

Series

VENTS VUT/VUE WH EC



A13 control panel



Equipped with
EC motor

Air handling units in heat- and sound-insulated casing with a water heater.
Air flow up to **550 m³/h**.
Heat recovery efficiency up to **98 %**

Description

The VUT/VUE WH EC air handling units 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 plate 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. Designed for connection to ø150, 160 and 200 mm round air ducts.

Modifications

VUT WH EC – models with water (glycol) heaters, fans with EC motors, counter-flow duct hexagonal heat exchanger made of polystyrene.

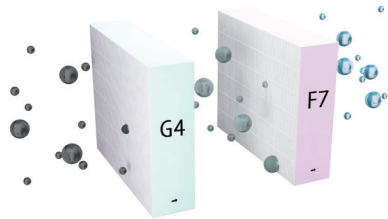
VUEWH EC – models with water (glycol) heaters, fans with EC motors, counter-flow duct hexagonal heat exchanger with an enthalpy membrane at the core.

Casing

Made of aluzinc steel, internally filled with a 25 mm mineral wool heat- and sound-insulating layer.

Filter

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

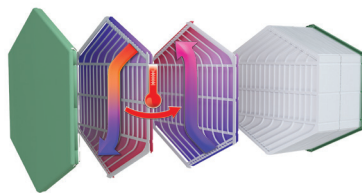


Fans

The units feature efficient electronically commutated (EC) direct current motors with external rotor and centrifugal double-intake impellers with forward curved blades. These state-of-the-art motors offer the very best in energy efficiency today. EC motors are characterised with high performance and optimum control across the entire speed range. In addition to that the efficiency of the electronically commutated motor reaches very impressive levels of up to 90 %.

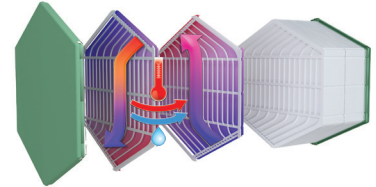
Heat exchanger

The units are equipped with high efficient heat exchangers with heat recovery up to 98 %. The VUT WH EC models are equipped with counter-flow heat exchangers made of polystyrene. The unit is equipped with a drain pan for condensate drainage and removal.



The VUE WH EC units are equipped with a counter-flow heat exchanger with an enthalpy membrane at the core. In the cold season the extract air heat and moisture are transferred to the supply air stream through the enthalpy membrane reducing the heat losses from ventilation. Consequently, it is

the ambient air heat and moisture transferred to the exhaust air stream through the enthalpy membrane in the warm season. This allows for a considerable reduction of the supply air temperature and humidity which, in turn, reduces the air conditioning load.



Heater

The VUT/VUE WH water heater at outlet from the heat exchanger is designed for warming up of supply air up to the set level if heat recovery is not enough to attain the set supply air temperature. 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 unit incorporates an integrated automation and control system with a multifunctional control panel with a graphical display. The standard delivery set includes a 10 m cable for connection to the control panel. The freezing protection function is performed by means of the bypass and the heater. In case of a freezing danger according to the temperature sensor readings the bypass damper is opened to let supply air flow through the bypass duct and not come in contact with the heat exchanger. The heater warms up supply air up to the required temperature and meanwhile the heat exchanger is heated by the warm extract air. After the heat exchanger defrosting, the bypass damper closes the bypass duct and the air handling unit reverts to the standard operation mode.

VUT/VUE WH EC control and protection functions

- ▶ Via control panel: Turning air handling unit on/off, room temperature indication, low-medium-high speed selection.
- ▶ Supply and exhaust fan speed can be adjusted from 0 to 100 % for each of 3 speeds during the system set-up.
- ▶ Maintaining supply air temperature set from the control panel by controlling the circulation pump

Designation key

Series	Rated air flow [m ³ /h]	Spigot modification	Heater type	Spigot orientation	Motor type	Integrated automation system
VUT: ventilation with heat recovery VUE: ventilation with energy recovery	300; 400; 600	_: default value 1: 150 mm 2: 160 mm	W: water heater	H: horizontal	EC: synchronous electronically commutated motor	A13: multifunctional control panel with a graphical display

and actuating the heat medium regulating valve.

- ▶ The air temperature sensor downstream of the heater and the return water temperature sensor are used for freezing protection of the heater.
- ▶ Safe start-up/shutdown of the fans, warming up of the water heater before start-up; maintaining the set return heat medium temperature when the fan is off.
- ▶ Actuating the external air dampers with a return spring.
- ▶ System shutdown on signal from fire fighting system.
- ▶ Smooth bypass damper control in the freeze protection mode to prevent the heat exchanger freezing.

Installation

The units are designed for suspended installation under the ceiling. They can also be mounted on a wall in a vertical or horizontal position. The access for unit and filter maintenance is available from the service panel.

ACCESSORIES

For attenuation of sound generated by the fans it is recommended to install the duct silencer SR from inside upstream of the unit.

For vibration absorbing it is recommended to install the flexible anti-vibration connectors VVG on both sides of the unit.

The VUT WH units are recommended to be equipped with automatic air dampers for the water heater freezing protection when the fans are off.

The USWK mixing units are recommended for smooth supply air temperature regulation in the units equipped with water heaters.

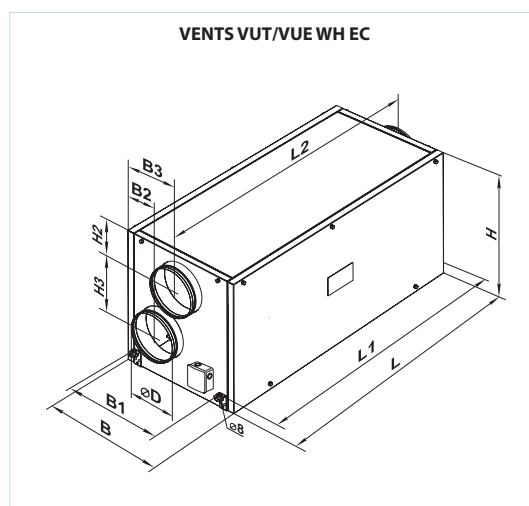
The mixing unit USWK with a three-way heat medium regulating valve and circulation pump provides smooth heating capacity regulation and minimizes the water heater freezing danger.

Accessories for air handling units

Model	F7 supply panel filter	G4 extract panel filter	Mixing unit	Non-return valve	Air dampers	Electric actuators
VUT/VUE 300-1 WH EC	SF 436x215x48 F7	SF 436x215x48 G4	USWK 3/4-4	KOM 150	KRV 150	CM230 TF230
VUT/VUE 300-2 WH EC				KOM 160	KRV 160	
VUT/VUE 400 WH EC				KOM 200	KRV 200	
VUT/VUE 600 WH EC				KOM 200	KRV 200	

Overall dimensions of units

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



AIR HANDLING UNITS WITH HEAT RECOVERY

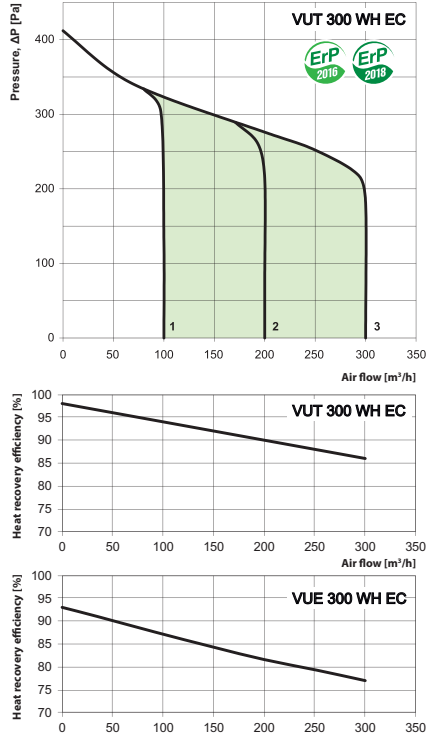
Technical data

	VUT 300-1 WH EC	VUT 300-2 WH EC	VUE 300-1 WH EC	VUE 300-2 WH EC
Voltage [V/Hz]	1~ 220-240/50 (60)		1~ 220-240/50 (60)	
Maximum fan power [W]	2 pcs. x 70		2 pcs. x 70	
Fan current [A]	2 pcs. x 0.60		2 pcs. x 0.60	
Number of water heating coils	2		2	
Total unit power [kW]	0.14		0.14	
Total unit current [A]	1.2		1.2	
Maximum air flow [m ³ /h]	300		300	
RPM [min ⁻¹]	1380		1380	
Sound pressure level at 3 m distance [dBA]	24-45		24-45	
Transported air temperature [°C]	from -25 up to +60		from -25 up to +60	
Casing material	aluzinc		aluzinc	
Insulation	25 mm mineral wool		25 mm mineral wool	
Extract filter	G4		G4	
Supply filter	F7 (EU7)		F7 (EU7)	
Connected air duct diameter [mm]	∅ 150	∅ 160	∅ 150	∅ 160
Weight [kg]	40		40	
Heat recovery efficiency	up to 98 %		up to 93 %	
Heat exchanger type	counter-flow		counter-flow	
SEC class	A+		A+	
Heat exchanger material	polystyrene		enthalpy membrane	

Technical data

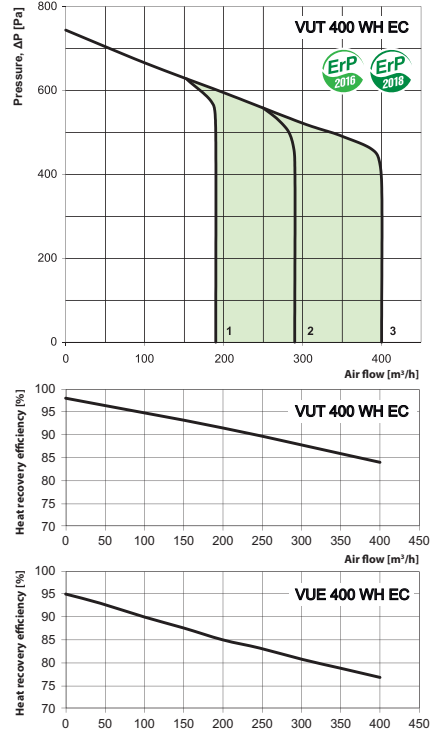
	VUT 400 WH EC	VUT 600 WH EC	VUE 400 WH EC	VUE 600 WH EC
Voltage [V/Hz]	1~ 220-240/50 (60)		1~ 220-240/50 (60)	
Maximum fan power [W]	2 pcs. x 175		2 pcs. x 175	
Fan current [A]	2 pcs. x 1.3		2 pcs. x 1.3	
Electric heater power [kW]	-		-	
Electric heater current [A]	-		-	
Number of water heating coils	2		2	
Total unit power [kW]	0.35		0.35	
Total unit current [A]	2.6		2.6	
Maximum air flow [m ³ /h]	400	550	400	550
RPM [min ⁻¹]	1340	2150	1340	2150
Sound pressure level at 3 m distance [dBA]	28-47		28-47	
Transported air temperature [°C]	from -25 up to +60		from -25 up to +60	
Casing material	aluzinc		aluzinc	
Insulation	25 mm mineral wool		25 mm mineral wool	
Extract filter	G4		G4	
Supply filter	F7 (EU7)		F7 (EU7)	
Connected air duct diameter [mm]	∅ 200		∅ 200	
Weight [kg]	40		40	
Heat recovery efficiency	up to 98 %		up to 93 %	
Heat exchanger type	counter-flow		counter-flow	
SEC class	A+	A	A+	A
Heat exchanger material	polystyrene		enthalpy membrane	

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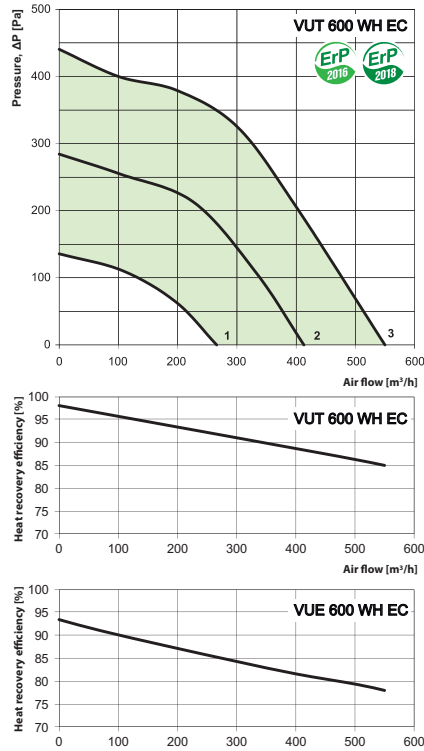
Sound power level		Octave frequency band [Hz]								
	Hz	Gen.	63	125	250	500	1000	2000	4000	8000
L _{WA} to inlet	dBA	49	30	46	49	39	42	38	31	20
L _{WA} to outlet	dBA	60	39	55	58	52	45	45	35	26
L _{WA} to environment	dBA	34	20	23	30	27	18	18	20	21

VENTS VUT/VUE WH EC



Sound power level		Octave frequency band [Hz]								
	Hz	Gen.	63	125	250	500	1000	2000	4000	8000
L _{WA} to inlet	dBA	56	33	51	50	40	44	41	37	22
L _{WA} to outlet	dBA	62	42	57	58	58	48	49	36	26
L _{WA} to environment	dBA	36	25	27	34	29	20	19	25	23

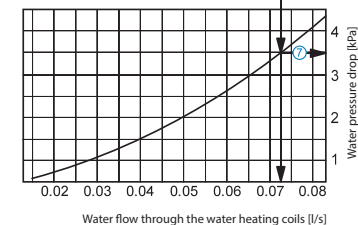
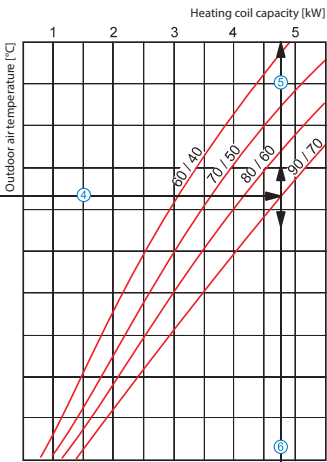
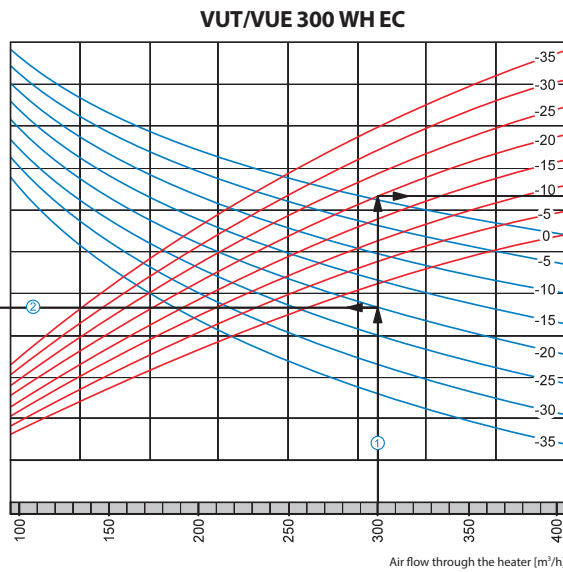
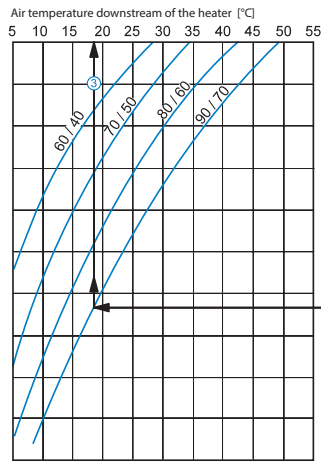
VENTS VUT/VUE WH EC



Sound power level		Octave frequency band [Hz]								
	Hz	Gen.	63	125	250	500	1000	2000	4000	8000
L _{WA} to inlet	dBA	59	38	56	52	41	47	44	40	24
L _{WA} to outlet	dBA	66	45	59	62	57	52	50	39	30
L _{WA} to environment	dBA	41	26	31	35	32	25	24	24	28

Calculation of air handling unit water heater parameters

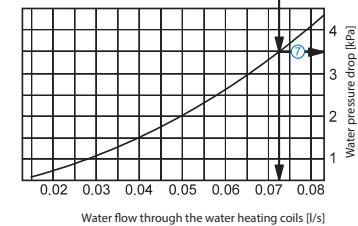
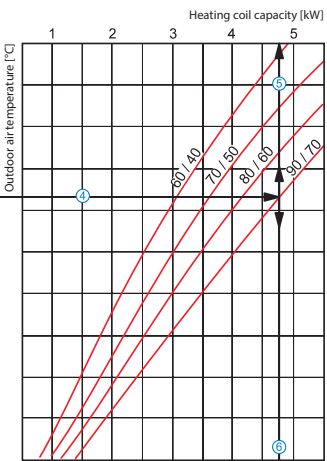
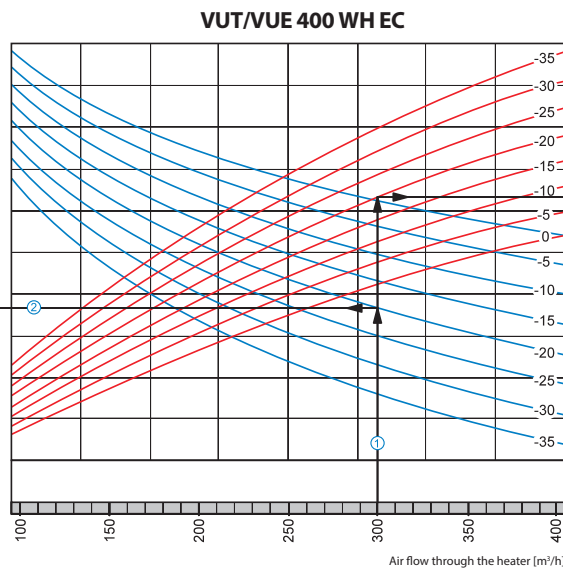
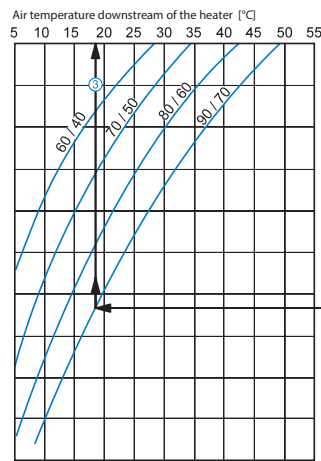
VENTS VUT/VUE WH EC



Water heater parameters calculation example:

- To calculate the maximum air temperature find the intersection point of the air flow line (e.g. 300 m³/h) ① with the rated winter temperature shown in blue line (e.g., -20 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g. 90/70). From this point draw a vertical line to the supply air temperature downstream of the heater (+18 °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., -20 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g. 90/70). From this point draw a vertical line to the heater power axis (4.75 kW) ⑤.
- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0.072 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 (3.5 kPa).

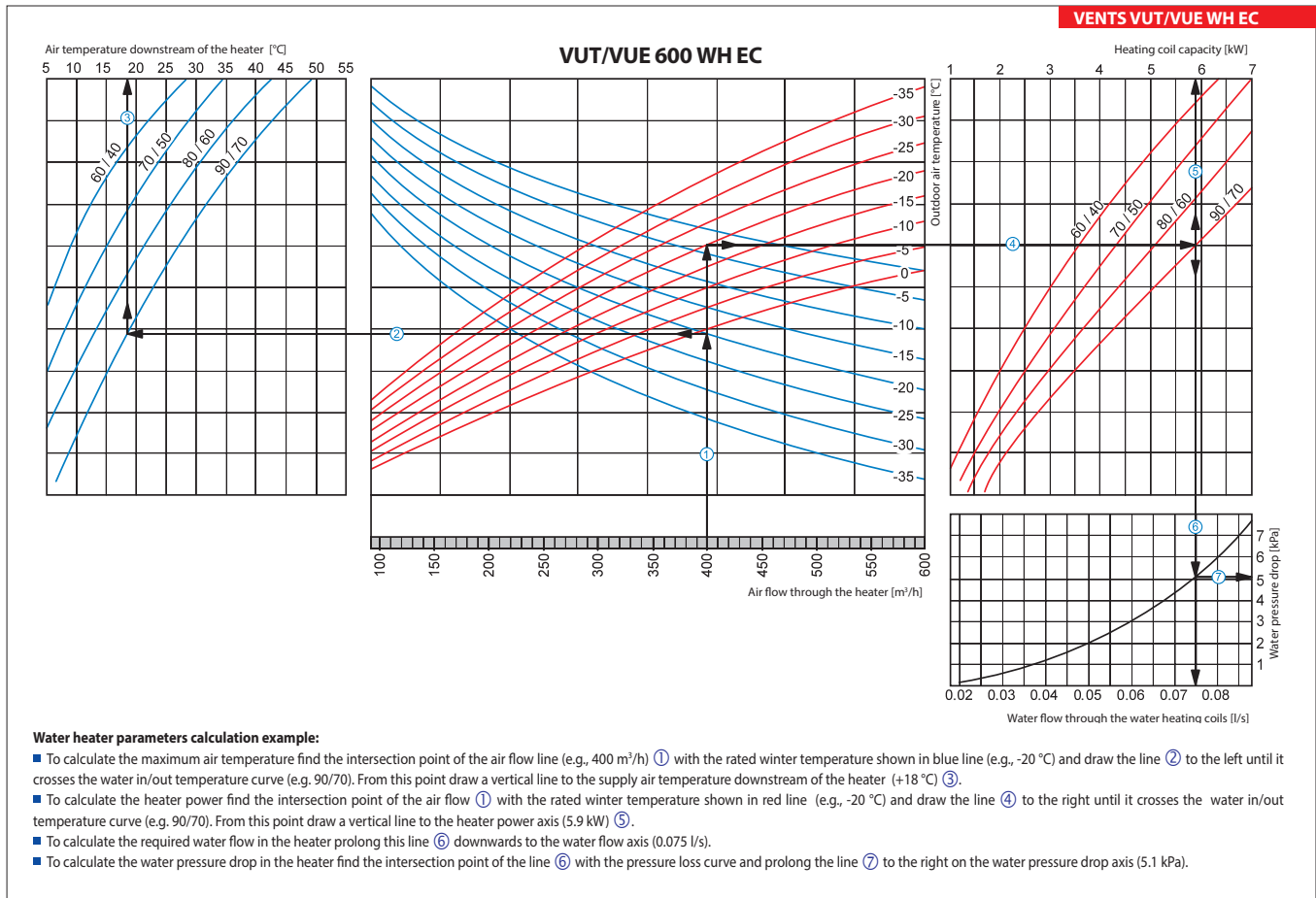
VENTS VUT/VUE WH EC



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Calculation of air handling unit water heater parameters



Application options

