Series
VUTR 400 EH EC/WH EC
VUTR 700 EH EC/WH EC
VUTR 900 EH EC/WH EC

Series
VUTR 1200 EH EC/WH EC
VUTR 1500 EH EC/WH EC

Series
VUTR 2000 EH EC/WH EC

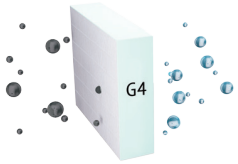
Air handling units in heat- and sound-insulated casing with an electric or a water heater.
Air flow up to **2250 m³/h**.
Heat recovery efficiency up to **95 %**

Description
The air handling units VUTR EH EC with an electric heater and VUTR WH EC with a water heater are the fully-featured ventilation units that ensure air filtration, fresh air supply and stale air extract. During the operation process the extract air heat is transferred to the supply air through the rotary heat exchanger.
The units are used in ventilation and air conditioning systems installed in various premises that require reasonable energy saving solutions and controllable ventilation systems. EC motors reduce energy demand by 1.5-3 times and ensure high performance and low noise operation.
The VUTR 400/700/900/1200/1500 EH/WH EC units are compatible with round air ducts (Ø 160, 250 and 315 mm).
The VUTR 200 EH/WH EC units are compatible with rectangular air ducts (Ø 500x300).

Modifications
VUTR EH EC models are equipped with an electric heater.
VUTR WH EC models are equipped with a water heater.

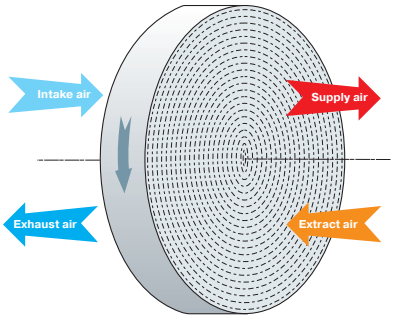
Casing
The casing consists of a frame and three-layer 20 mm (VUTR 1500 and 2000 – 25 mm) thick panels made of zinc aluminium internally filled with mineral wool for reliable heat- and sound-insulation. Due to the specially designed removable side panels the unit requires little space for servicing and accessing to all the unit components.

Filter
The two integrated G4 filters ensure sufficient supply and extract air purification.



Motor
The air handling units are equipped with high-efficiency electronically commutated (EC) direct current motors with an external rotor and backward-curved blades. These state-of-the-art motors offer the very best in energy efficiency today. In addition to that, EC motors combine high performance and optimum control over the entire speed range. The high efficiency (up to 90 %) is a definite advantage of EC motors.

Rotary heat exchanger
The rotary heat exchanger is a short rotating cylinder filled with layers of corrugated aluminium tape packaged in a such way so as to enable free passage of the supply and extract air flows.
As the cylinder rotates the aluminium tape contained in the heat exchanger is first exposed to the supply air stream and then - to the extract air stream.
As a result the material undergoes repeated warming and heating cycles thereby transferring heat and humidity from the warm air stream to the cold one.
Compared to plate-type devices a rotary heat exchanger demonstrates better efficiency and helps maintain a comfortable air humidity level while reducing frostbite danger to a bare minimum (tending to zero at normal temperature and humidity).



Rotary heat exchanger operation principle

Designation key

Series	Heat exchanger type	Rated air flow [m³/h]	Heater type	Pipe modification	Motor type	Control panel
VENTS VUT	**R:** rotary heat exchanger	400; 700; 900; 1200; 1500; 2000	**E**: electric **W**: water	**H**: horizontal	**EC**: synchronous motor with electronic control	**A17**: th-Tune **A18**: pGD1

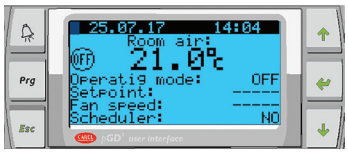
Heater

The air handling units are equipped with electric heaters (VUTR EH EC models) or water heaters (VUTR WH EC models) to operate at low outside temperatures. If heat recovery is not sufficient to reach the set supply air temperature, the heater is activated to warm up supply air. The heaters are equipped with protecting devices to ensure safe and reliable operation of the unit. The water heaters are designed for maximum operating pressure 1.0 MPa (10 bar) and maximum heat medium operating temperature +95 °C.

Control and automation

The VUTR EH EC A17 and VUTR WH EC A17 units are equipped with a th-Tune control panel.

The VUTR EH EC A18 and VUTR WH EC A18 units are equipped with a pGD1 control panel.



Automation functions

- Speed selection: low, medium, high.
- Speed is individually adjusted from 0 to 100 % for the supply and the extract fans.
- Filter maintenance indication.
- Alarm indication.
- Timer-based operation.
- Week-scheduled operation.
- Supply air temperature control.
- CCU control.
- Air damper actuator controlling.

Mounting

The unit is designed for mounting to a horizontal plane, suspension to a ceiling or wall mounting by means of brackets. Service access is from the left side panel (in air direction). The water heater pipes on the VUT R WH EC unit are leaded to the service side, on the left (in air direction).

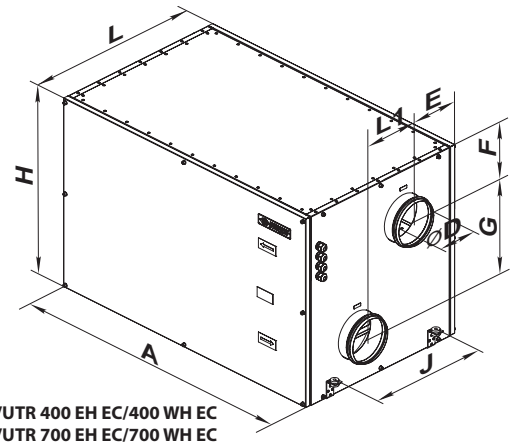
Calculation of air temperature at heat exchanger outlet:

$t = t_{outd} + k_{hr} * (t_{ext} - t_{outd}) / 100$, where

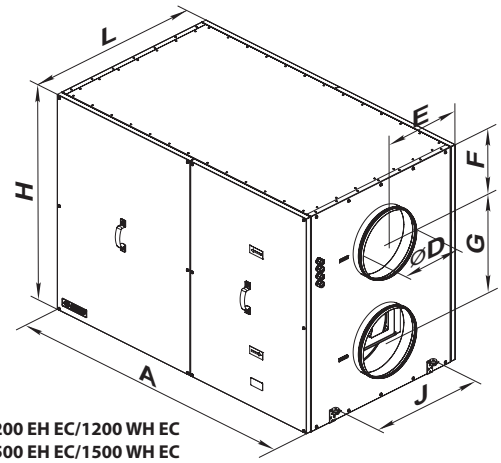
t_{outd}: outdoor air temperature [°C]
t_{ext}: extract air temperature [°C]
k_{hr}: heat exchanger efficiency (according to the diagram) [%]

Overall dimensions

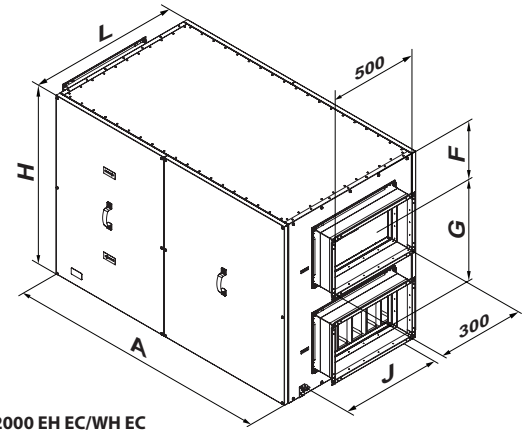
Model	Dimensions [mm]								
	øD	A	E	F	G	L	L1	H	J
VUTR 400 EH EC/400 WH EC	159	1050	225	167	333	648	200	670	440
VUTR 700 EH EC/700 WH EC	249	1210	243	180	340	745	260	700	580
VUTR 900 EH EC/900 WH EC	249	1210	243	180	340	745	260	700	580
VUTR 1200 EH EC/1200 WH EC	314	1335	373	220	438	745	-	880	460
VUTR 1500 EH EC/1500 WH EC	314	1430	427	275	460	855	-	1010	560
VUTR 2000 EH EC/2000 WH EC	-	1485	-	275	480	875	-	1010	630



VENTS VUTR 400 EH EC/400 WH EC
VENTS VUTR 700 EH EC/700 WH EC
VENTS VUTR 900 EH EC/900 WH EC



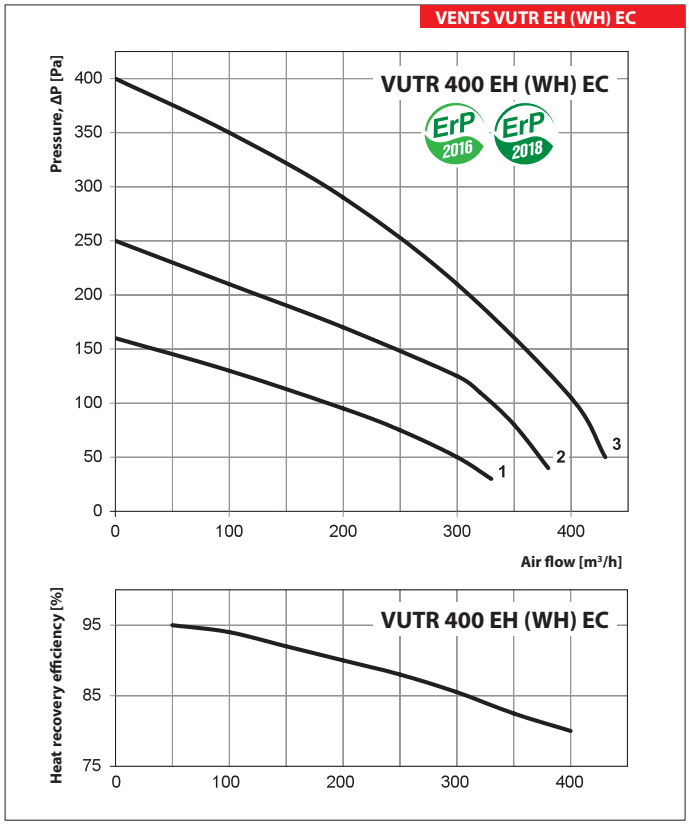
VENTS VUTR 1200 EH EC/1200 WH EC
VENTS VUTR 1500 EH EC/1500 WH EC

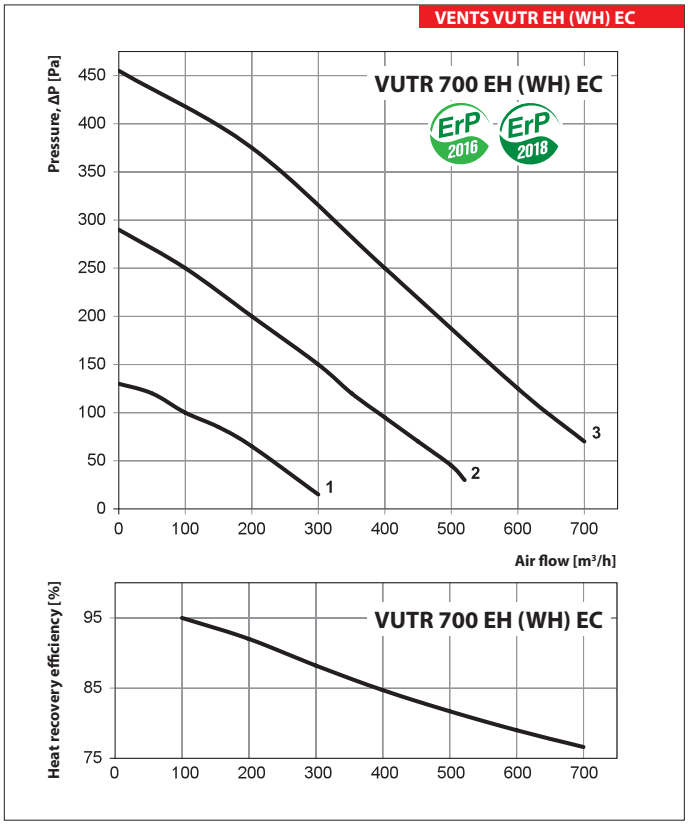


VUTR 2000 EH EC/WH EC

Technical data

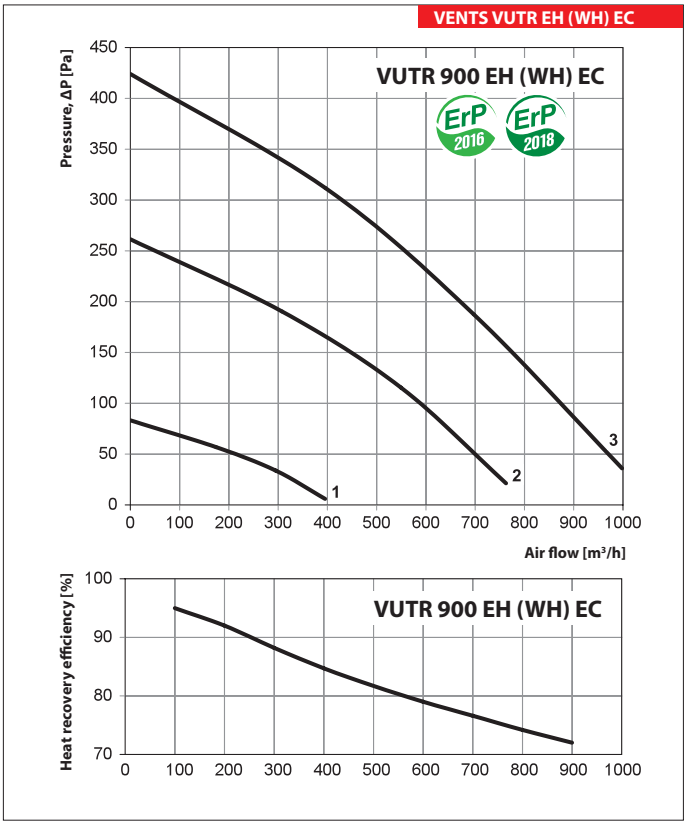
	VUTR 400 EH EC	VUTR 400 WH EC	VUTR 700 EH EC	VUTR 700 WH EC	VUTR 900 EH EC	VUTR 900 WH EC
Voltage [V/Hz]	1~220-240/50-60		1~220-240/50-60		3~400/50-60	1~220-240/50-60
Maximum fan power [W]	2 pcs. x 100		2 pcs. x 105		2 pcs. x 135	
Electric heater power [kW]	2.0	–	3.3	–	4.5	–
Total unit power [W]	2290	290	3615	315	4940	440
Total unit current [A]	9.9	1.2	15.8	1.4	7.2	1.9
Maximum air flow [m³/h]	400		700		900	
RPM	up to 3100		up to 2600		up to 2600	
Sound pressure level at 3 m distance [dBA]	45		52		58	
Max. transported air temperature [°C]	-25…+60					
Casing material	Aluzinc					
Insulation	20 mm mineral wool					
Extract filter	G4					
Supply filter	G4					
Connected air duct diameter [mm]	Ø160		Ø250		Ø250	
Weight [kg]	112		128		130	
Heat recovery efficiency [%]	80-95		76-95		72-95	
Heat exchanger type	rotary					
Heat exchanger material	aluminium					
SEC class	A					

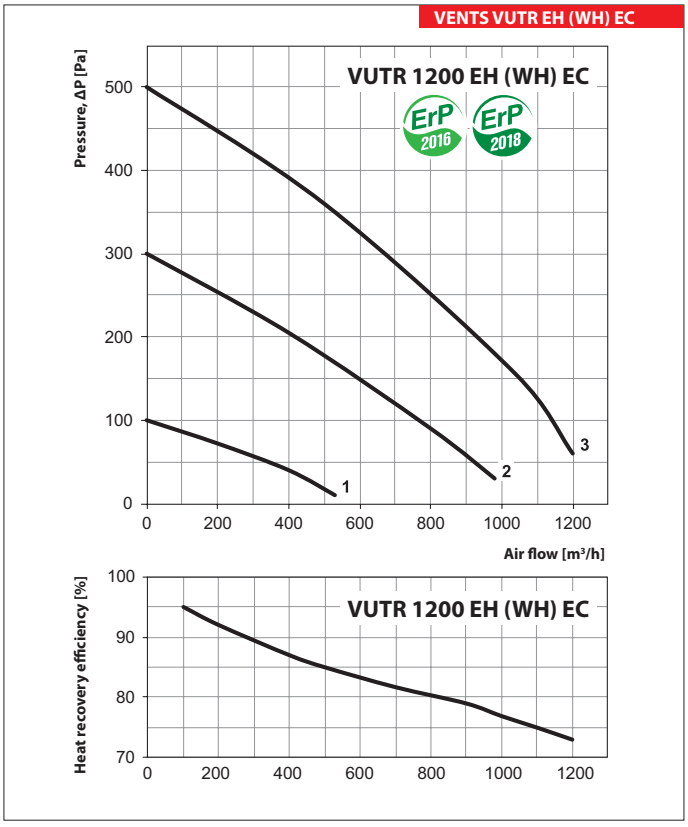




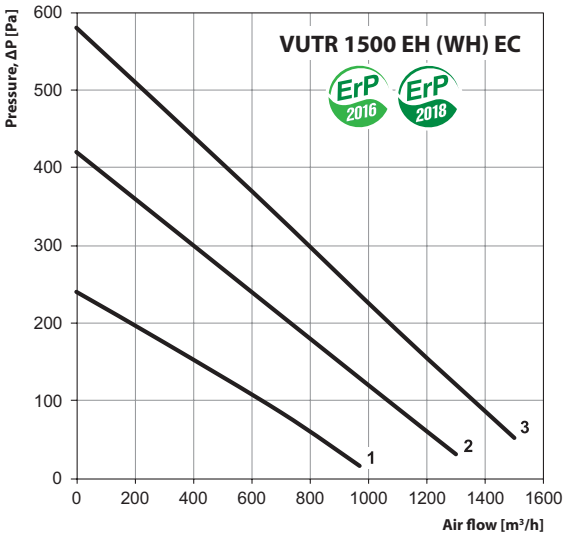
Technical data

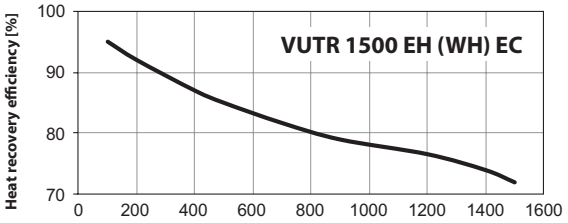
	VUTR 1200 EH EC	VUTR 1200 WH EC	VUTR 1500 EH EC	VUTR 1500 WH EC	VUTR 2000 EH EC	VUTR 2000 WH EC
Voltage [V/Hz]	3~400/50-60	1~220-240/50-60	3~400/50-60	1~220-240/50-60	3~400/50-60	1~220-240/50-60
Maximum fan power [W]	2 pcs. x 208		2 pcs. x 222		2 pcs. x 448	
Electric heater power [kW]	6.0	–	9.0	–	12	-
Total unit power [W]	6570	570	9750	750	13070	1070
Total unit current [A]	9.5	2.5	14.1	3.2	22.4	5
Maximum air flow [m³/h]	1200		1500		2250	
RPM	up to 1930		up to 2000		up to 3000	
Sound pressure level at 3 m distance [dBA]	60		62		64	
Max. transported air temperature [°C]	-25…+60					
Casing material	Aluzinc					
Insulation	20 mm mineral wool				25 mm mineral wool	
Extract filter	G4					
Supply filter	G4					
Connected air duct diameter [mm]	Ø315		Ø315		500x300	
Weight [kg]	165		175		198	
Heat recovery efficiency [%]	73-95		72-95		68-93	
Heat exchanger type	rotary					
Heat exchanger material	aluminium					



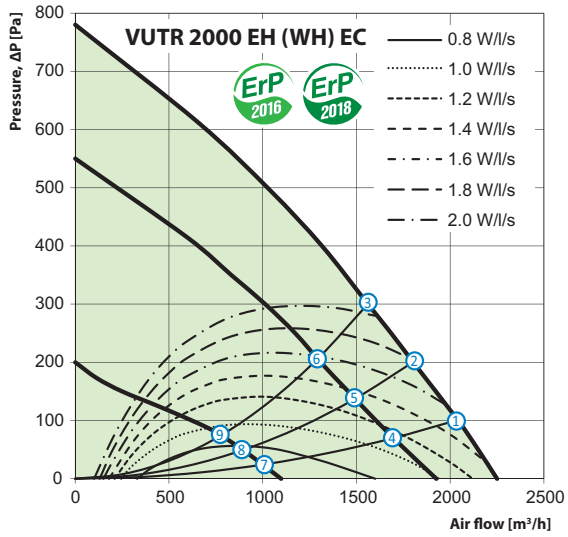


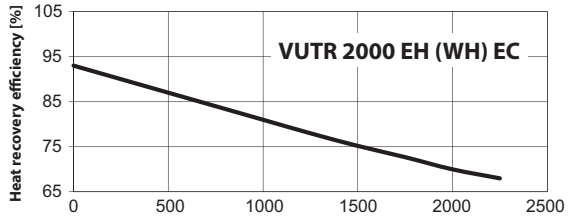
VENTS VUTR EH (WH) EC





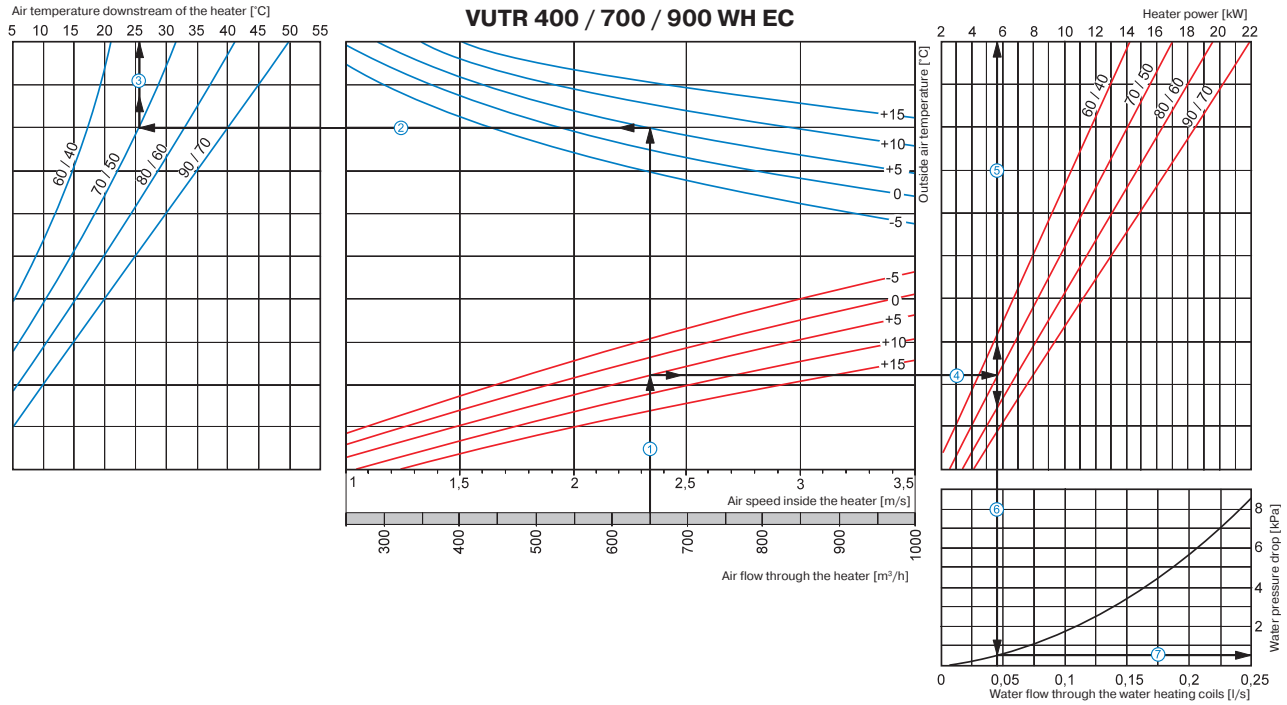
VENTS VUTR EH (WH) EC





Water heater parameters calculation

VENTS VUTR WH EC



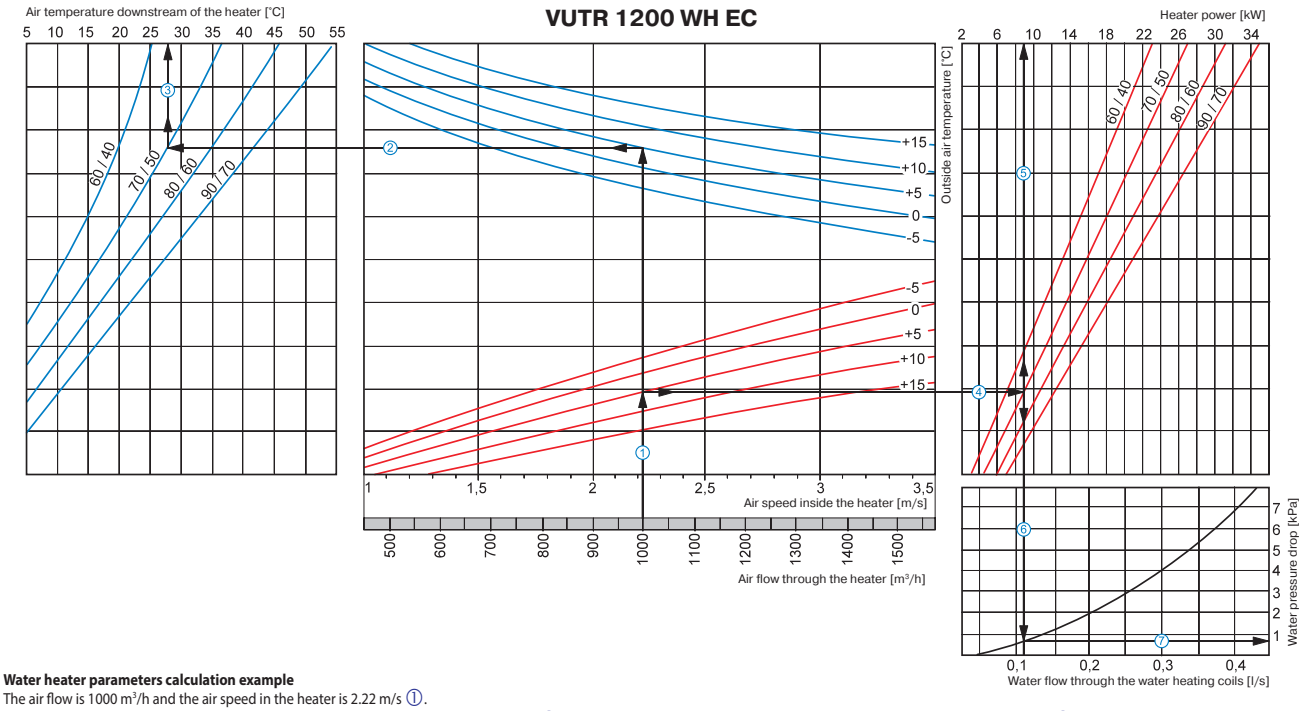
Water heater parameters calculation example

The air flow is 650 m³/h and the air speed in the heater is 2.35 m/s ①.

- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated winter temperature shown in blue line (e.g., +5 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the supply air temperature downstream of the heater (+26 °C) ③.
- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., +5 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the heater power axis (5.8 kW) ⑤.
- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0,04 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (0.5 kPa).

Water heater parameters calculation

VENTS VUTR WH EC

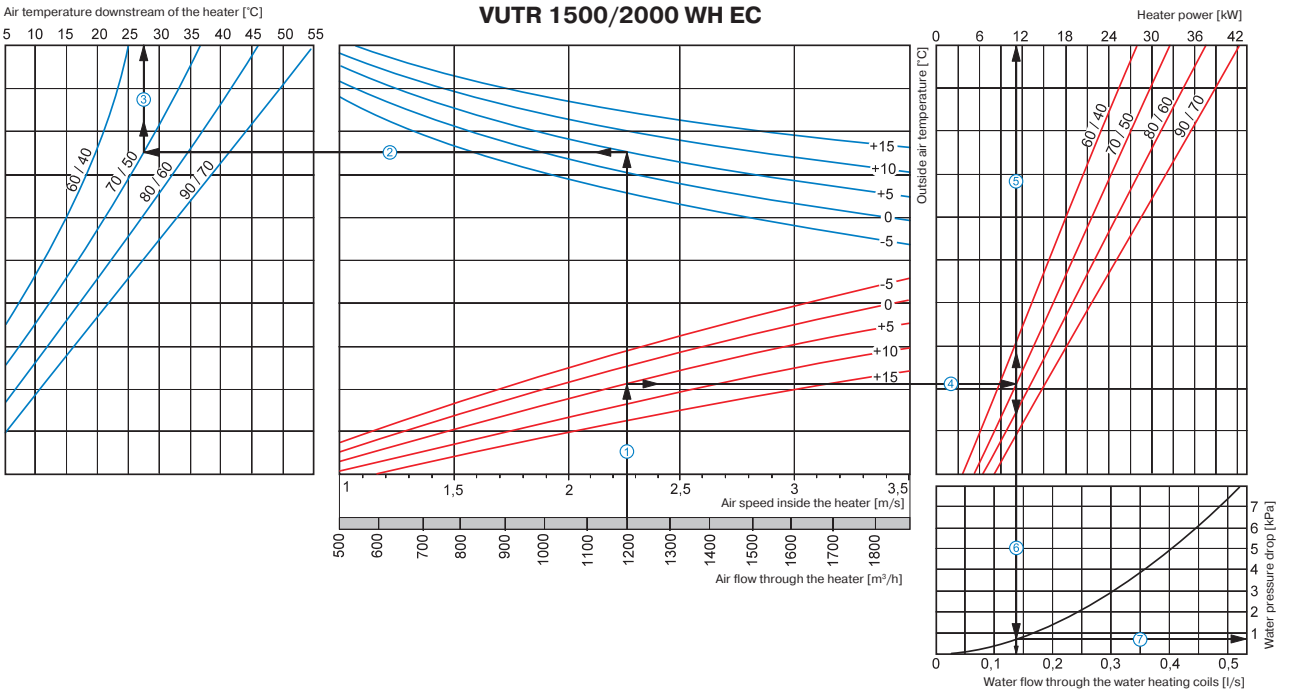


Water heater parameters calculation example

The air flow is 1000 m³/h and the air speed in the heater is 2.22 m/s ①.

- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated winter temperature shown in blue line (e.g., +5 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the supply air temperature downstream of the heater (28 °C) ③.
- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., +5 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the heater power axis (9.0 kW) ⑤.
- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0,11 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (0.8 kPa).

VENTS VUTR WH EC



Water heater parameters calculation example

The air flow is 1200 m³/h and the air speed in the heater is 2.25 m/s ①.

- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated winter temperature shown in blue line (e.g., +5 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the supply air temperature downstream of the heater (27 °C) ③.
- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., +5 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g. 70/50). From this point draw a vertical line to the heater power axis (11.0 kW) ⑤.
- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0,13 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (0.8 kPa).

Accessories for air handling units

Model	G4 supply pocket filter	G4 extract panel filter	Outdoor air quality sensor	Outdoor CO_2 sensor	Outdoor humidity sensor	Outdoor humidity sensor	Indoor humidity sensor (0-10 V)	Mixing unit	Back valves	Air damper	Electric actuator
VUTR 400 EH EC	SFK 393x235x27 G4	SF 600x324x48 G4	DPWQ 30600	DRWQ 40200	DPWC 11200	HR-S	HV-2	- USVK 3/4-4	KOM 160	KRV 160	CM230
VUTR 400 WH EC											TF230
VUTR 700 EH EC	SFK 700x333x27 G4	SF 700x332x48 G4						- USVK 3/4-4	KOM 250	KRV 250	CM230
VUTR 700 WH EC											TF230
VUTR 900 EH EC								- USVK 3/4-4			CM230
VUTR 900 WH EC											TF230
VUTR 1200 EH EC	SFK 700x423x27 G4	SF 700x410x48 G4						- USVK 3/4-4	KOM 315	KRV 315	CM230
VUTR 1200 WH EC											TF230
VUTR 1500 EH EC	SFK 800x477x27 G4	SF 800x477x47 G4						- USVK 1-6			CM230
VUTR 1500 WH EC											TF230
VUTR 2000 EH EC								- USVK 1-6	KOM1 500x300	KR 500x300	CM230
VUTR 2000 WH EC											TF230

Application options