

Series  
**VENTS VUT EH EC**



LCD control panel



Air handling units with the air capacity up to **600 m<sup>3</sup>/h** and recuperation efficiency up to 95% in the sound- and heat-insulated casing.

Series  
**VENTS VUT WH EC**



SAS908 control panel



Air handling units with the air capacity up to **550 m<sup>3</sup>/h** and the recuperation efficiency up to 95% in the sound- and heat-insulated casing with the water heating coils.

■ **Description**

VUT EH EC air handling units with the electric heating battery and VUT WH EC with water heating coils are the complete ventilation units designed to provide both supply and exhaust ventilation, air filtration and cleaning as well as removal of contaminated exhaust air. The exhaust air energy is transferred to supply air through the plate heat exchanger. Applied in ventilation and conditioning systems for various premises requiring economic solution and controllable air exchange. EC-motors reduce energy consumption by 1.5-3 times and ensure high efficiency and low noise level at the same time. All the models are compatible with Ø 150, 160 and 200 mm round ducts.

■ **Modifications**

**VUT EH EC** – a range of compact Energy saving Air Handling Units (AHU) equipped with intake and exhaust centrifugal fans with EC motors, counter-

flow heat recovery elements, electric heater and air filters.

**VUT WH EC** – a range of compact Energy saving Air Handling Units (AHU) equipped with supply and exhaust centrifugal fans with EC motors, counter-flow heat recovery elements, water or glycol heating coils and air filters.

■ **Casing**

The casing is manufactured from aluminum-zinc compound with internal 25 mm mineral wool heat- and sound- insulating layer.

■ **Filter**

Two incorporated G4 panel filters for extract air ventilation and F7 filters for supply air ventilation are supplied with the unit.

■ **Fans**

The double inlet impellers with forward curved blades are powered by high efficient electronically commutated (EC) direct current motors with external rotor. As of today, such motor type is the most advanced solution for energy saving. EC-motors are featured with high efficiency and the best control over the whole fan speed range. Premium efficiency (reaching 90%) is an absolute advantage of the electronically commutated motors.

■ **Heat recovery**

The units are equipped with the high efficient heat exchangers reaching up to 95%. VUT EH EC and VUT WH EC models are fitted with the counter-flow heat exchangers made of polystyrene. The unit is equipped with the drain pan at the bottom of the heat exchanger for condensate drainage.

**Designation key:**

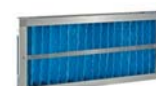
Series	Rated air capacity, m <sup>3</sup> /h	Heater type	Duct connection	Motor type
<b>VENTS VUT</b>	300; 400; 600	<b>E</b> – electric heater; <b>W</b> – water heater	<b>H</b> – horizontal duct connection	<b>EC</b> – electronically commutated synchronous motor

**Accessories**



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**Offered options to the units**



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**■ Heater**

If the outside temperature is too low and/or heat energy transfer from the extract air is insufficient to heat up the incoming air to the required temperature, the heater automatically be turned on. The control system regulates the heating power to keep the indoor temperature as set by the user. The units supplied with the water heaters are marked as VUT WH, and the units with electric heaters are marked as VUT EH.

**■ Control and automation**

The unit is equipped with the built-in automation system with multifunctional control panel with graphic LED display.

The standard delivery set includes 10 m wire for connection to the control panel. Electronic freezing protection is prevents the heat exchanger freezing. It includes the by-pass damper and heater. The temperature sensor activates the by-pass air shutter opening to let the air flow pass through the heat exchanger by-pass duct. During the heat exchanger defrost cycle the supply air is warmed up in the heater up to the required temperature. During the defrosting process the warm exhaust air warms the heat exchanger. After that the by-pass damper closes again, the heater is switched off, supply air warms up again through the heat exchanger and the unit continues operating under rated conditions.

**■ VUT EH EC control and protection functions**

- ▶ safe start-up and shutdown of the unit;
- ▶ setting and maintaining the desired temperature of supply air with the control panel;
- ▶ motor speed control and air capacity regulation accordingly by means of the control panel;
- ▶ control of the external intake and exhaust air damper actuators;
- ▶ working out the required patterns while the unit start-up and shutdown;
- ▶ programming daily and weekly schedules by user;
- ▶ active electric heating elements overheating protection;
- ▶ disabling electric heater operation when the motor is not running;
- ▶ two electric heater over-heating thermostats;
- ▶ automatic switch ensuring the short circuit protection of the automation system;
- ▶ control of filter clogging.

**■ VUT WH (EC) control and protection functions**

- ▶ safe start-up and shutdown of the unit;
- ▶ supply air temperature control by means of actuating three-way valve regulating the feed of the heat medium into the water coils;
- ▶ water (glycol) heating coils freezing protection as the leaving air temperature and leaving heat medium temperature sensors require;
- ▶ controlling the heat exchanger by-pass actuator;

- ▶ control of the external circulation pump installed on the heat medium entering into the water coils;
- ▶ heat exchanger freezing protection;
- ▶ control of the supply and exhaust fans;
- ▶ air clogging controlling (according to engine hours);
- ▶ control of the external intake and exhaust air damper actuators.

The air handling unit is equipped with the remote control panel that provides:

- ▶ starting-up/shutdown of the ventilation unit;
- ▶ setting the required air capacity;
- ▶ setting the required supply air temperature;
- ▶ displaying the temperature in the room.

**■ Mounting**

Air handling unit is mounted on the floor, suspended to the ceiling by means of a seat angle with inserted vibration-damping element or attached to a wall with brackets. The unit can be mounted either in service spaces or in main premises above the suspended ceiling, in the pocket or the unit can be placed directly in the room. Mounting in any position shall provide the correct condensate drainage. Access for the unit maintenance and filter cleaning shall be reserved on the pane side.

**Accessories for air handling units:**

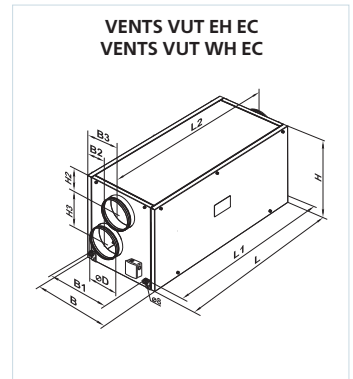
Type	G4 replaceable filter (panel filter)	F7 replaceable filter (panel filter)
VUT 300-1 EH EC VUT 300-2 EH EC VUT 400 EH EC VUT 600 EH EC VUT 300-1 WH EC VUT 300-2 WH EC VUT 400 WH EC VUT 600 WH EC	SF VUT 300-600 EH/WH G4	SF VUT 300-600 EH/WH F7

VENTS  
 VUT EH EC /  
 WH EC  
 AIR HANDLING UNIT WITH  
 HEAT RECOVERY SERIES

## AIR HANDLING UNITS WITH HEAT RECOVERY

### Unit overall dimensions:

Type	Dimensions, [mm]										
	∅D	B	B1	B2	B3	H	H2	H3	L	L1	L2
VUT 300-1 EH EC	149	500	403	161	249	555	127	231	1092	1137	1198
VUT 300-2 EH EC	159	500	403	161	249	555	127	231	1092	1137	1198
VUT 400 EH EC	199	500	403	161	249	555	127	231	1092	1137	1198
VUT 600 EH EC	199	500	403	161	249	555	127	231	1092	1137	1198
VUT 300-1 WH EC	149	500	403	161	249	555	127	231	1092	1137	1198
VUT 300-2 WH EC	159	500	403	161	249	555	127	231	1092	1137	1198
VUT 400 WH EC	199	500	403	161	249	555	127	231	1092	1137	1198
VUT 600 WH EC	199	500	403	161	249	555	127	231	1092	1137	1198



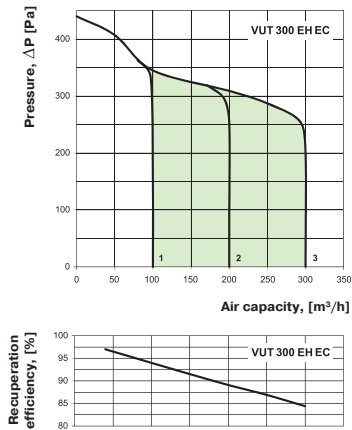
### Technical data:

	VUT 300-1 EH EC	VUT 300-2 EH EC	VUT 300-1 WH EC	VUT 300-2 WH EC
Unit supply voltage [V / 50 Hz]			1~ 230	
Maximum fan power [W]			2pcs. x 70	
Fan current [A]			2pcs. x 0,60	
Electric heater capacity [kW]	3,0			-
Electric heater current [A]	13,0			-
Number of water (glycol) coil rows	-			2
Total power of the unit [kW]	3,14			0,14
Total current of the unit [A]	14,2			1,2
Air capacity [m³/h]			300	
RPM			1380	
Noise level at 3m [dB[A]]	24-45			24-45
Operating temperature [°C]			-25 up to +60	
Casing material			aluzink	
Insulation			25 mm mineral wool	
Filter: exhaust			G4	
intake			F7 (EU7)	
Duct connection diameter, [mm]	∅ 150	∅ 160	∅ 150	∅ 160
Weight, [kg]	38			40
Recuperation efficiency			up to 90%	
Heat exchanger type			counter-flow	
Heat exchanger material			polystyrene	

### Technical data:

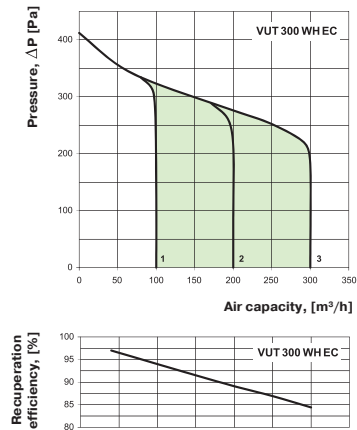
	VUT 400 EH EC	VUT 400 WH EC	VUT 600 EH EC	VUT 600 WH EC
Unit supply voltage [V / 50 Hz]	1~ 230		1~ 230	
Maximum fan power [W]	2pcs. x 175		2pcs. x 175	
Fan current [A]	2pcs. x 1,3		2pcs. x 1,3	
Electric heater capacity [kW]	4,0	-	4,0	-
Electric heater current [A]	17,4	-	17,4	-
Number of water (glycol) coil rows	-	2	-	2
Total power of the unit [kW]	4,35	0,35	4,35	0,35
Total current of the unit [A]	20,0	2,6	20,0	2,6
Air capacity [m³/h]	400		600	550
RPM	1340		2150	
Noise level at 3m [dB[A]]	28-47	28-47	28-47	28-47
Operating temperature [°C]	-25 up to +60		-25 up to +60	
Casing material	aluzink		aluzink	
Insulation	25 mm mineral wool		25 mm mineral wool	
Filter: exhaust	G4		G4	
intake	F7 (EU7)		F7 (EU7)	
Duct connection diameter, [mm]	∅ 200		∅ 200	
Weight, [kg]	38	40	38	40
Recuperation efficiency	up to 90%		up to 90%	
Heat exchanger type	counter-flow		counter-flow	
Heat exchanger material	polystyrene		polystyrene	

**VENTS VUT EH EC**



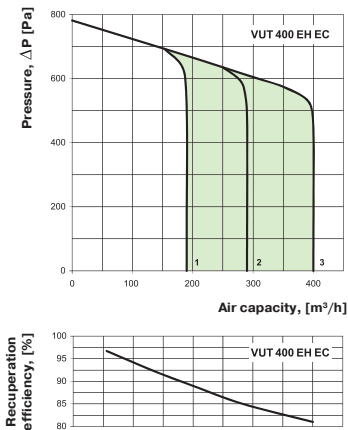
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	51	30	48	46	37	42	36	32	21
L <sub>WA</sub> to outlet	dB(A)	60	41	54	57	55	44	46	35	24
L <sub>WA</sub> to environment	dB(A)	33	23	23	32	27	19	15	19	18

**VENTS VUT WH EC**



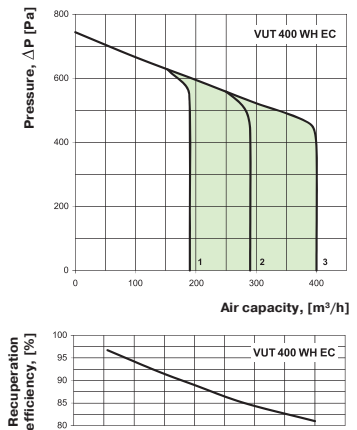
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	49	30	46	49	39	42	38	31	20
L <sub>WA</sub> to outlet	dB(A)	60	39	55	58	52	45	45	35	26
L <sub>WA</sub> to environment	dB(A)	34	20	23	30	27	18	18	20	21

**VENTS VUT EH EC**



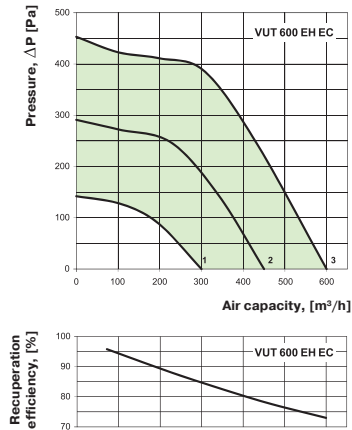
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	54	32	50	51	40	43	40	37	25
L <sub>WA</sub> to outlet	dB(A)	65	44	57	58	54	51	48	38	27
L <sub>WA</sub> to environment	dB(A)	37	27	28	32	29	22	19	21	23

**VENTS VUT WH EC**



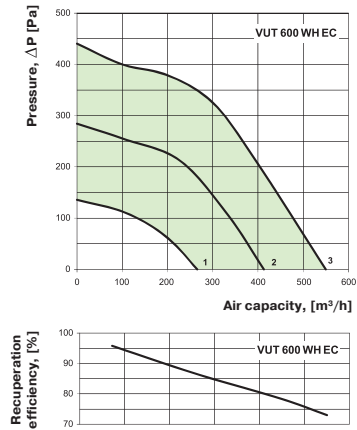
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	56	33	51	50	40	44	41	37	22
L <sub>WA</sub> to outlet	dB(A)	62	42	57	58	58	48	49	36	26
L <sub>WA</sub> to environment	dB(A)	36	25	27	34	29	20	19	25	23

**VENTS VUT EH EC**



Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	59	36	55	54	43	46	43	38	26
L <sub>WA</sub> to outlet	dB(A)	68	45	60	64	61	52	52	40	29
L <sub>WA</sub> to environment	dB(A)	38	29	31	38	31	26	24	27	26

**VENTS VUT WH EC**

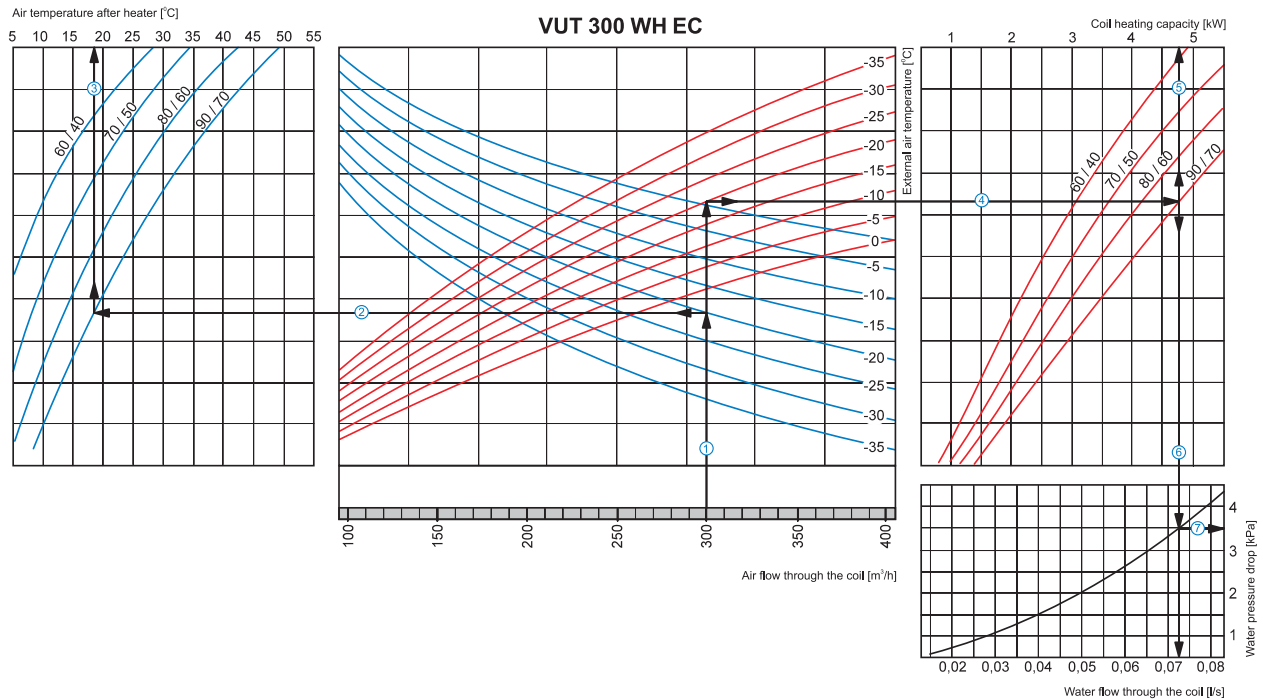


Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L <sub>WA</sub> to inlet	dB(A)	59	38	56	52	41	47	44	40	24
L <sub>WA</sub> to outlet	dB(A)	66	45	59	62	57	52	50	39	30
L <sub>WA</sub> to environment	dB(A)	41	26	31	35	32	25	24	24	28

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## Hot water coil parameters:

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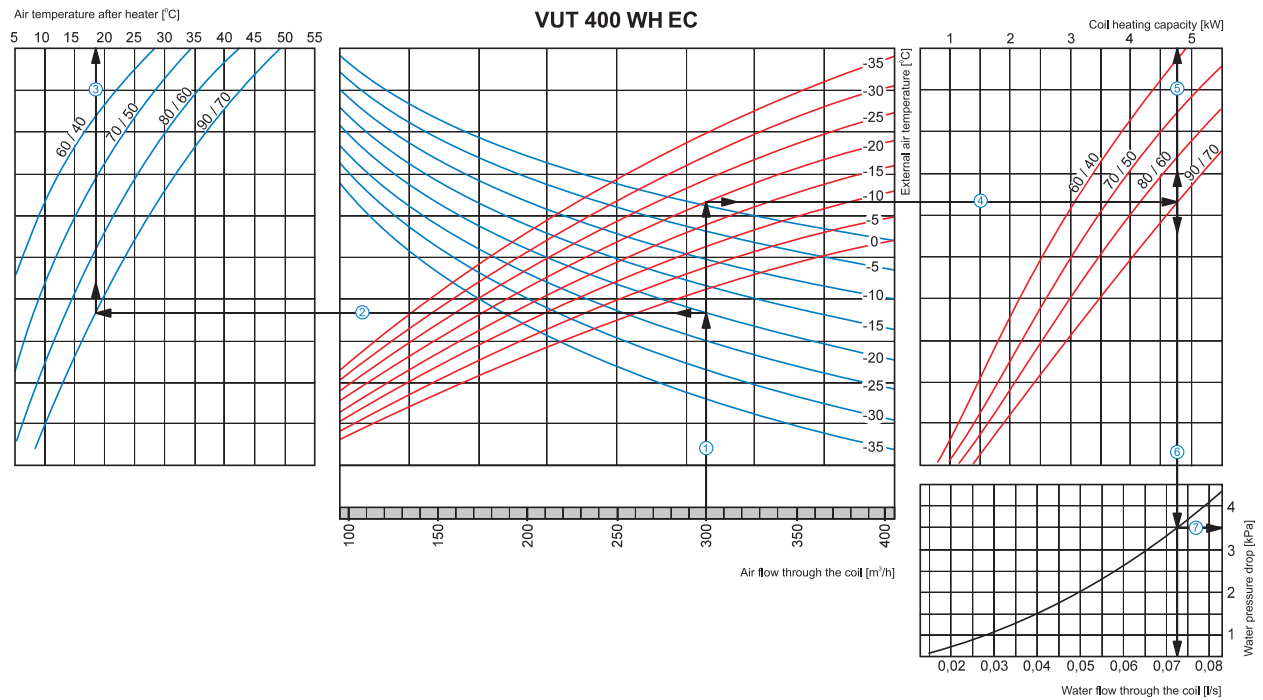


### How to use water heater diagrams

System Parameters: Air flow = 300 m<sup>3</sup>/h. Outside air temperature = -20°C. Water temperature (in/out) = 90/70 °C.

- Supply air temperature. prolong the line of air flow (e.g., 300 m<sup>3</sup>/h) ① up to the point where it crosses the outside air temperature (blue curve, e.g. -20°C); then draw a horizontal line ② from this point to the left till crossing water in/out temperature curve (e.g. 90/70 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+18°C).
- Heating coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. -20°C, red curve) and draw a horizontal line ④ from this point to the right until it crosses water in/out temperature curve (e.g., 90/70 °C), from here draw a vertical line ⑤ up to the scale representing the heating coil capacity (4.75 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.072 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (3.5 kPa).

VENTS VUT WH EC

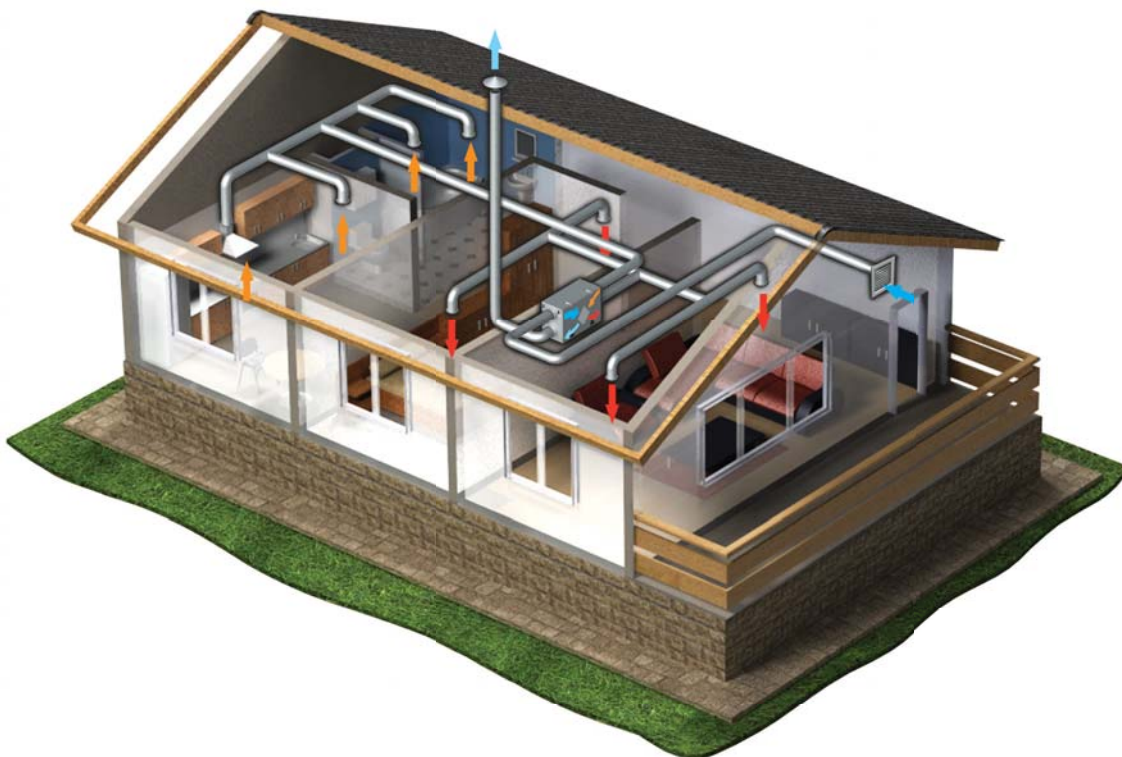
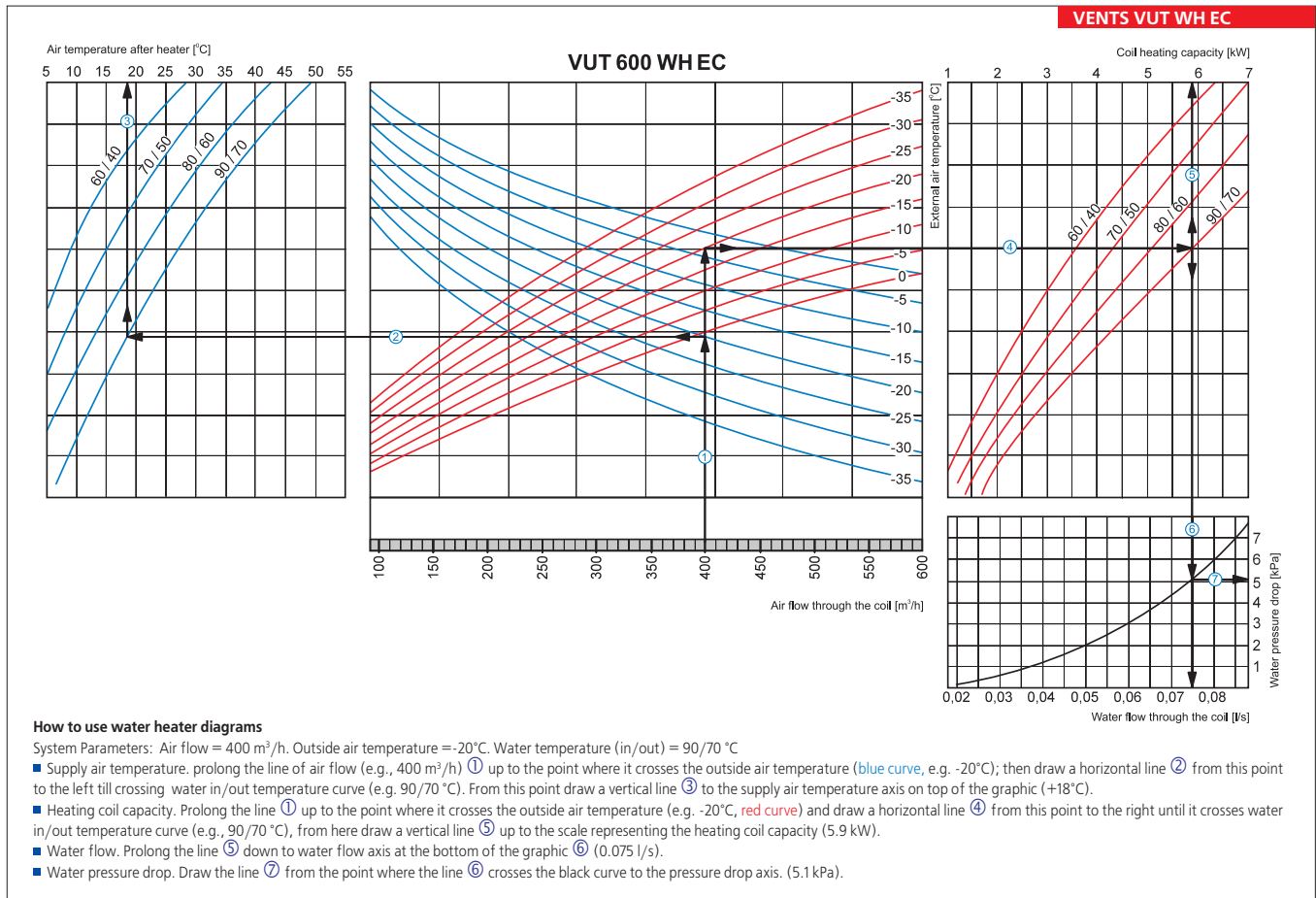


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Hot water coil parameters:



VUT EH EC ventilation and air exchange example in the cottage.

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