



FW ENERGY DAY

EQ ENERGY SAVING PRODUCTS

19/10/2016 DOCUMENT





Mini**Master**



House**Master**



Villa**Master**



iLOX**AIR**





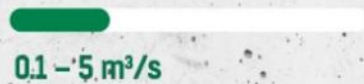
TOPMASTER



eQ TOP



eQ PRIME



eQ MASTER



eQL



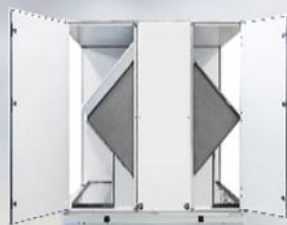


Rotary (RHE)



Regoterm®
Incl. Premium **NEW**

Plate (PHE)



Recuterm®
(Crossflow)



Recuterm®
(Counterflow)

Run Around Coil (RAC)



Econet
Premium®



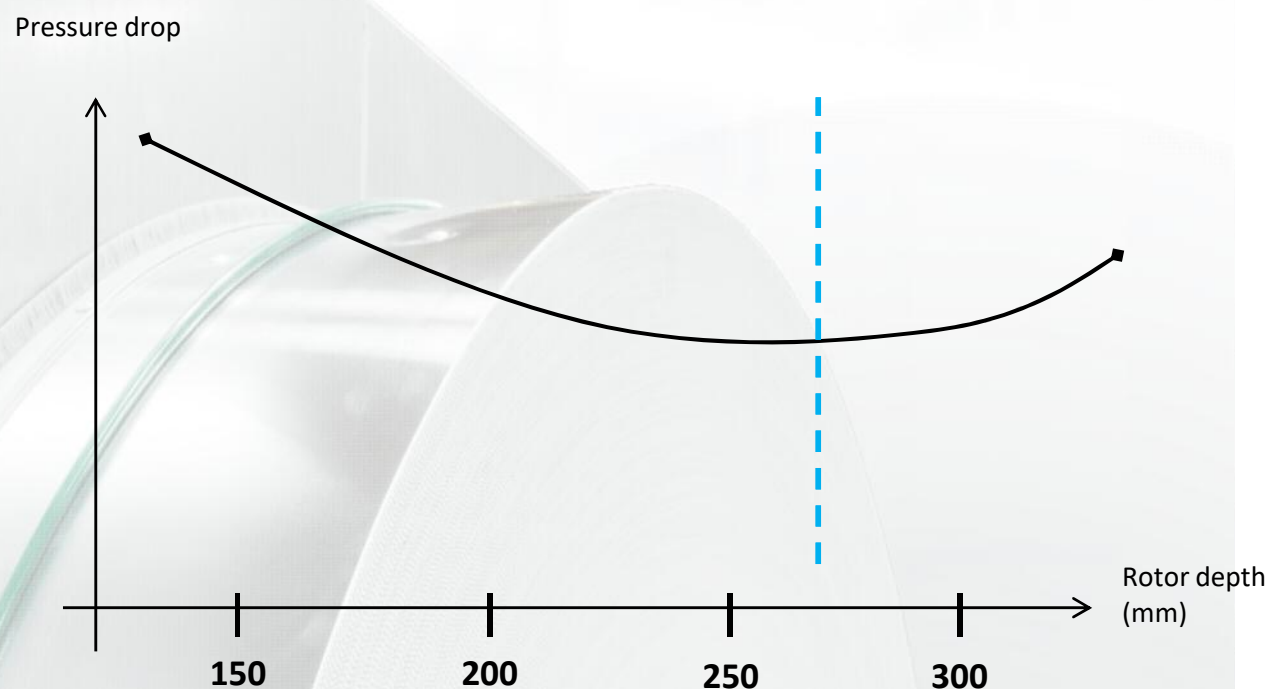
Ecoterm®



REGOTERM 270 Premium®



- Extra-deep thermal wheel
- 270 mm depth is the optimal ratio between heat recovery and pressure drop
- Enables larger airflows for smaller units
- Reduced AHU foot print for the same energy performance



SEMCO wheel for optimal heating and cooling

Summer

Winter



- **Simplified investment in heating and cooling**

RECUTERM® PHE RANGE

Recuterm® *crossflow*

- ~73% heat transfer efficiency
- Complies with EU – Ecodesign Regulation
- Wide flow range 0,3-7 m³/s

Recuterm® *counterflow*

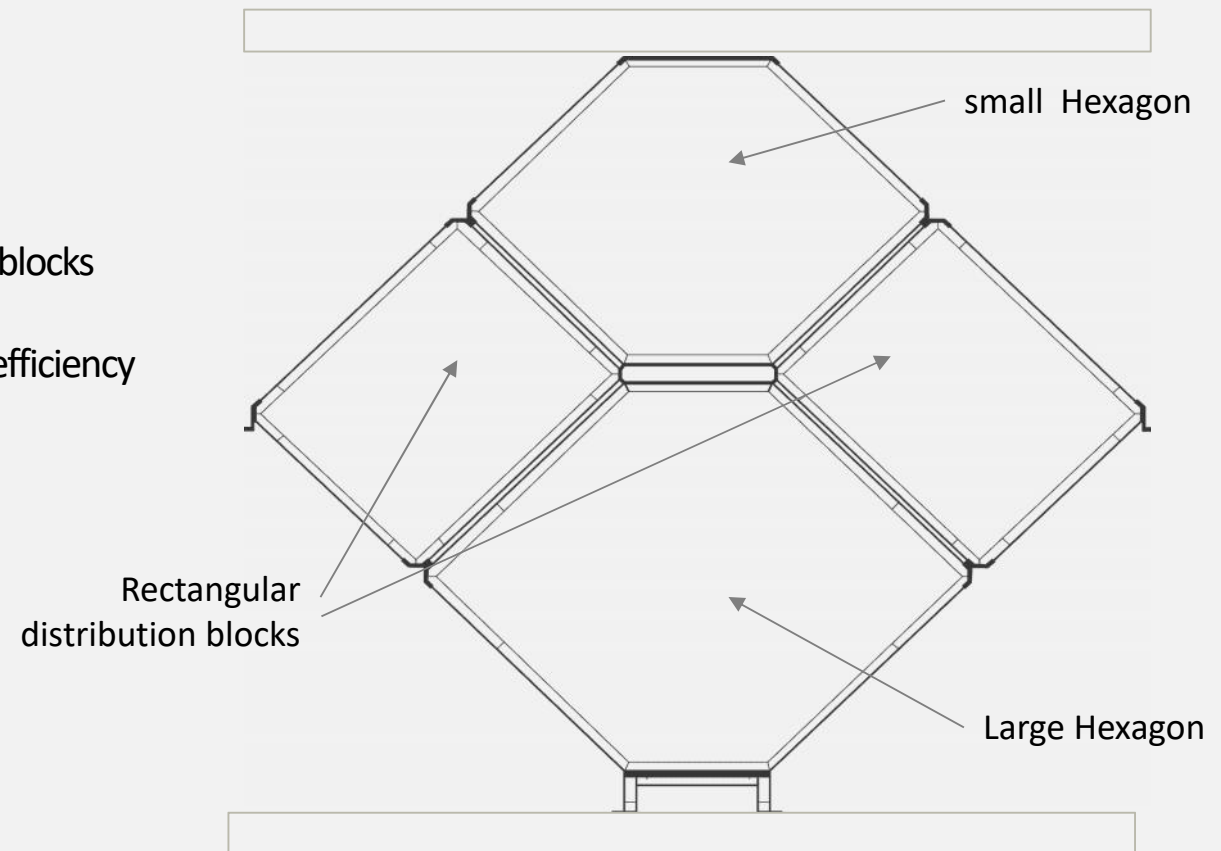
- ~85% heat transfer efficiency
- Reduced heating load
- Flow range 0,3-3 m³/s



Crossflow

Counterflow

- Maximise heat transfer area
- Different sizes Heat Exchanger blocks
- Highest possible temperature efficiency



DEFROST FUNCTION

VS

FROST PROTECTION?



Recuterm® AFP - **Advanced Frost Protection**

- Demand based control - Dew point control
- Sectionalised control function with 4 sections – energy efficient control
- Maximised heat recovery for every unique condition



Highest possible energy
recovery



Active dew point control based on measurements – all mounted in PHE section

Extract air

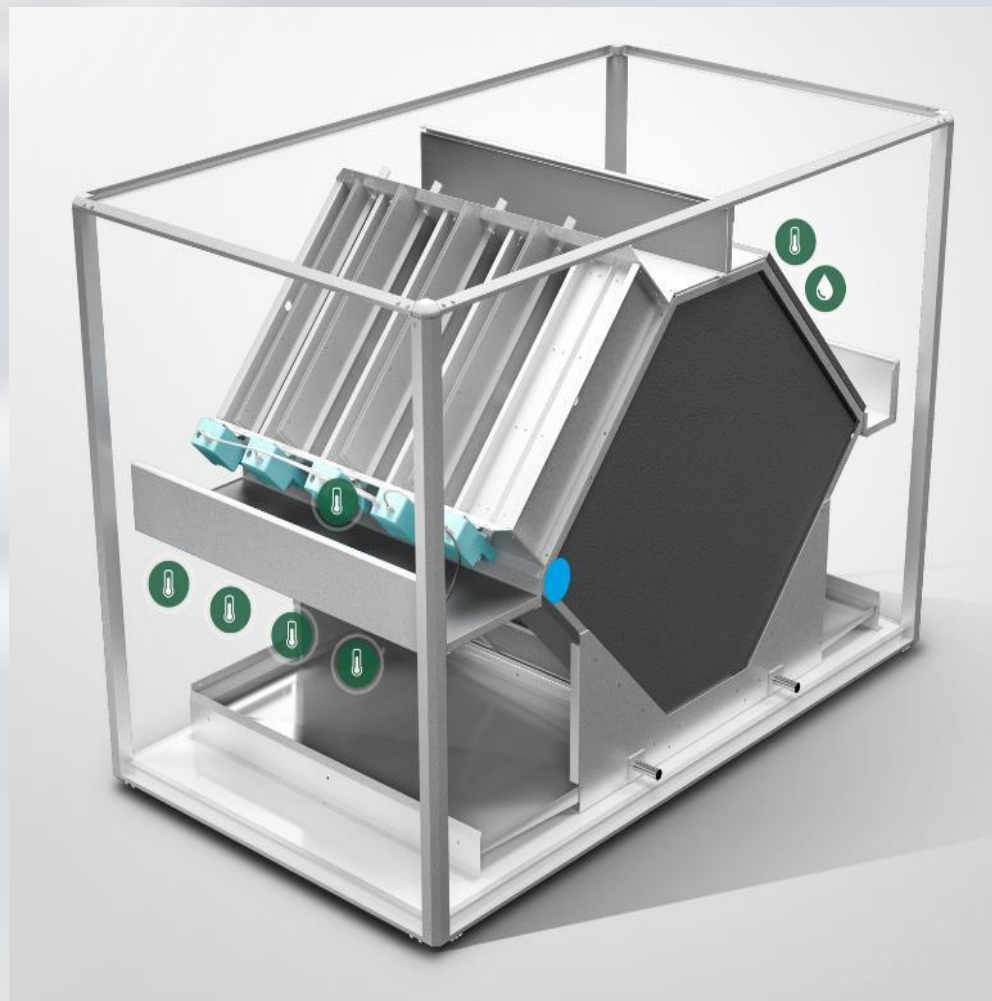
- Temperature measurements
- Humidity measurements

Exhaust air

- Temperature measurement per section (4 sensors)

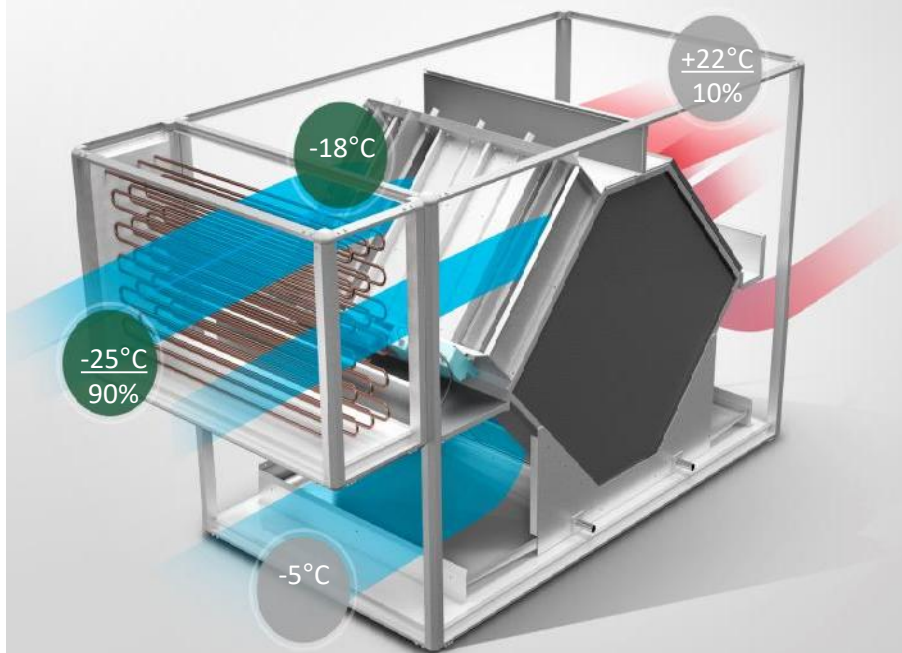
Outdoor air

- Temperature sensor



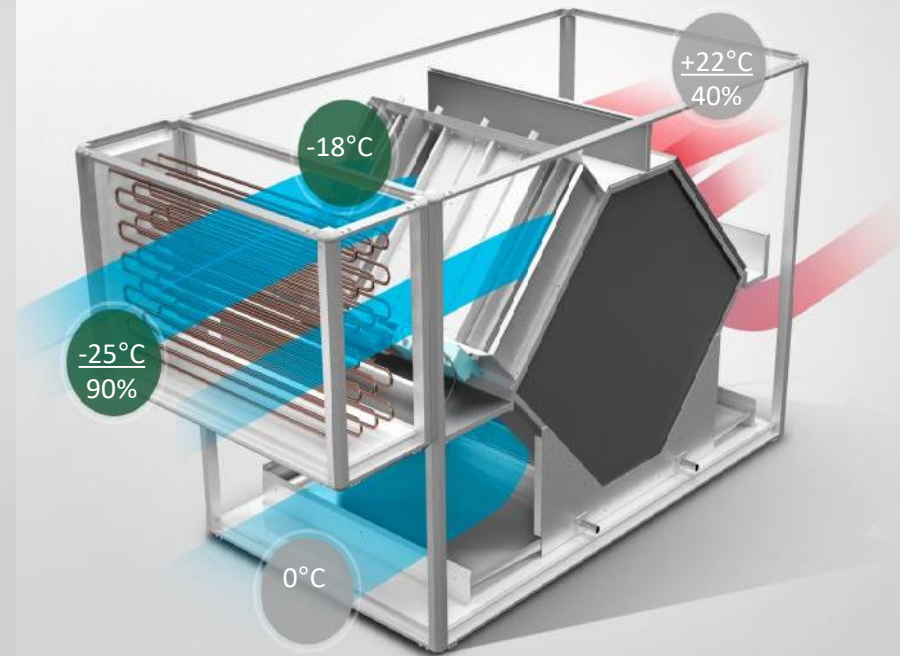
Fall 1: torr frånluft

Litet avfrosthingsbehov



Fall 2: fuktig frånluft

Större avfrosthingsbehov



EXAMPLE – ANNUAL ENERGY CALCULATION

Specification according to Svensk Ventilation, calculation of annual energy recovery efficiency

1. Counter flow, 85% efficiency, 1 m³/s
2. 8760 h/a
3. Supply air, 20°C
4. Extract air, 22°C, additional water content +2 g/kg
5. Climate: Stockholm

Recuterm Counterflow

1. Efficiency: 85 %
2. Pressure drop: 200 Pa



Standard frost protection

- Control based on temperature
- 2 sections + by-pass damper

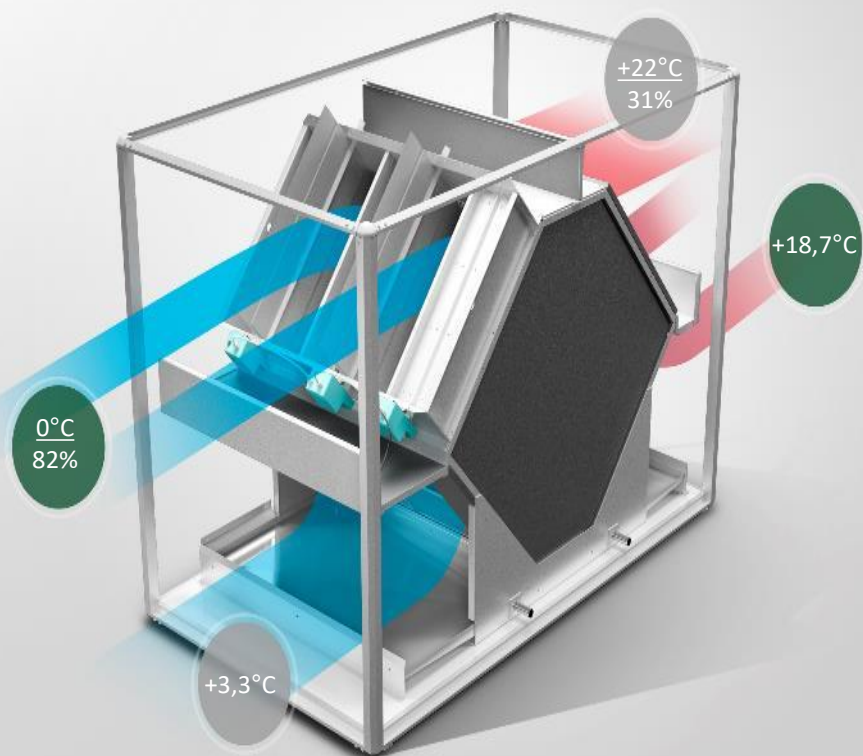
Recuterm Advanced Frost Protection

- Control based on temperature and humidity
- 4 sections + by-pass



Heat transfer efficiency

Standard - 85%

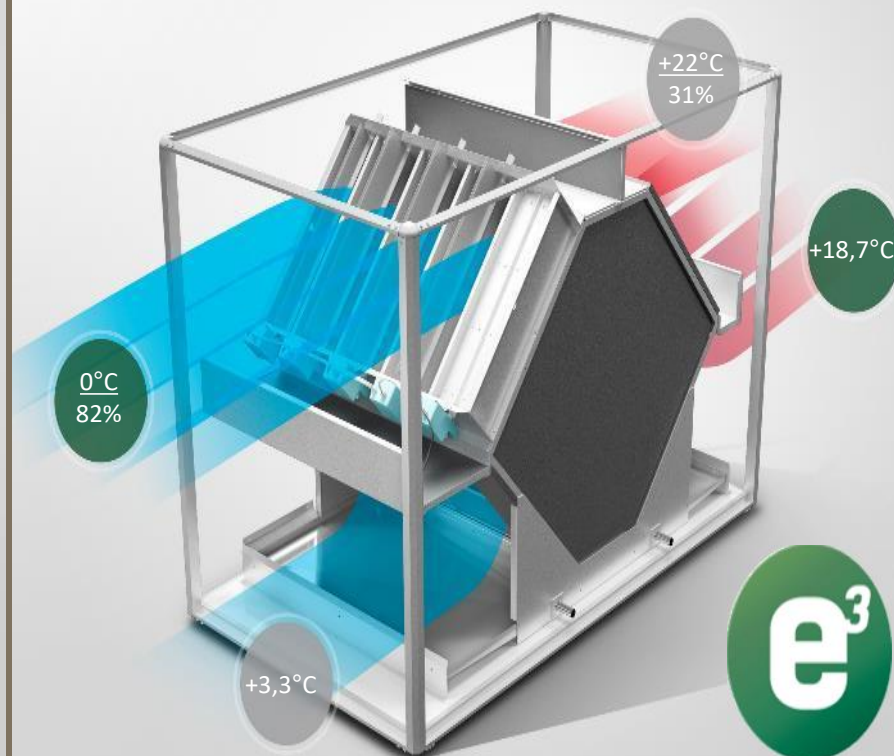


No regulation

Max recovery	85%
Additional heating	0,3°C

Heat transfer efficiency

Fläkt Woods – 85%

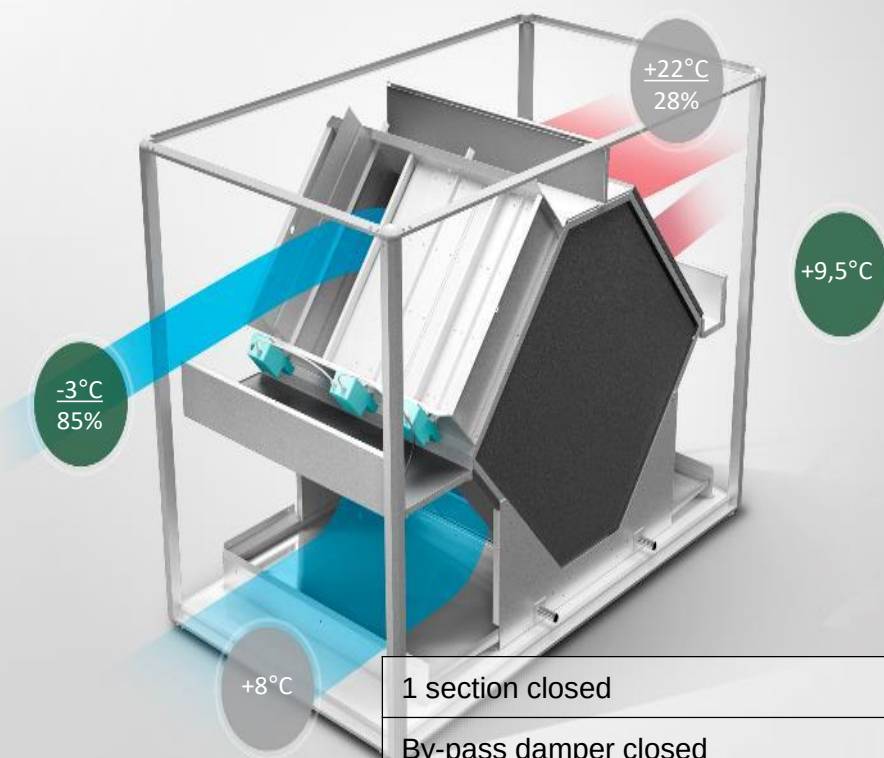


No regulation

Max recovery	85%
Additional heating	0,3°C

Heat transfer efficiency

Standard < 60%



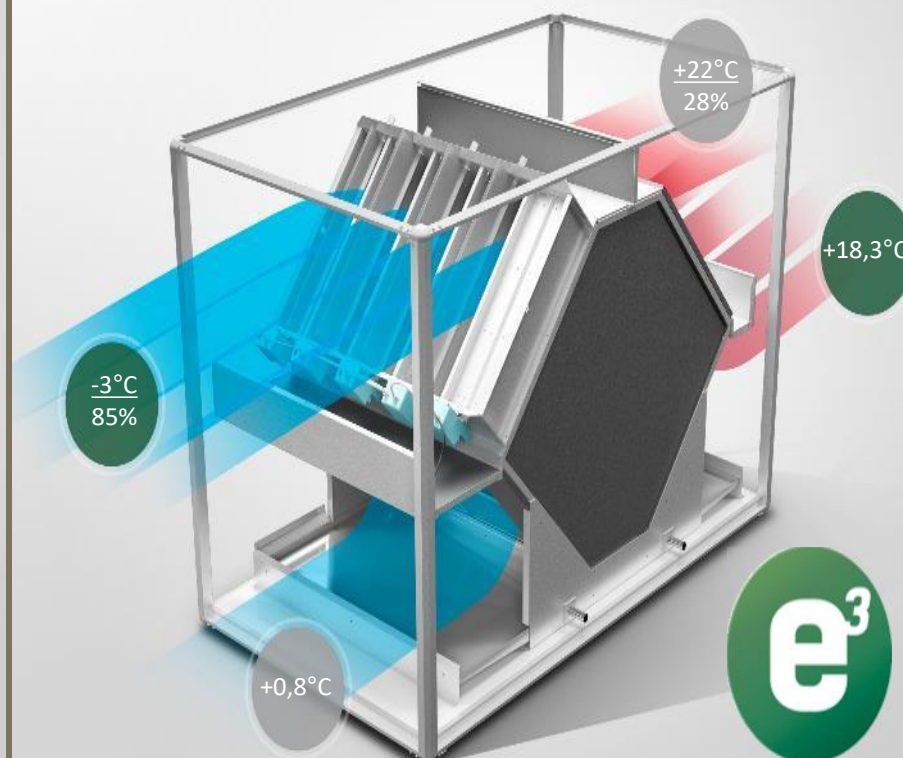
1 section closed

By-pass damper closed

Reduced recovery	< 60%
Additional heating	9,5°C
Increased pressure drop	350Pa

Heat transfer efficiency

Fläkt Woods - 85%

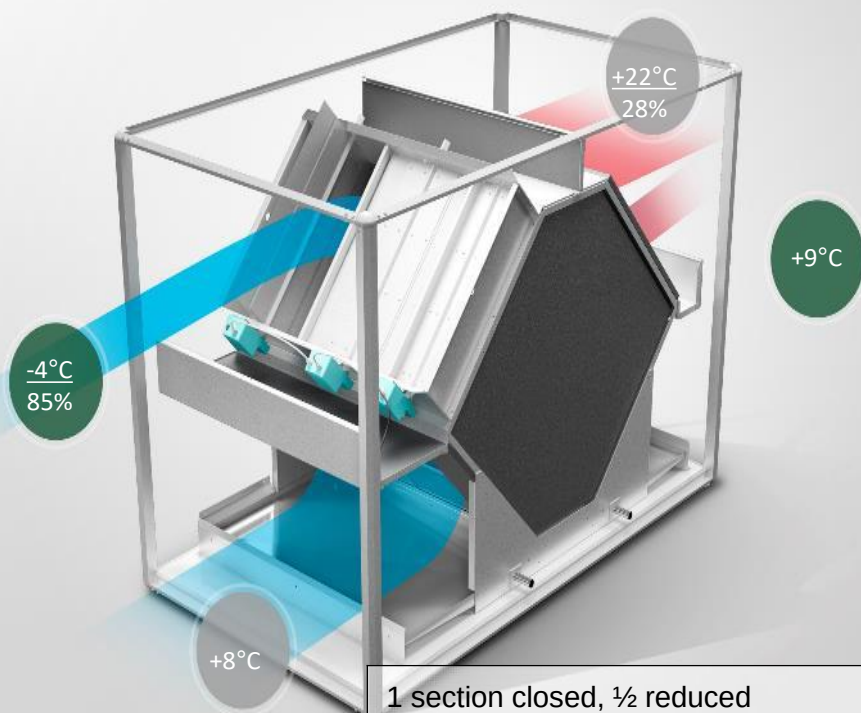


No regulation

Max recovery	85%
Additional heating	0,7°C

Heat transfer efficiency

Standard < 60%



1 section closed, ½ reduced recovery

By-pass damper closed

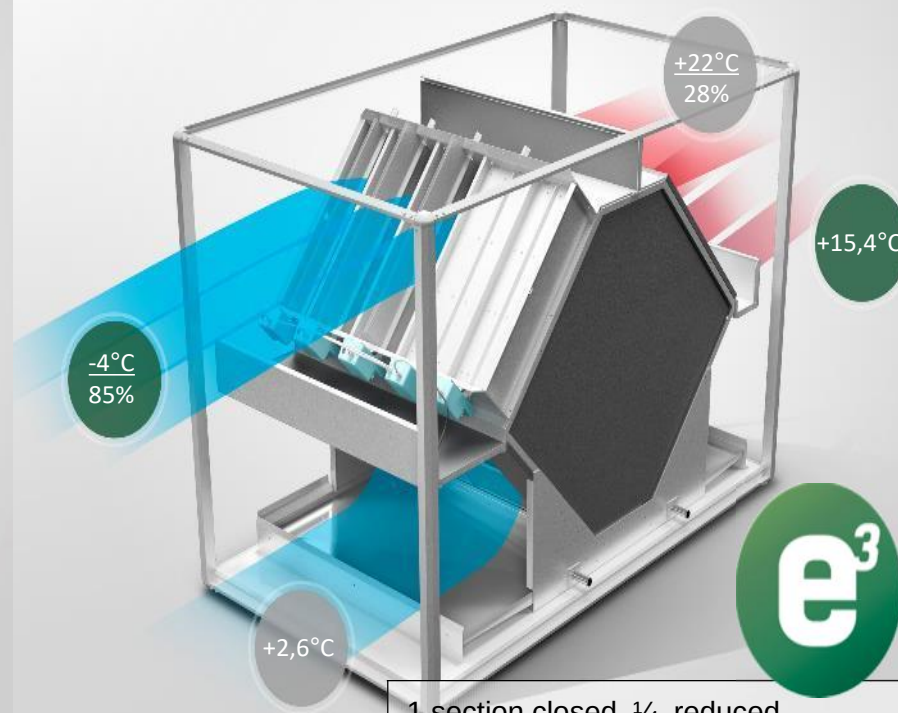
Reduced recovery	< 60%
------------------	-------

Additional heating	10°C
--------------------	------

Increased pressure drop	350Pa
-------------------------	-------

Heat transfer efficiency

Fläkt Woods < 75%



1 section closed, ¼ reduced recovery

By-pass damper closed

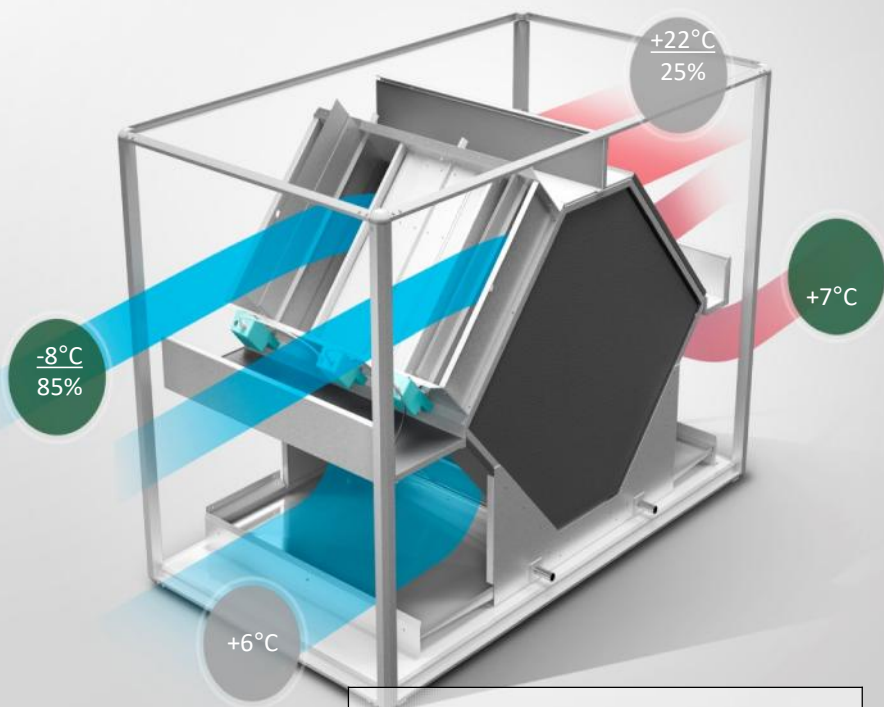
Reduced recovery	< 75%
------------------	-------

Additional heating	3,6°C
--------------------	-------

Increased pressure drop	100Pa
-------------------------	-------

Heat transfer efficiency

Standard < 55%



1 section closed, ½ reduced recovery

By-pass damper starts opening

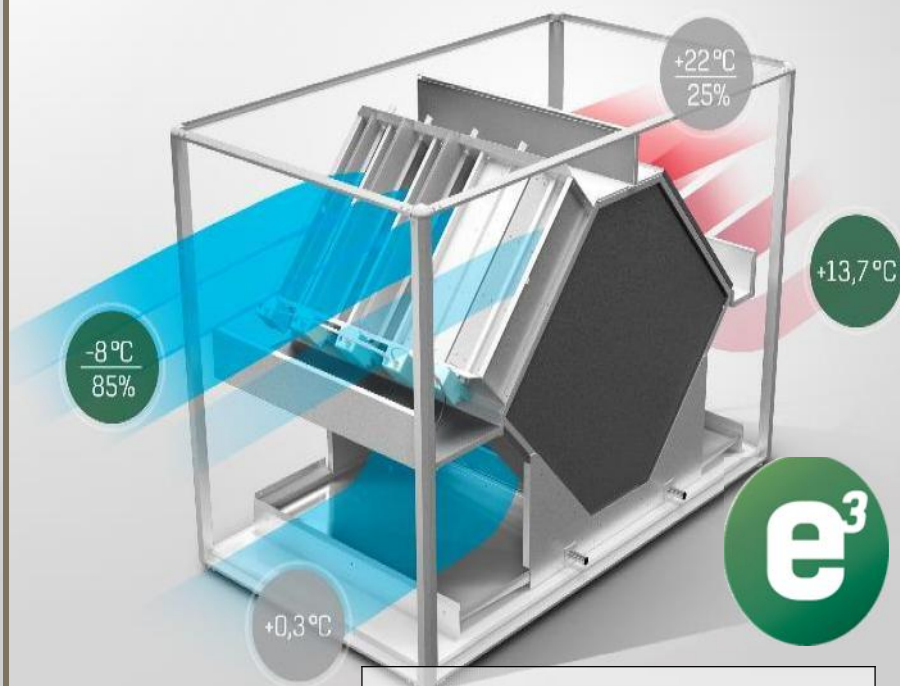
Reduced recovery	< 55%
------------------	-------

Additional heating	12°C
--------------------	----------------------

Increased pressure drop	250Pa
-------------------------	-------

Heat transfer efficiency

Fläkt Woods < 72%



1 section closed, ¼ reduced recovery

By-pass damper starts opening

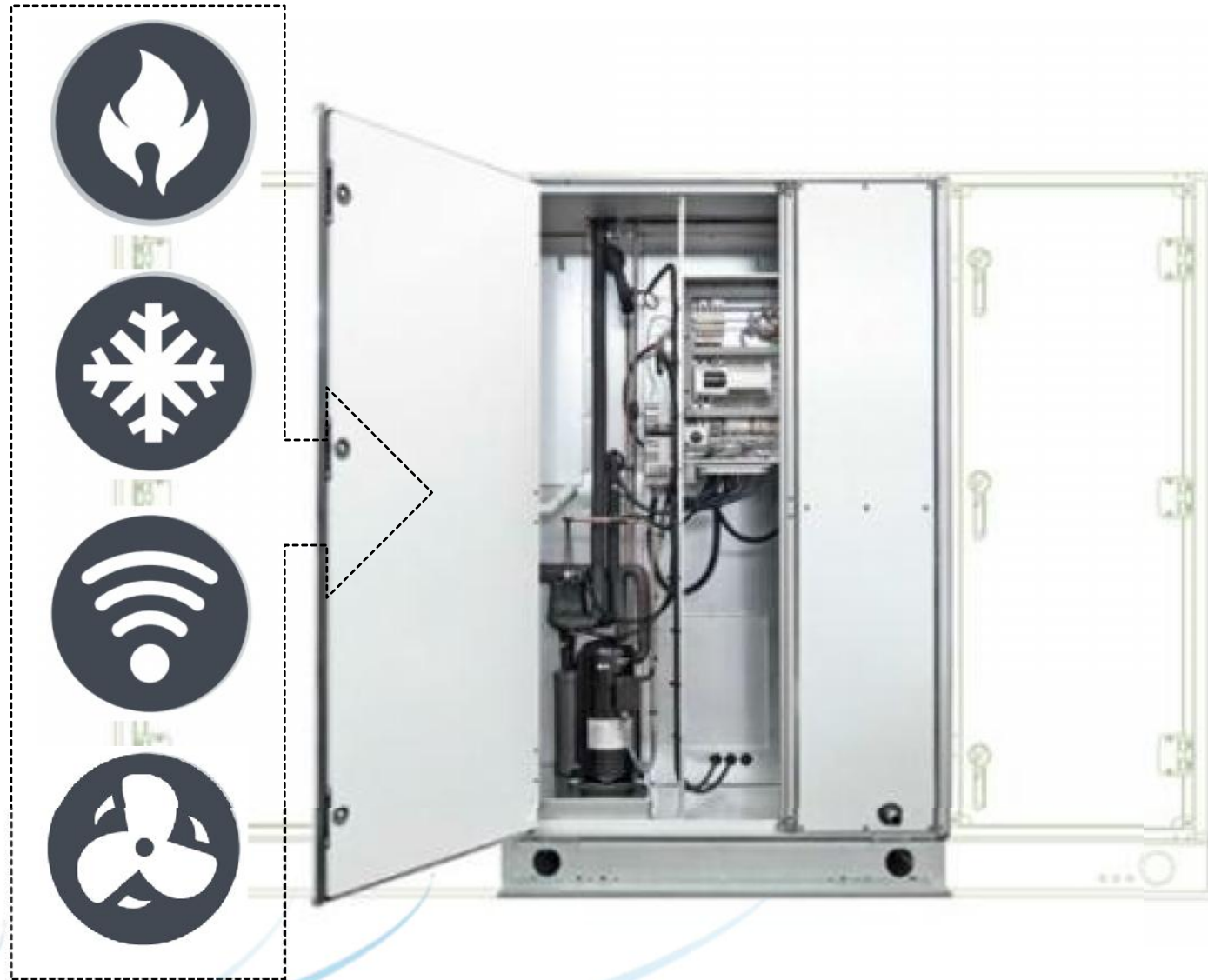
Reduced recovery	< 72%
------------------	-------

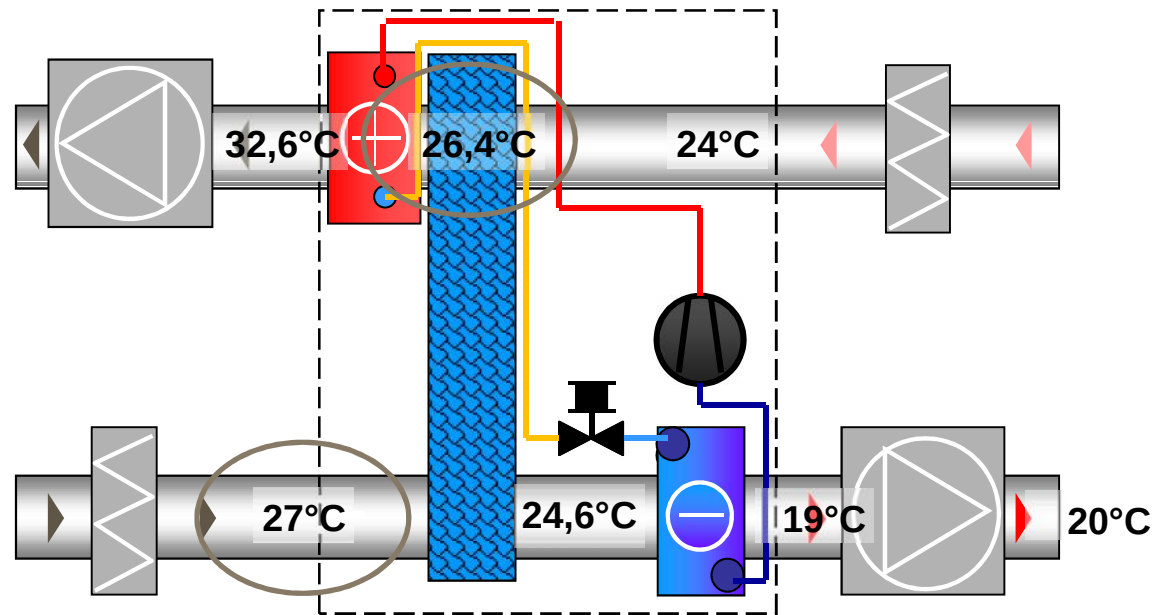
Additional heating	$5,3^{\circ}\text{C}$
--------------------	-----------------------

Increased pressure drop	75 Pa
-------------------------	-------



Integrated heating and cooling - ReCooler HP

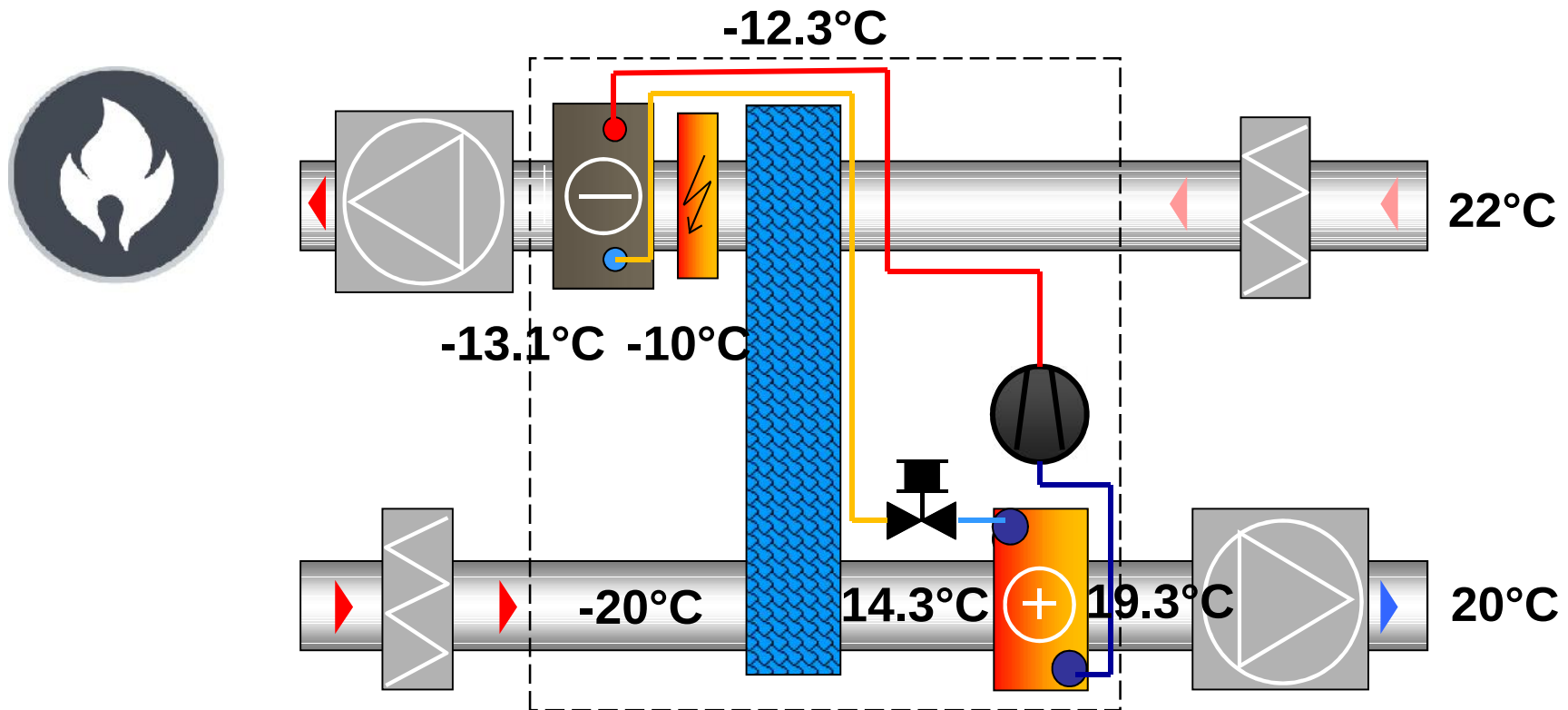




Less complexity – no extra fan, pumps & piping

More efficient – Lower temperature on condenser

ReCooler HP works?



More efficient – higher temperature to the coil

Reliable and efficient defrost system

eQ with Recooler HP enable extreme energy efficiency values

- Heat recovery
- Cooling recovery
- Heat pump
- Chiller

Total
EER
8^{*}

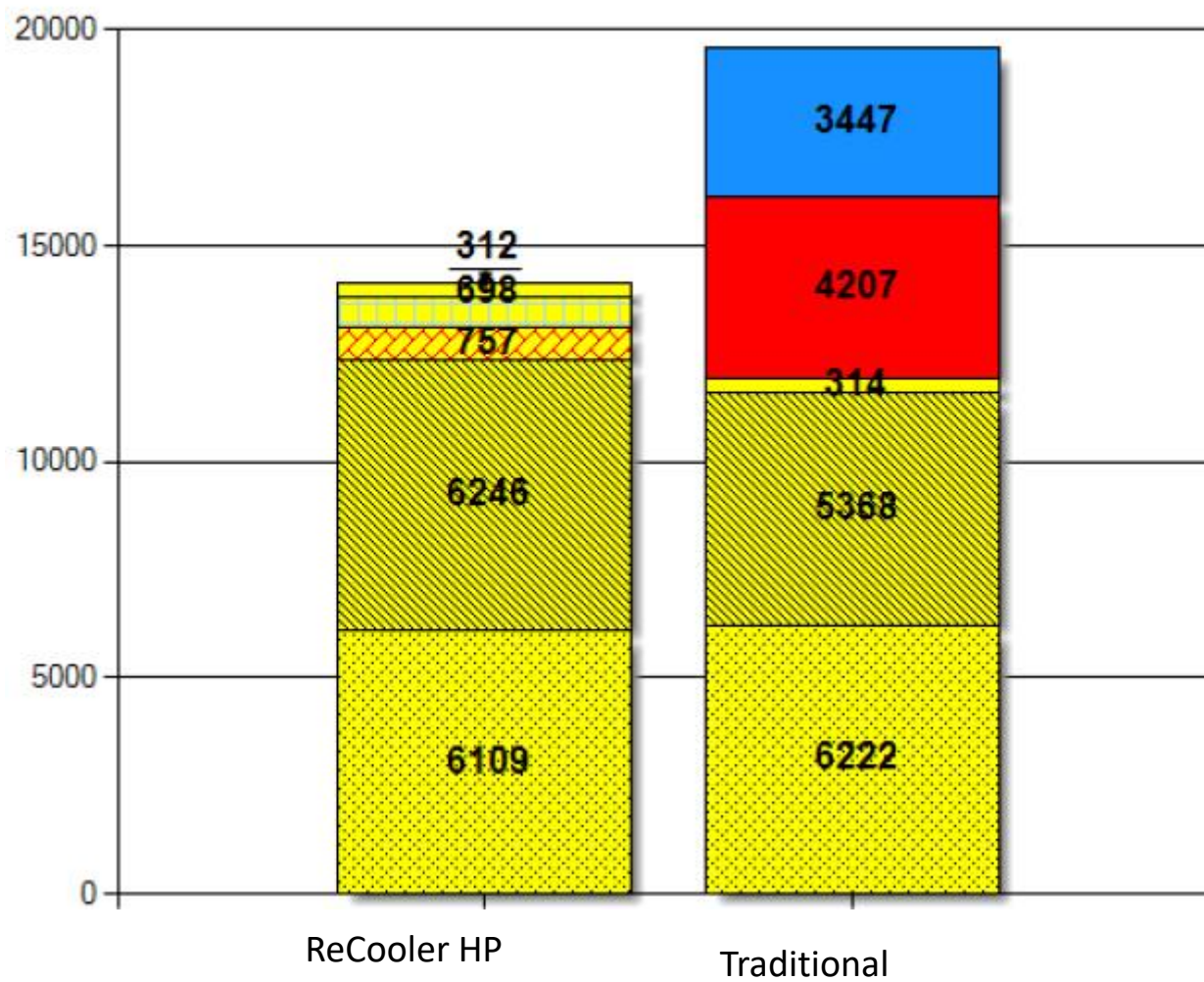
Heating
Recovery

Total
COP
60^{**}

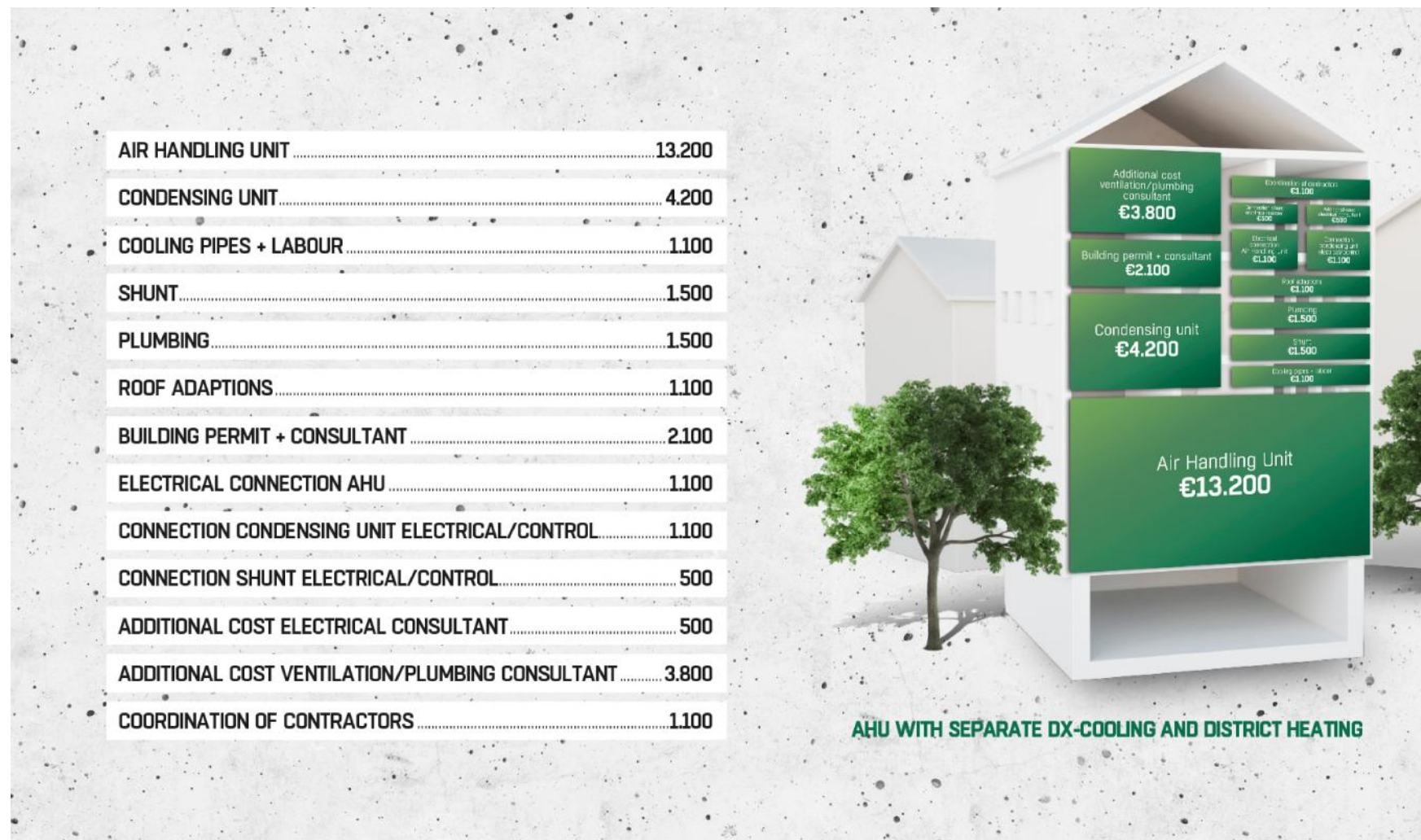
Cooling
Recovery

* at 27 °C outdoor temperature / EER=3,85
**at 0 °C outdoor temperature / COP=6,62

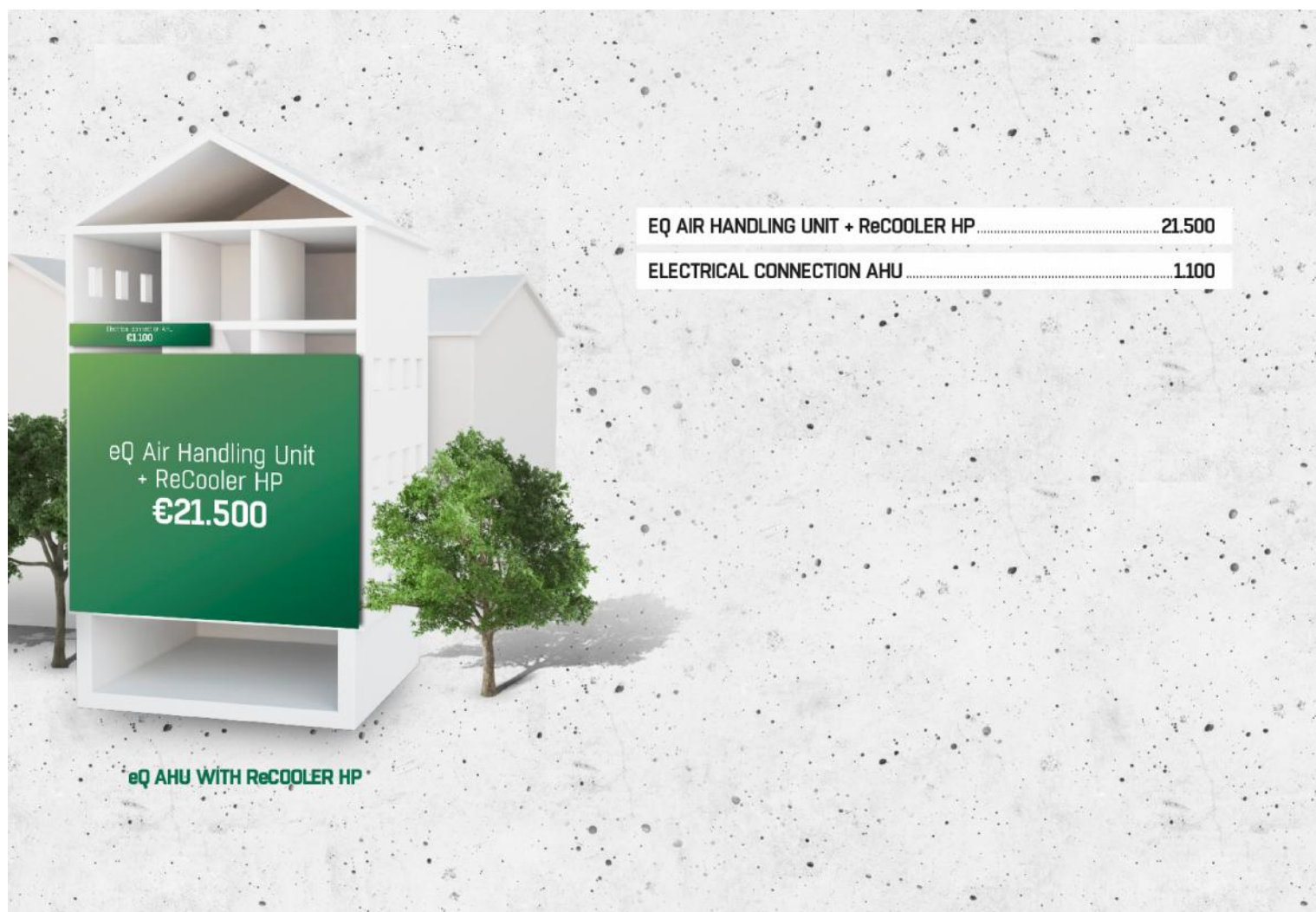
Comparison energy consumption



eQ with ReCooler HP – investment cost



eQ with ReCooler HP – investment cost



Investment cost comparison

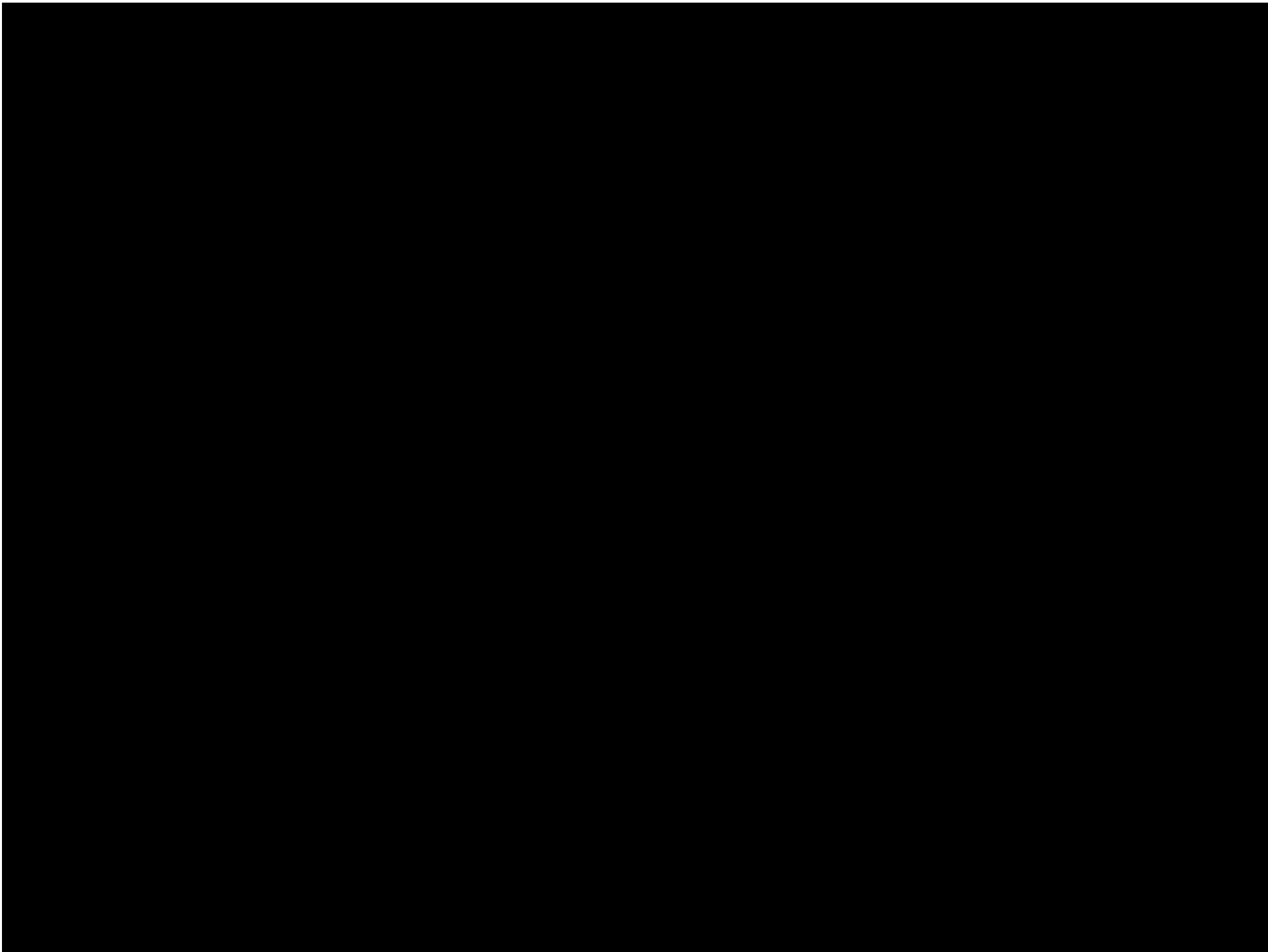


ECONET
PREMIUM
by FLÄKT WOODS

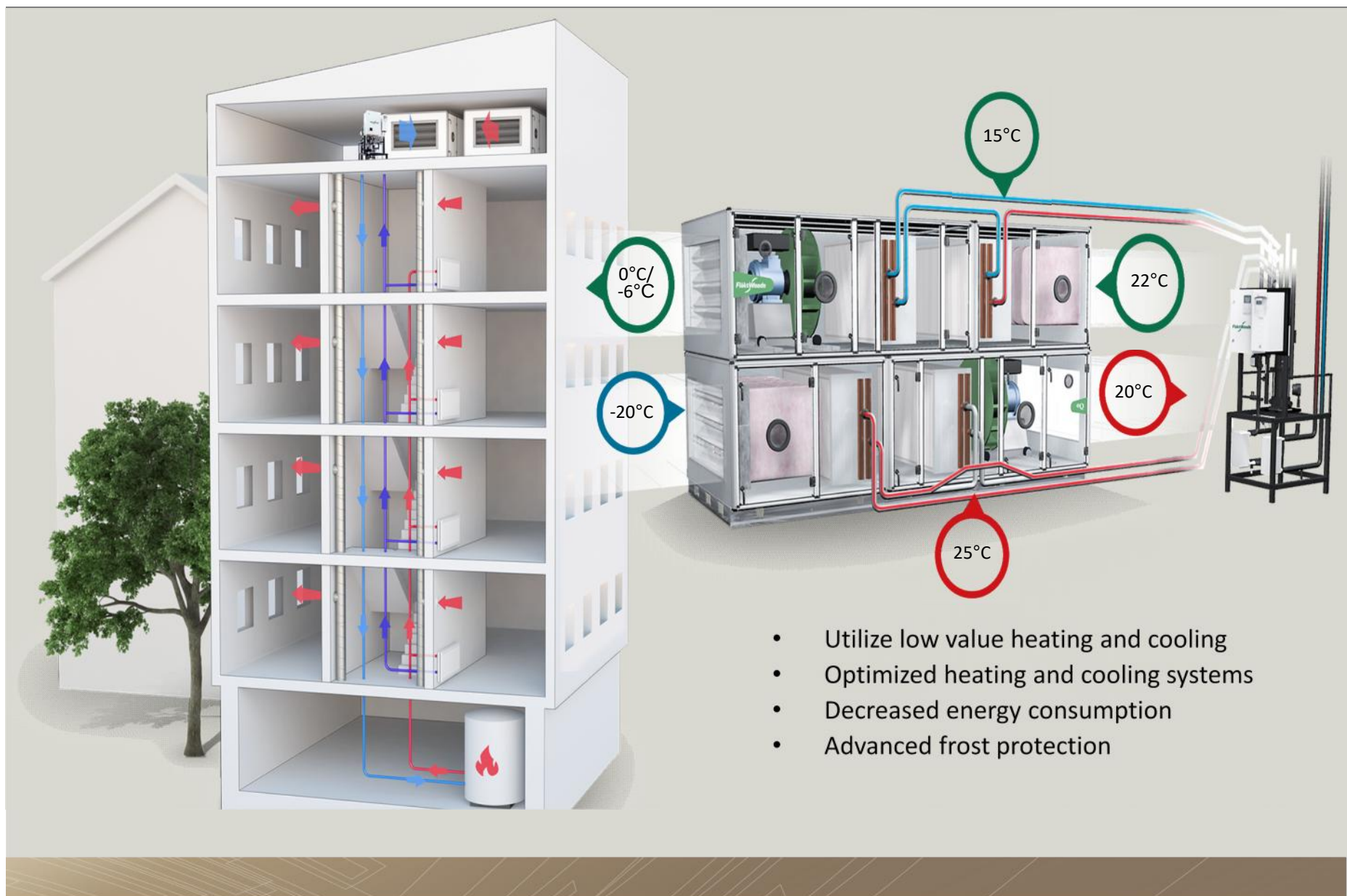


100% SEPARATED AIR FLOWS
80% TEMPERATURE EFFICIENCY





Använd energi med låg kostnad eller lågt värde med Econet® Premium



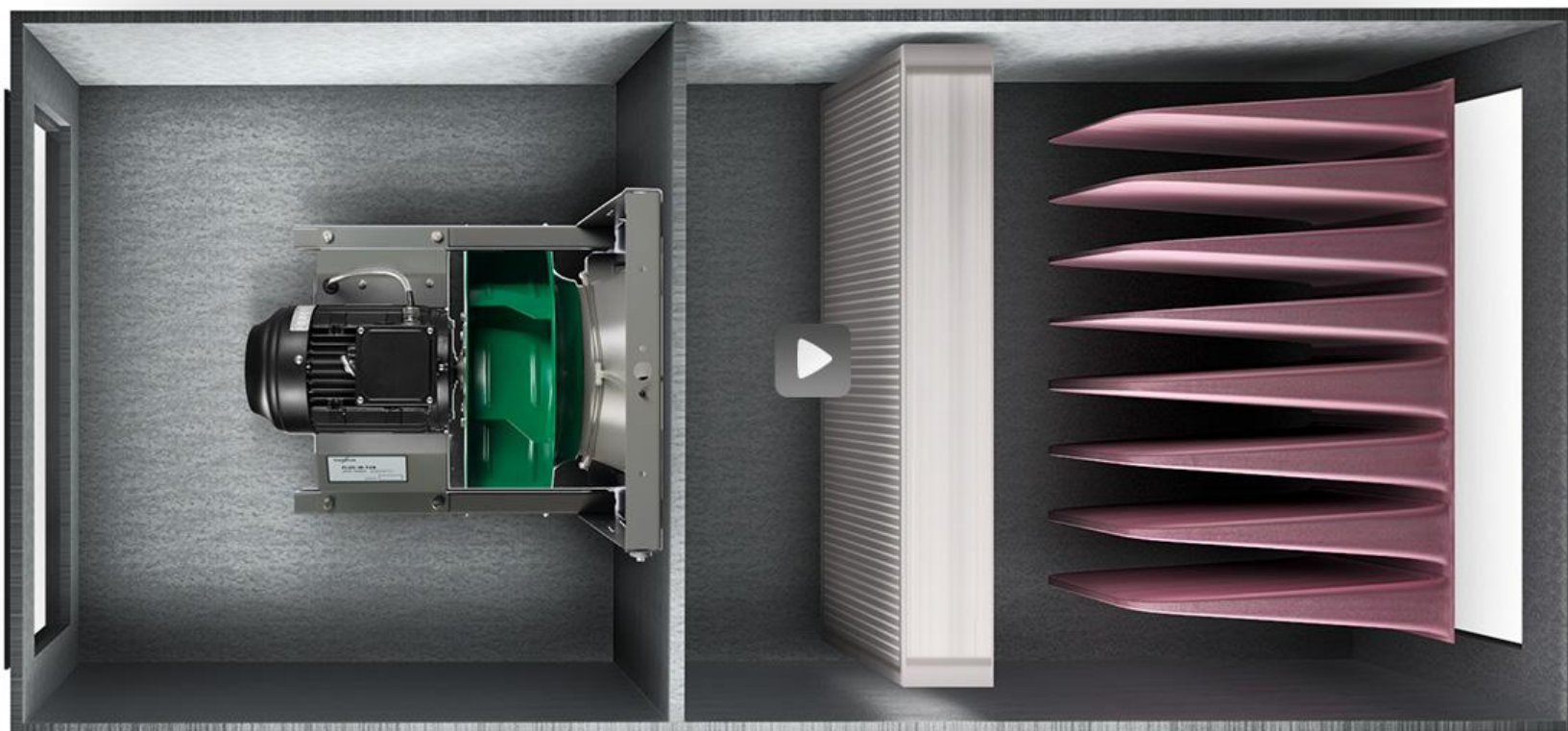


CentriFlow 3D

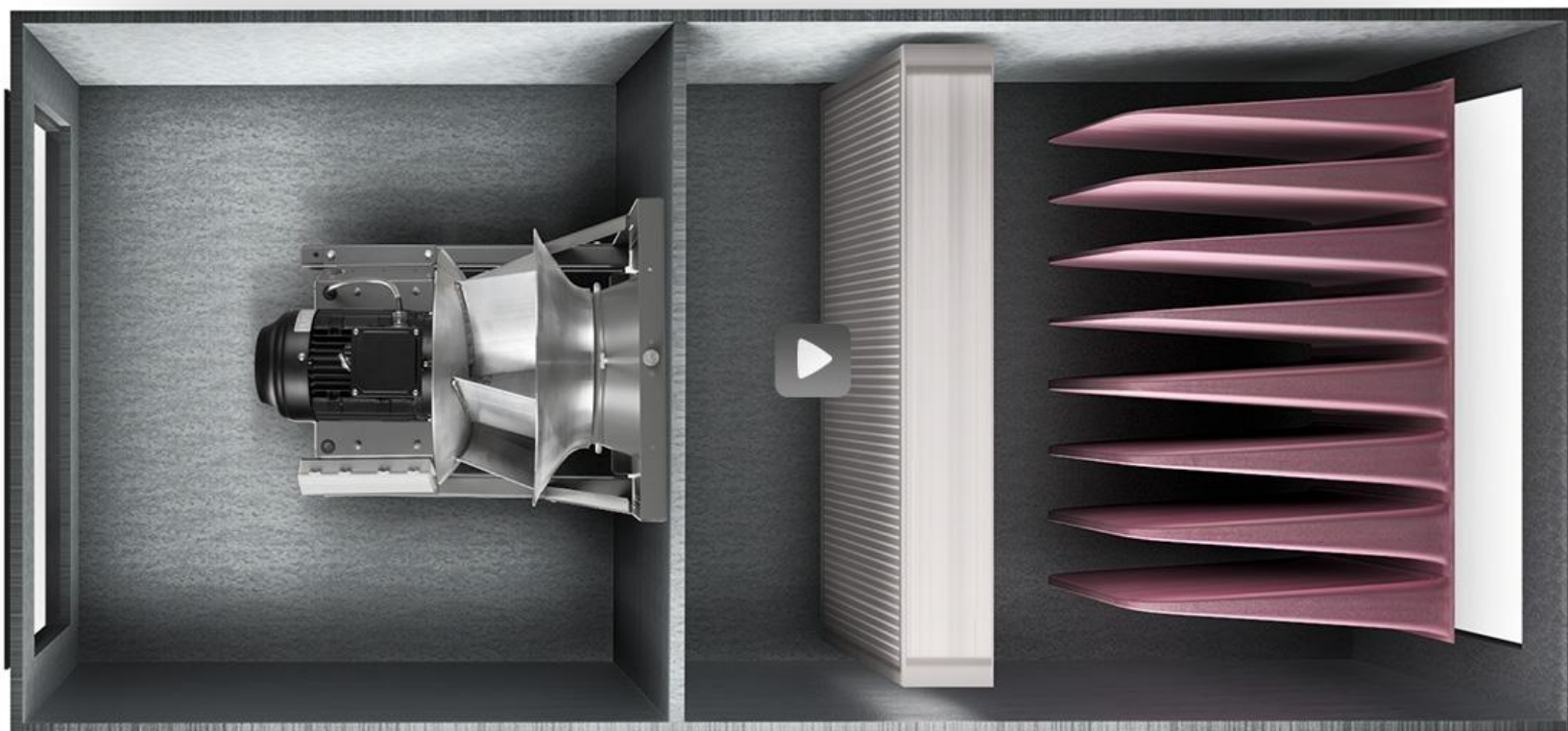
- Mixed flow fan for best performance inside AHU
- Optimized flow pattern increases energy efficiency
- Excellent sound performance – low noise



Conventional Pattern



Mix flow Pattern



PM/EC MOTORS



- High energy efficiency motors with IE4 rating
- High efficiency also at part load
- Compact physical dimensions



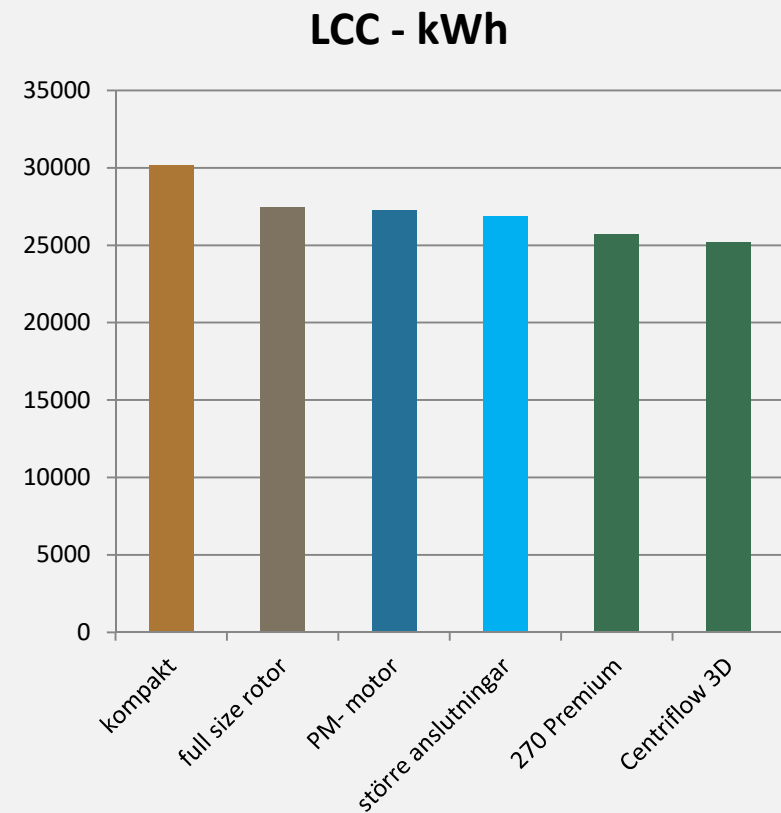
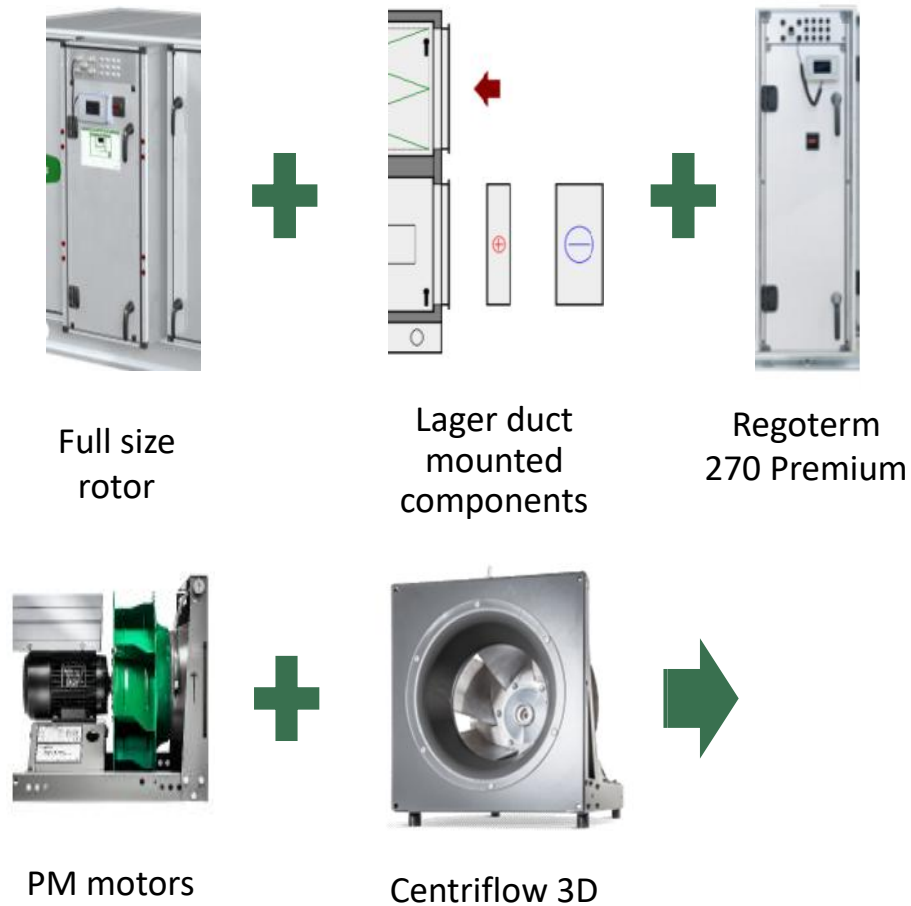
INDUCTION MOTORS



- Integral motor or separate VSD that can be connected to motor and mounted on AHU panel
- Outdoor units can be configured with VSD inside AHU casing



Best components give best possible energy performance



Energy cost – 17%
eQ Prime vs. eQ Kompakt