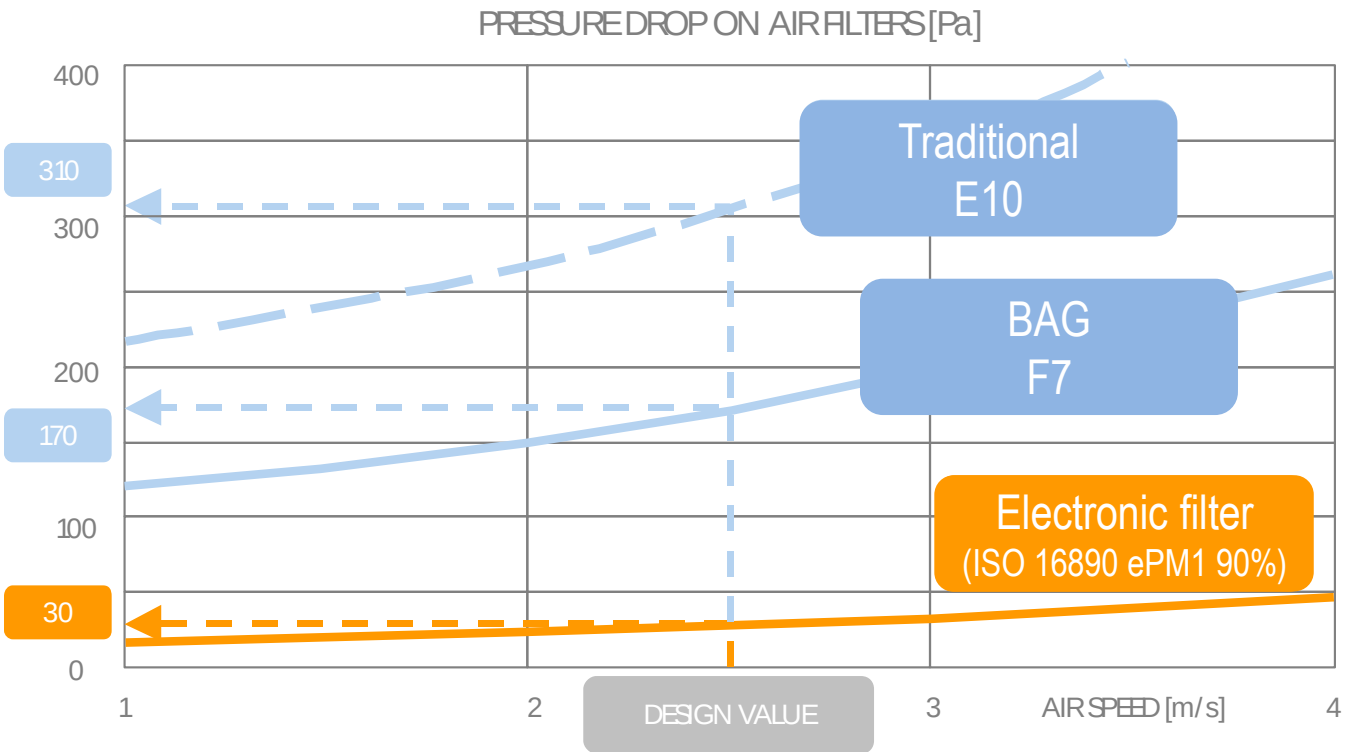
C) They are captured by the blades, connected to the mass



High efficiency on filtration

The air stream passes through aluminium alloy blades

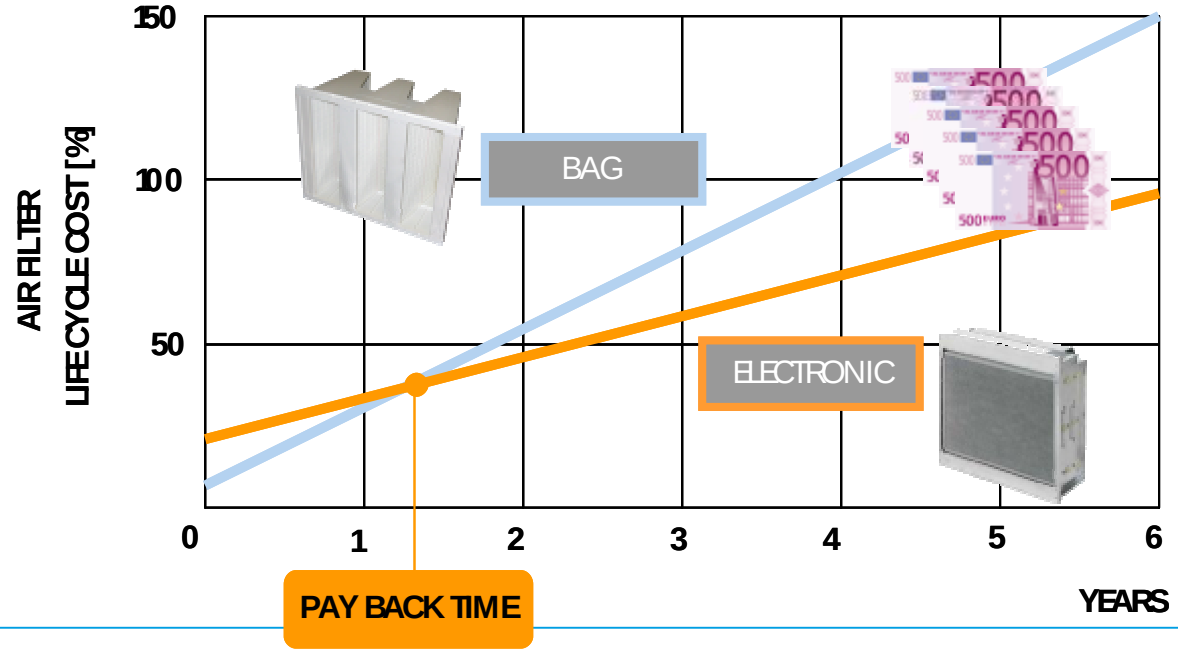
Pressure drop is reduced over 80% when compared to traditional filtration systems



Electronic filters **reduce the total management cost**

- For operation→ Great energy saving for ventilation
- For maintenance→ Electronic filters are washable

Typical pay-back is less than 18 months

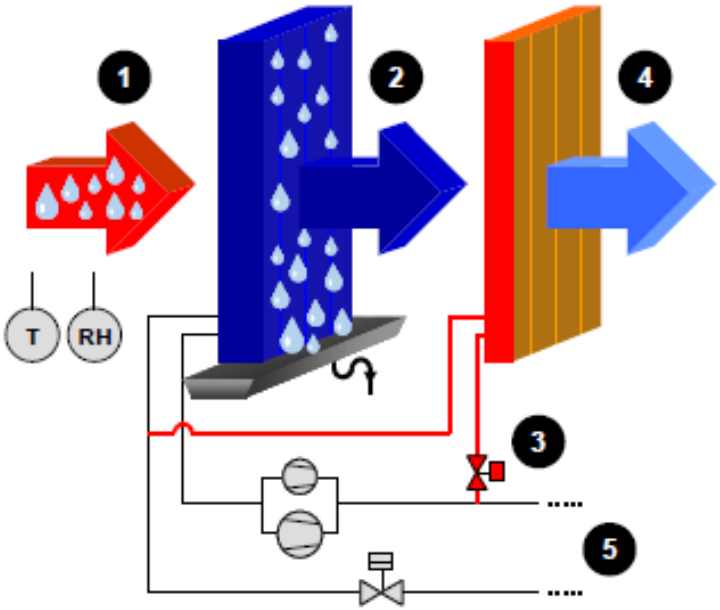


The right temperature after summer dehumidification

Hot gas re-heating coil

It uses the hot gas from compressors to heat the chilled and dehumidified air

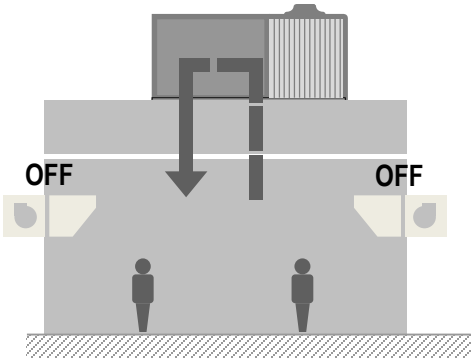
The ambient sensor is equipped with an integrated temperature and humidity probe (standard with unit) and manages the dehumidification process



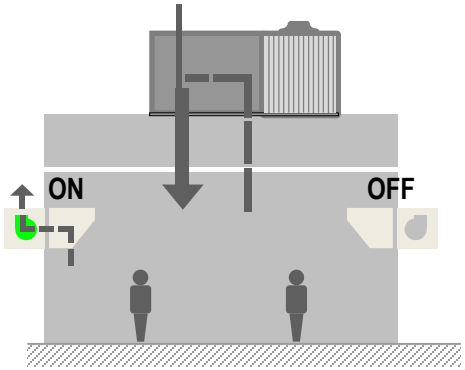
1. Fresh air and humidity / temperature probe
2. Chilled and dehumidified air in the internal exchanger (evaporator)
3. Automatic hot gas pump valve
4. Air treated by the post-heating exchanger
5. External exchanger (condenser)

The proper solution for spaces with forced air exhaust

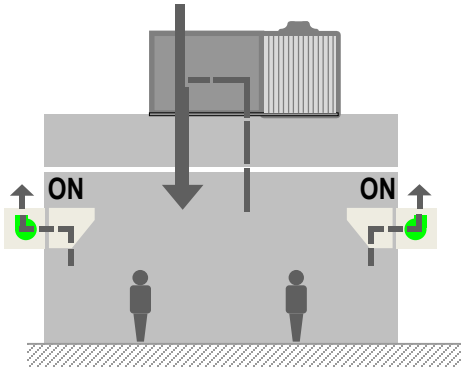
EXFLOWC - option indicated for conditioning buildings with hoods or active air exhaust system as: cinema projections rooms, catering kitchens, labs with suction hoods



All extrators off



Some extractors on

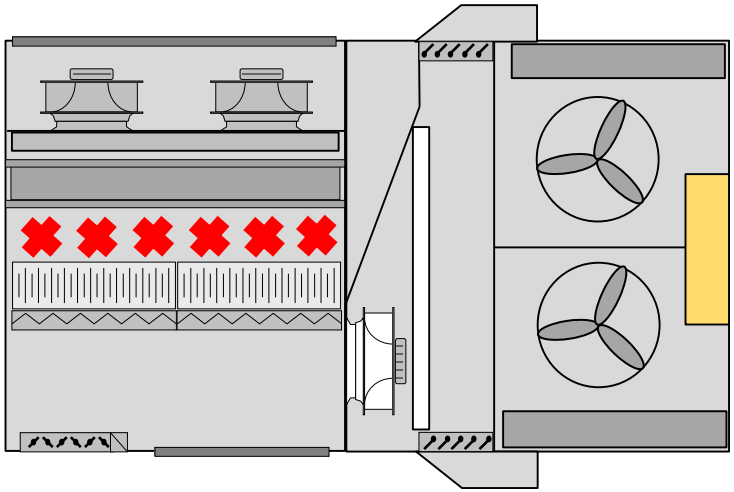


All extraxtors on

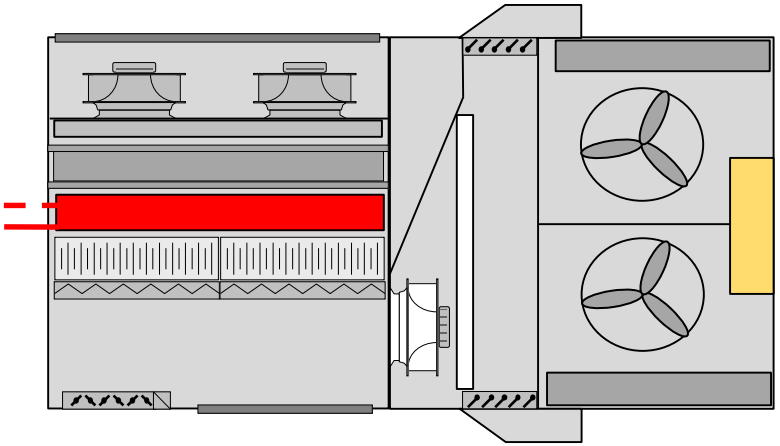
When the extractor hoods are activated the unit manage the fresh air damper to compensate the extraction air

Heat pump and **auxiliary heating** options

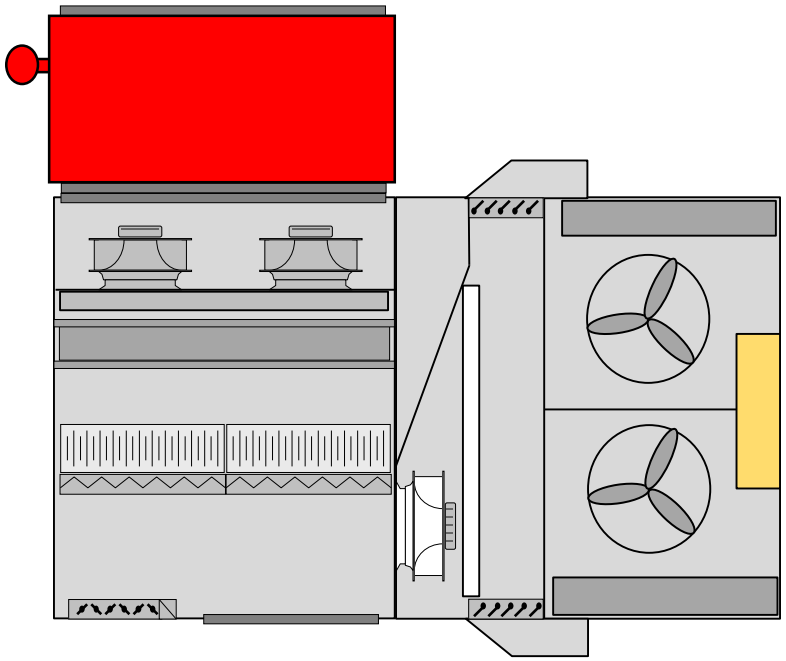
- Electric heaters



- Hot water coil



Heat pump with gas burner

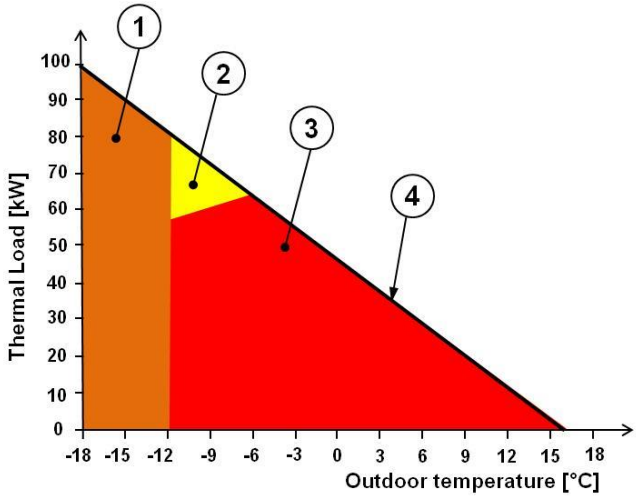


Gas burner module:

1) A warm integration on heat pump

2) It can substitute the heat pump below a determined temperature

3) Modulating capacity with condensing technology



1. Bivalent function (total substitution)
2. Hybrid function (thermal integration)
3. Heat pump
4. Thermal load line

Application for very cold climate

Outdoor temperature:
-10°C down to -30°C

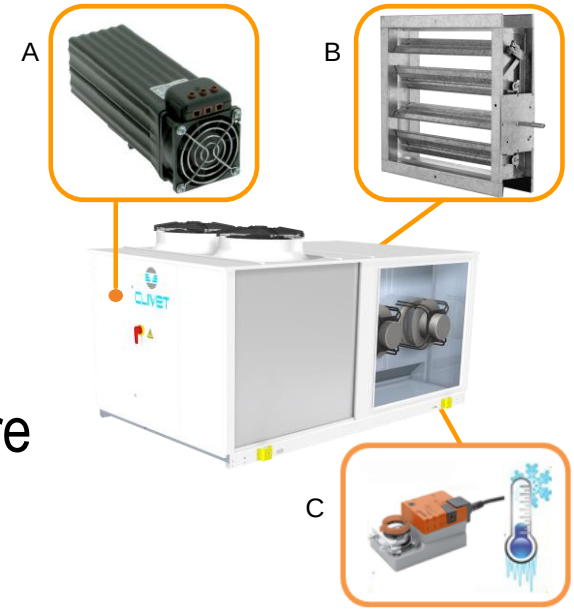
Besides auxiliary heating options:

A) Heater thermostatically controlled

B) Air damper in special execution

C) Motorized actuator suitable for low temperature

D) Low temperature electrical wires



Winter comfort with dedicated humidification

Immersed electrodes steam humidifier

- Available in various sizes
- Automatic modulating control
- With automatic drain for inactivity

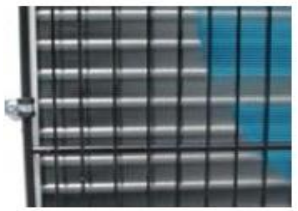
The management of humidity is controlled with humidity probe on board of the unit

Sizes	12.3-15.3	16.4-20.4-24.4	33.4-40.4-44.4
3 kg/h	√	-	-
5 kg/h	√	√	-
8 kg/h	√	√	√
15 kg/h	-	√	√

Wide customization to adapt the unit to any situation

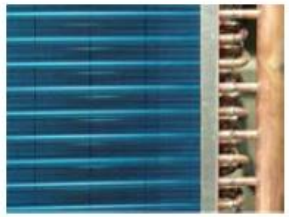
Copper/aluminium external exchanger, with specific fin shape to facilitate the drainage of the condensate water (standard)

- The external exchanger can be protected with protective grids



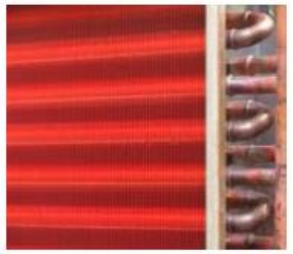
All the exchangers can be manufactured as follows:

- copper/aluminium with acrylic lining: for applications in settings with moderately low aggressive saline concentrations and other chemical agents



- copper/aluminium with Fin Guard treatment: for settings with high saline concentration and chemical agents

- copper-copper: for applications in aggressive saline settings



New options available

PVMEV -Modulating supply air from external input signal

option to conditioning different spaces with same thermal load needs

It is possible to manage a variable supply air flow rate and in exhaust air through two different external input signal 4-20mA

PTAAX – Remote temperature probe to install in the space

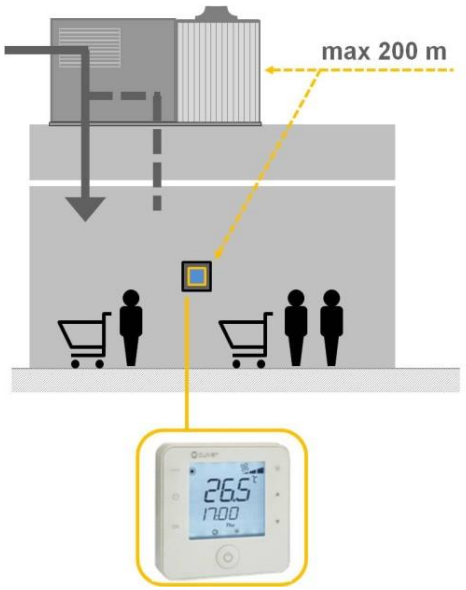
To manage the unit with temperature sensor installed in the indoor space, max distance 30m.

PTUAX - Remote temperature and humidity probe to install in the space

To manage the unit with temperature sensor installed in the indoor space, max distance 30m.

Smart electronic control

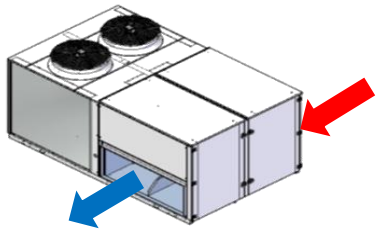
- Management by microprocessor
- Control development from Clivet
- **Remote control** is a standard
- Easy to use by not specialized personnel
- Communication protocol: ModBus, Lonworks, BACnet-IP
- Supervisor: Clivet Master System



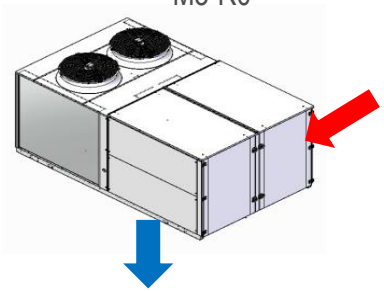
High flexibility in air distribution

CCK e CCKP: supply and return configurations

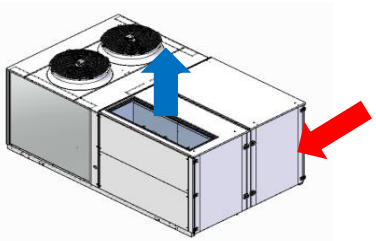
M0-R0



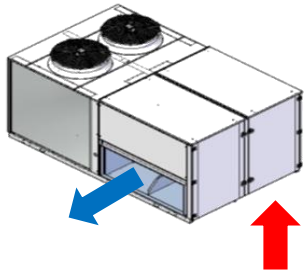
M3-R0



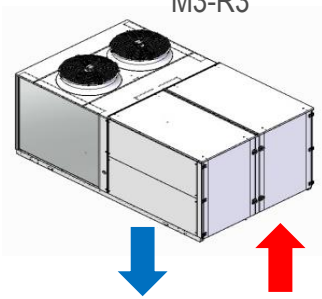
M5-R0



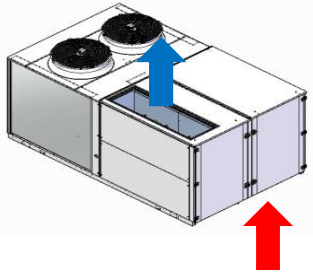
M0-R3



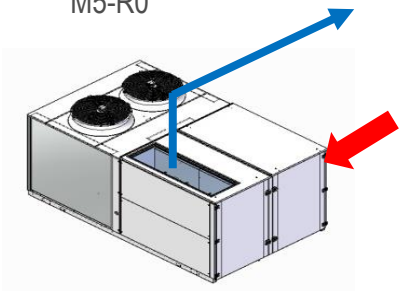
M3-R3



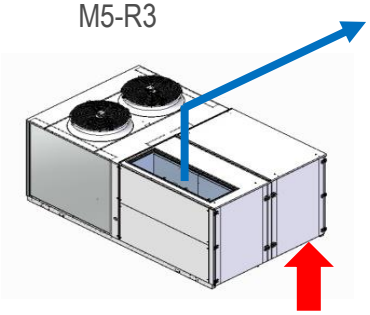
M5-R3



M5-R0



M5-R3

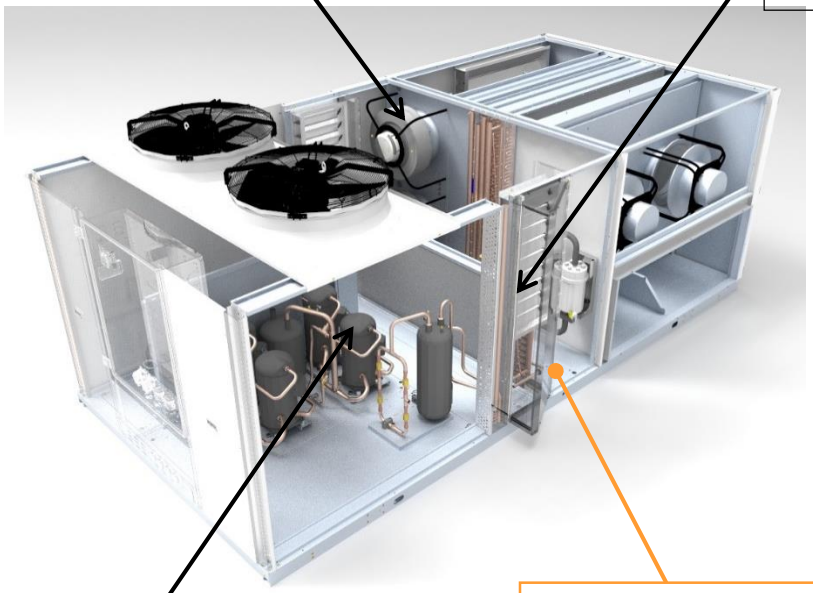


Supply and return from the same side

CCK-CCKP configuration

Exhaust section

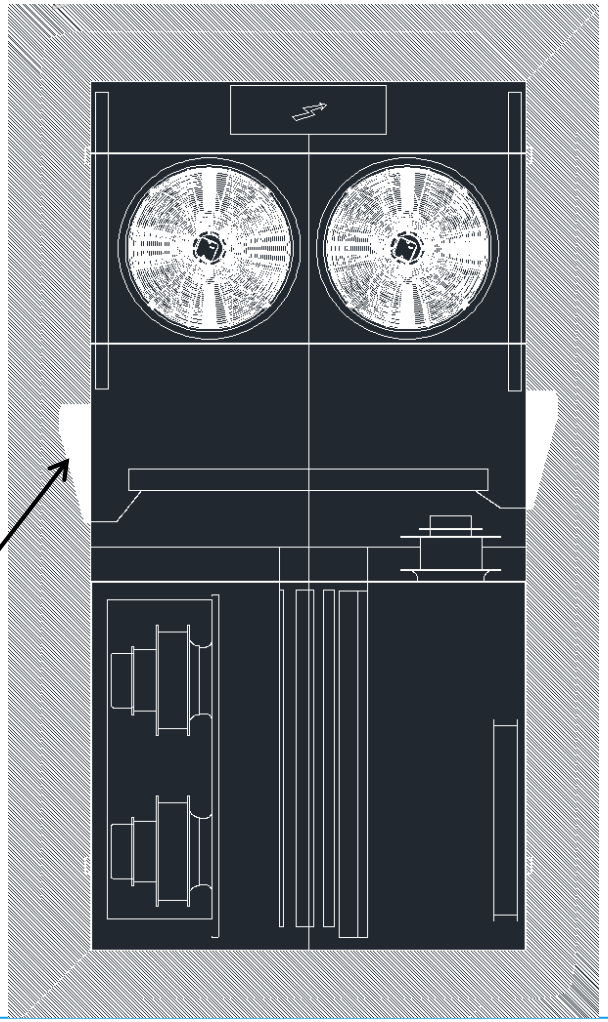
Overpressure damper



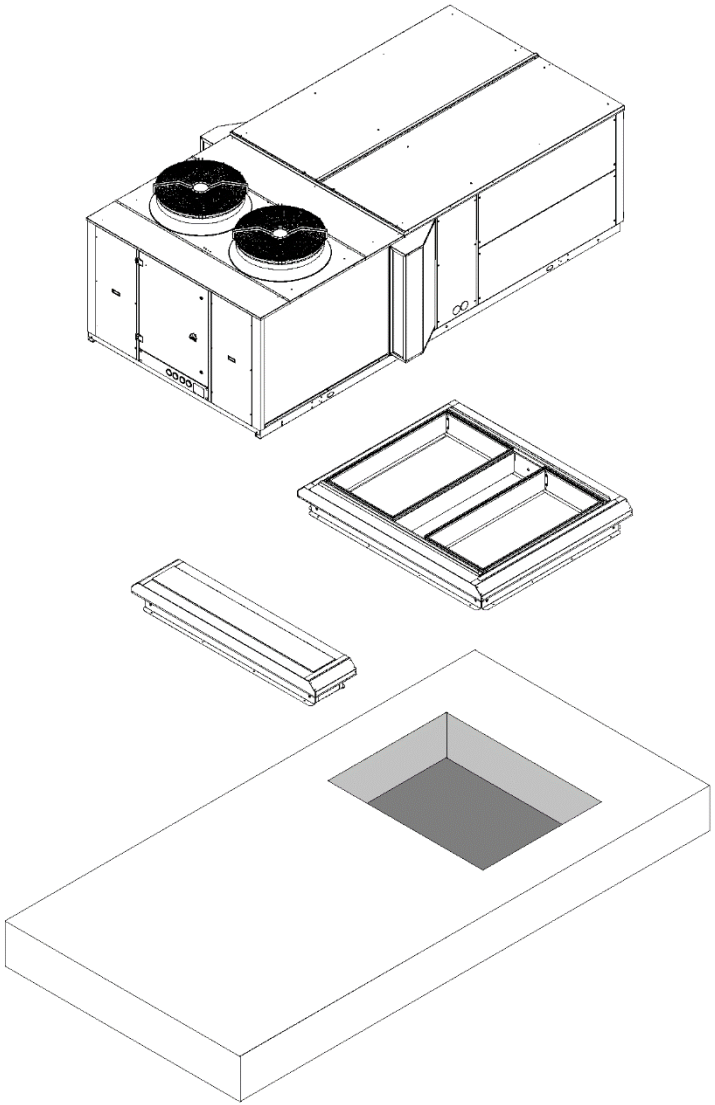
Air deflector

THOR

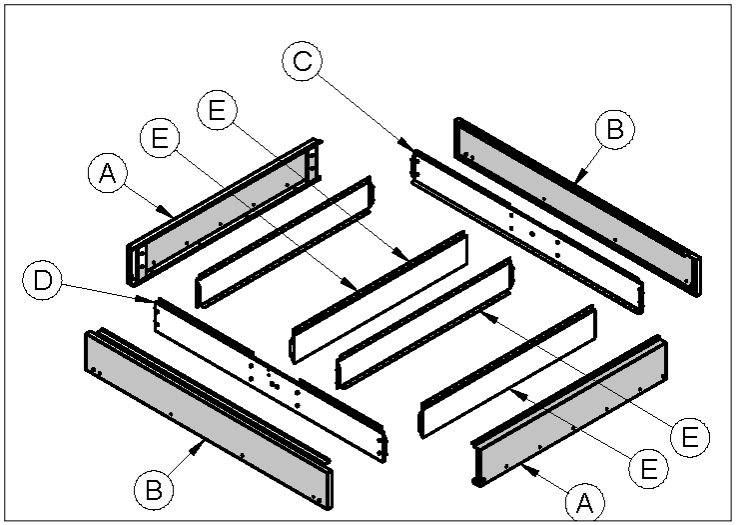
To install on site, (doesn't change transport dimension)

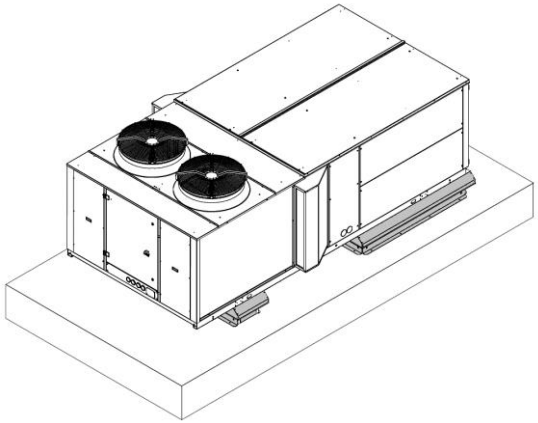


Roof curb: base frame to connect air ducts for downward



Easy to build on field, it permits the horizontal coplanar installation





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