

VENTILATION HEATING & COOLING UNIT KUBEN 550 AW



TECHNICAL DESCRIPTION

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ALL INCLUSIVE



KUBEN 550 AW

A ventilation unit for **ALL** ventilation, comfort heating and domestic hot water in the house. Built-in outdoor air and exhaust air to water heatpump and a DHW-tank. **A world unique ventilation and heating unit in the cutting edge of technology!**

VENTILATION & HEATING UNIT KUBEN

550AW is a complete indoor climate unit for houses, apartments, condominiums etc.

The 550AW unit is extremely energy efficient, very competent and versatile.

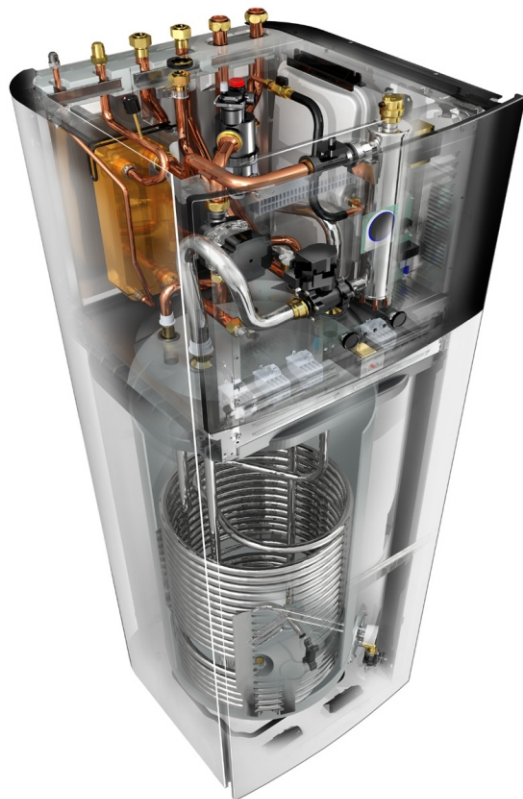
Kuben 550AW takes care of everything concerning the climate in the building:

- Ventilation with heat recovery
- Air heating and air cooling system
- Radiator heating
- Underfloor heating
- Hot water production

The Kuben 550 AW unit includes an integrated air to water heat pump (AW), a complete ventilation system with heat recovery and additional secondary duct system for air heating, domestic hot water tank and a system for radiator heating and underfloor heating. Together with an advanced electronic regulation system operated via internet it is a complete climate system in the cutting edge of technology.



INFORMATORY DETAILS



THE HEAT PUMP

The integrated air to water heat pump has the latest technology and uses environmentally friendly refrigerant. It has the best annual efficiency in the market and produces water with a temperature up to $+65^{\circ}\text{C}$. With the special developed combination grille the heat pump can take the energy *both* from outside air and from the exhaust air even though the heat pump is located inside the unit. With the combination of outside air and exhaust air the efficiency of the heat pump will be extraordinary and produced energy will be enough to cover the entire house's energy needs, including domestic hot water.

DHW TANK

The domestic hot water tank is made of stainless steel and contains 180 liter. It has an integrated additional heater for reserve if the outside temperature is exceptional low. The tank has an inbuilt magnetite filter for healthier water.

THE VENTILATION SYSTEM

Kuben 550 AW includes a modern high tech ventilation solution.

The first step built-in heat recovery unit is a counter current heat exchanger with more than 80% efficiency. It is used to preheat the incoming cool air in winter time and also help to cool down the supply air in summertime. It is completely sealed and no transfer of odours from the extract air to the supply air occurs.



The unit contains an electrical coil in the outdoor airflow for extra preheating and to prevent the exchanger from freezing in environment with high humidity.

In the supply air side, after the heat recovery unit, a water coil is placed and connected to the heat pump which provides hot water to warm the supply air to a set temperature or to a variable temperature to warm up the house by the air.

Filtration takes place through effective and economical filters both on the supply air, secondary air and extract air sides.

The fans are individually steplessly rev count regulated and you can choose between a range of variants when it comes to needs controlled air.



INFORMATORY DETAILS



AIR HEATING SYSTEM

To be able to warm up the entire house with air it is necessary to increase the airflow of the supply air which also transports the heating load. Depending on energy consumption, the outdoor air should not be increased more than the ventilation requires. Therefore an extra duct for secondary air is placed on the top of the 550AW unit.

The secondary air is removed from the living zone and is transported by a separate duct system to the ventilation unit where the air is filtered, warmed by the heat pump and then fed back to the living rooms, sleeping rooms etc. together with the supply air. It is never mixed with the extract air from WC, kitchen etc. which leaves the house after the heat is transferred in the heat recovery unit.

In this way the whole house will be warmed up very fast and efficiency together with an extraordinary indoor climate.

If there is a need for a little warmer temperature in the bathroom it is very convenient to use underfloor heating there, simultaneously with the air heating, to get a warm floor for bare feet.

THE HEATING SYSTEM

The heating of the house or the flat can be made in different ways. The heart in the system is the integrated air to water heat pump. It provides hot water to different locations which can be used alone or together with the others.

Possible heating functions, independently or in parallel operation:

- Air heating by the supply- and the secondary air flow.
- Radiator heating
- Underfloor heating
- Hot water production in DHW tank

RADIATOR OR UNDERFLOOR HEATING

To be able to get different temperatures in different rooms it is possible to use radiator and underfloor heating together with air heating.

Air heating is fast, radiator heating is slower and underfloor heating is very slow, but together they will provide a very comfortable indoor environment. Just set the temperature of the air heating as the lowest average temperature in the house or flat. In the rooms where required a warmer temperature, set a little warmer temperature on the radiators or the underfloor heating.

Of course the radiators or the underfloor heating is independent of the air heating and operates also perfectly alone, without air heating, but the operation will be a little bit slower.

HOT WATER PRODUCTION

The integrated domestic hot water tank will always provide warm water independent of which mode the system works in. The temperature of the hot water is set to be prioritized by the heat pump before the heating of the building, but with the big storage tank of warm water it will never be noticed a lower temperature in the domestic hot water nor in the house warming.

ADVANTAGES

ONE SYSTEM FOR:

- Ventilation
- Comfort cooling
- Air heating
- Radiator heating
- Underfloor heating
- Hot water production

INBUILT HEAT PUMP

- Totally integrated
- No outdoor unit
- Air to water heat pump
- Outdoor + exhaust air
- Made for cold climate
- Works down to -25°C

**UP TO 85%
HEAT RECOVERY**

**LOWER
OPERATION COST**

**SPACE SAVING
INSTALLATION**

**COMPONENTS FROM
THE BEST SUPPLIERS**

**SAVING MORE OF
REQUIRED ENERGY**

**OPERATION
VIA INTERNET**

**VERY LOW TOTAL
INVESTMENT.**

**EASY TO USE
OPERATION**

**ONE SUPPLIER
ONE INSTALLER**

**REVERSIBLE
HEAT PUMP**

**NO NEEDS FOR
TECH ROOM**

**VERY SILENT
OPERATION**

**INTEGRATED
DHW TANK 180 l**



**EASY HANDLING
AND SERVICE**

LATEST HEAT PUMP TECHNOLOGY

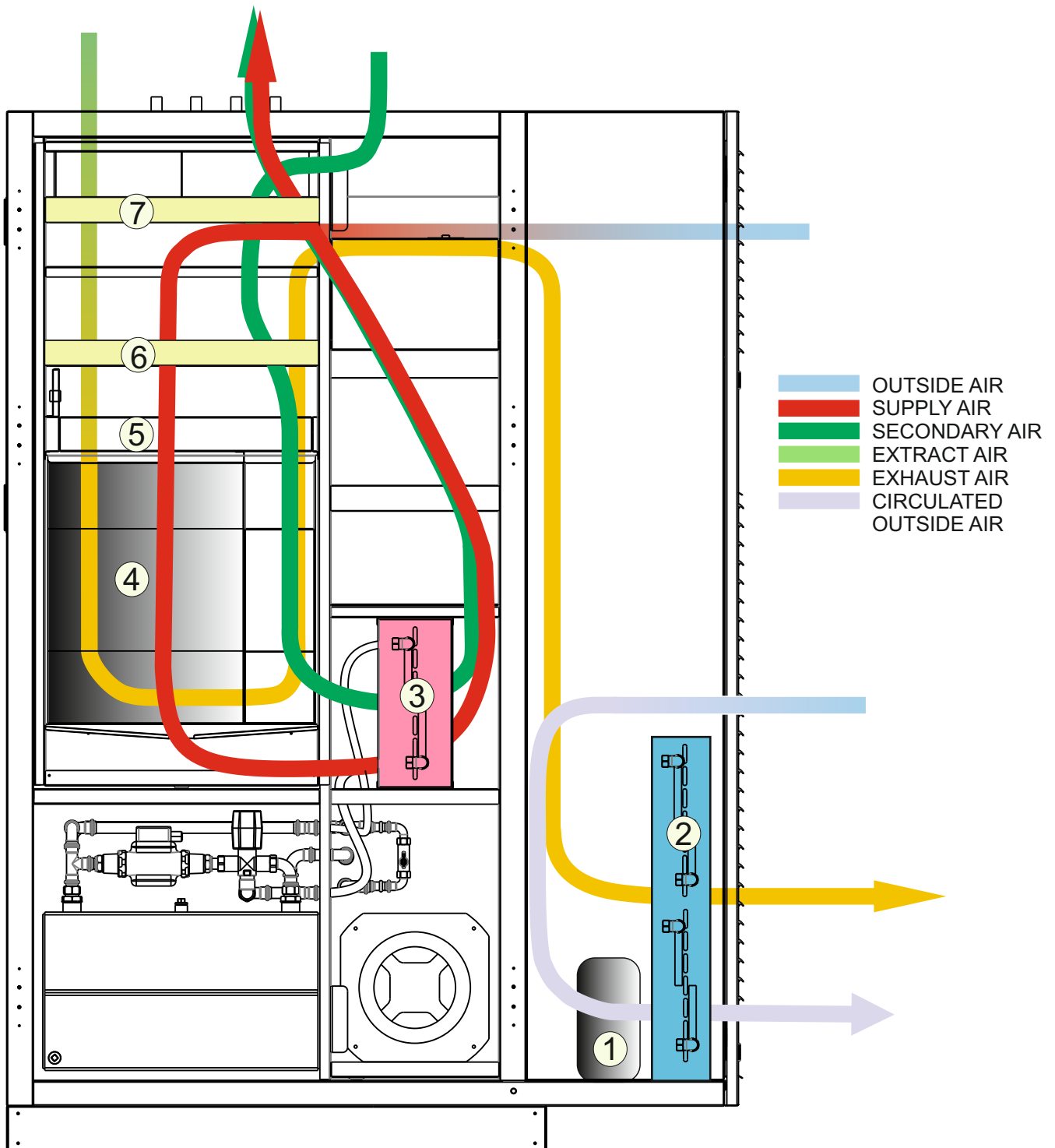
- More efficient R32 refrigerant
- 80% more environment friendly
- Inverter compressor is up to 30% more efficient.

**THE WHOLE SYSTEM
TESTED TOGETHER**

**A UNIQUE AND
SMART SYSTEM**

**LOWER COST FOR
MAINTENANCE**

AIRFLOW DIAGRAMME



1. **Heat pump.** Inverter heat pump air to water. Integrated in the unit. No outside part.
2. **Evaporator coil.** Takes the heat both from outside air and exhaust air.
3. **Water coil.** Heating (or cooling) for secondary air and supply air.
4. **Heat recovery unit.** Counter current type with recovery rate >80%.
5. **By pass damper.** By passes the airflow in certain operation modes.
6. **Supply air filter:** Cassette filter in class F7.
7. **Exhaust air filter:** Cassette filter in class F7.

TECHNICAL SPECIFICATIONS, GENERAL



KUBEN 550 AW

Air quantities:			
Normal speed	165 l/s	(954 m³/h)	60 Pa
Forced speed	200 l/s	(1260 m³/h)	60 Pa
Supplementary heat:			
Preheater	1 kW		
Heater	Water heated by heat pump		
Electrical data:			
Connection	3 phase, 400V, 10 A		
Supply air fan	EC 170 W, 230 V, 1,4 A (50/60 Hz)		
Exhaust air fan	EC 170 W, 230 V, 1,4 A (50/60 Hz)		
Heat recovery:		Counter-current heat exchanger Recovery >80%	
Sound level:		30 dB(A) max 165 l/s (60 Pa) 35 dB(A) max 200 l/s (60 Pa)	
Duct connection:		Circular duct Ø 160 on extract air air and secondary air. Supply air Ø 200	
Colour:		White powder coating.	
Dimensions:			
Unit	Height	2100 mm	incl base
	Width	1450 mm	
	Depth	1055 mm	incl door
	Depth	55 mm	
Door, easily removable for inbound transport			
Unit without door	Depth	1000 mm	

- * Extremely low noise level due to the low internal drop in pressure, good aerodynamics and technically developed sound insulation.
- * Highly effective heat recovery. > 80%.
- * Very compact unit that can be placed without a technical room due to the low sound level.
- * Very simple and fast installation.
- * Turnkey system with built-in regulation. Simply connect electrical power, water and ventilation ducts.
- * Touch display with color graphics.



- * Control and operation over the Internet (cloud based)



HEATING

Preheater 1 kW and warm water afterheating coil. Temperature regulation with pulse control in preheater. Overheating protection on the electrical battery. Room air temperature regulation. Can be changed to a different control type. Water after-heating with power from the integrated air-water heat pump. Temperature regulation with electronic heat regulator. Built-in regulating anti-freezing system. PI regulation.

STANDARD EQUIPMENT

Direct operated, energy saving supply- and exhaust air fans of EC type. Heat exchanger of counter current type. Temperature efficiency >80%. Completely tight without transmission between supply air and exhaust air. Filter F7. Cassette filter with very good filter economy. Heating from the inbuilt air-water heat pump. Built-in electrical and control unit. Pre-prepared for the "cloud". Automatic defrosting function. Individual stepless speed regulation with forcing. Supply air temperature regulation or room temperature regulation. Automatic bypass function. Multiple time ducts with automatic summertime function. Built-in stepless air flow regulation. Loose touch display for wall mounting. Color graphics. Forcing option in the display for airing out. Programmable alarm list.

OPTIONS

Online Controller which can control the operation mode and temperatures, monitoring the status of the system and set schedules for operation.



Duct kit. Complete kit with insulated ducts, bendable pipes and details for a complete installation. Exhaust air silencers and supply air silencers.

TECHNICAL SPECIFICATIONS HEATING COOLING

SIZE		550 AW 60	550 AW 75	550 AW 100
Heating capacity	kW	4,30 ⁽¹⁾ 4,20 ⁽²⁾	6,00 ⁽¹⁾ 5,90 ⁽²⁾	7,50 ⁽¹⁾ 7,50 ⁽²⁾
Cooling capacity	kW	5,56 ⁽¹⁾ 4,37 ⁽²⁾	5,96 ⁽¹⁾ 4,87 ⁽²⁾	6,25 ⁽¹⁾ 5,35 ⁽²⁾
Power input heating	kW	0,85 ⁽¹⁾ 1,16 ⁽²⁾	1,24 ⁽¹⁾ 1,69 ⁽²⁾	1,63 ⁽¹⁾ 2,14 ⁽²⁾
Power input cooling	kW	0,94 ⁽¹⁾ 1,14 ⁽²⁾	1,06 ⁽¹⁾ 1,33 ⁽²⁾	1,16 ⁽¹⁾ 1,51 ⁽²⁾
COP		5,10 ⁽¹⁾ 3,65 ⁽²⁾	4,85 ⁽¹⁾ 3,50 ⁽²⁾	4,60 ⁽¹⁾ 3,50 ⁽²⁾
EER		5,94 ⁽¹⁾ 3,84 ⁽²⁾	5,61 ⁽¹⁾ 3,67 ⁽²⁾	5,40 ⁽¹⁾ 3,54 ⁽²⁾
SCOP Water outlet 55°C		3,26	3,26	3,32
SCOP Water outlet 35°C		4,48	4,47	4,56
Domestic hot water efficiency	%	127		
DHW tank water volume	liter	180		
Temperature water max	°C	60		
Pressure water max	bar	10		
Operation range heating	°C	15~65		
Operation range cooling	°C	5~22		
Operation temp DHW max	°C	60		
Refrigerant type		R-32		
GWP		675,0		
Refrigerant charge	kg	1,50		

(1) Cooling Ta 35°C - LWE 18°C (DT = 5°C, Heating Ta DB/WB 7°C / 6°C - LWC 35°C (DT = 5°C)

(2) Cooling Ta 35°C - LWE 7°C (DT = 5°C, Heating Ta DB/WB 7°C / 6°C - LWC 45°C (DT = 5°C)

**FILTER
SPARE
PARTS
SERVICE**

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DIMENSIONS, DUCT CONNECTIONS

