WESTERN™
AIRCONDITIONING

ErP 2018

indoor air quality and energy saving

TECHNICAL DATA

EASY-W 1

HEAT RECOVERY VENTILATION UNITS for COMMERCIAL and INDUSTRIAL BUILDINGS

ROTOR H-EC
Non-residential ventilator unit with dual flow and high yield heat recovery.

PERFORMANCE
Equipped with a rotary heat exchanger (regenerative recuperator) in aluminium (Eurovent certified) and electronic backward blade ventilators. The bypass effect obtained with temporary stoppage of the rotary recuperator allows favourable climatic conditions to be taken advantage of outside the building for free cooling (or free heating) in automatic mode.

STRUCTURE
ROTOR H-EC is manufactured using a profiled extruded aluminium frame and 36 mm thick sandwich panels, insulated in polyurethane foam. The panels and inner parts are manufactured in Aluzinc® material that ensures high strength against corrosion and oxidation. A pair of panels with hinged opening eases access to the filters (F7 for the renewed air flow and M5 for the extraction air flow). ROTOR H-EC is prepared for installation outdoors (with an optional, specific protective roof) and indoors; it is supplied with 100 mm high aluminium bases for installation on the floor. Available in 4 sizes, it can be equipped with air post-treatment systems (inside the unit) such as: hot/cold water battery, electrical heater or direct expansion battery. The option is also available with the rotary recuperator with constant speed or variable speed.

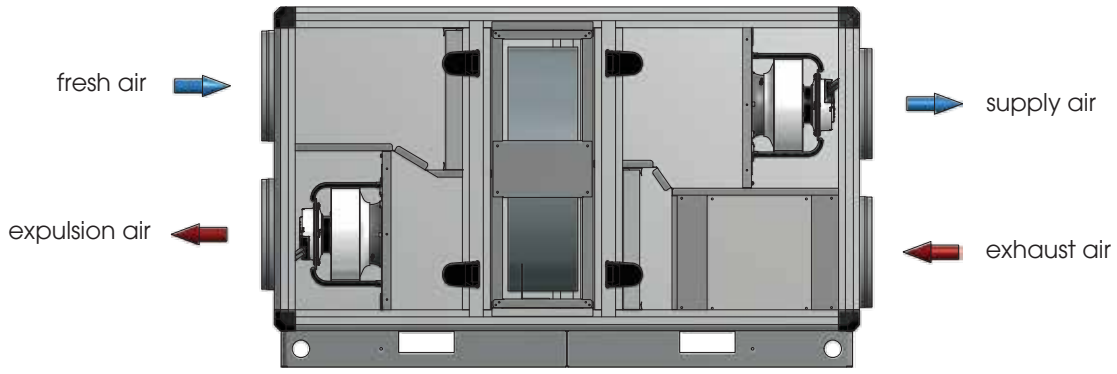
CONTROLS
ROTOR H-EC was supplied with an electric box and control system; it is available in a version equipped with EVO-PH control and a version equipped with EVOD-PH-IP control prepared for complete integration in home automation systems (Modbus protocol with Ethernet connection or, on request, with the addition of connection RS485). The new version of our control systems enables extremely easy and rapid passage from a control system to another, even after installation with the single replacement of the remote panel.

The EVO-PH control has a coloured, backlit touch screen interface with intuitive viewing of the working status of the machine. It enables precise adjustment of ventilator speed and has a weekly , time schedule for automatic management of the ventilators. It can be controlled by an external switch to activate the booster function, it can automatically adjust the air flow rate if connected to an air quality probe, it can manage any air post treatment accessories, it automatically manages the bypass and prevents heat exchanger freezing by managing the speed of the ventilators or, if installed, an electrical pre-heating resistor (optional accessory outside the machine); it signals to the user the need to replace the filters (the clogging status of the filters is monitored by a pair of different pressure switches, supplied as standard) or an anomaly, indicating the origin. With the addition of optional accessories (COP kit and CAV kit installed on the channel) you can manage the ventilation machine in constant pressure or constant flow rate mode.

The EVOD-PH-IP control has the same characteristics as the EVO-PH version with the addition of Modbus communication protocol which allows full control of the machine by the supervision software of the home automation system. The implemented webserver allows interaction with the machine, even with an internet browser of a device connected (even from remote) to the home automation system in which the machine is inserted.

ACCESSORIES
ROTOR H-EC can be equipped with other accessories such as:
. R.H. of probe, CO_2 or CO_2/VOC
. Operating kit pressure or constant flow
. protection roof for outside instalalzione
. grilles and damper

For a more complete view of the characteristics of the control panels, please read the specific manuals

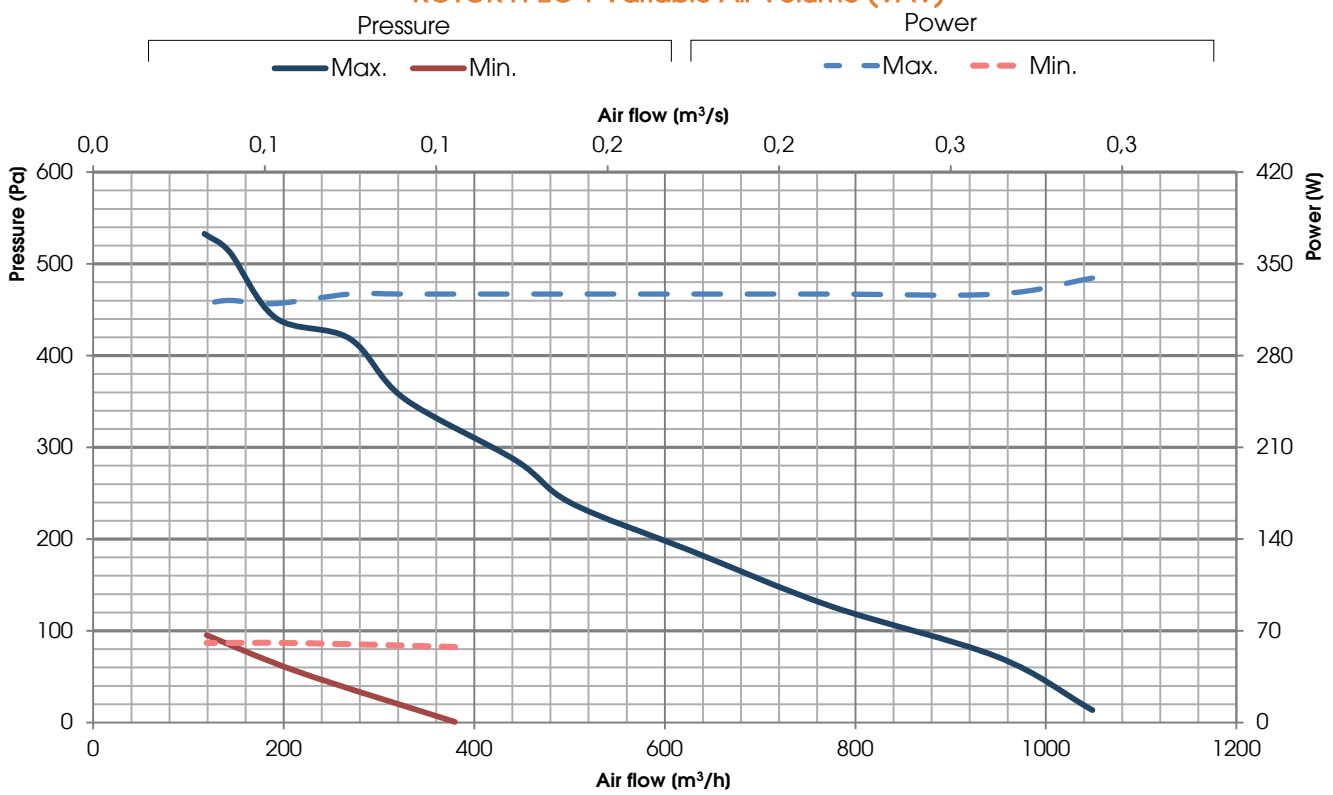


Counterflow heat exchanger made of aluminum manufactured by COVENT
COVENT participates in the Eurovent Certification Program

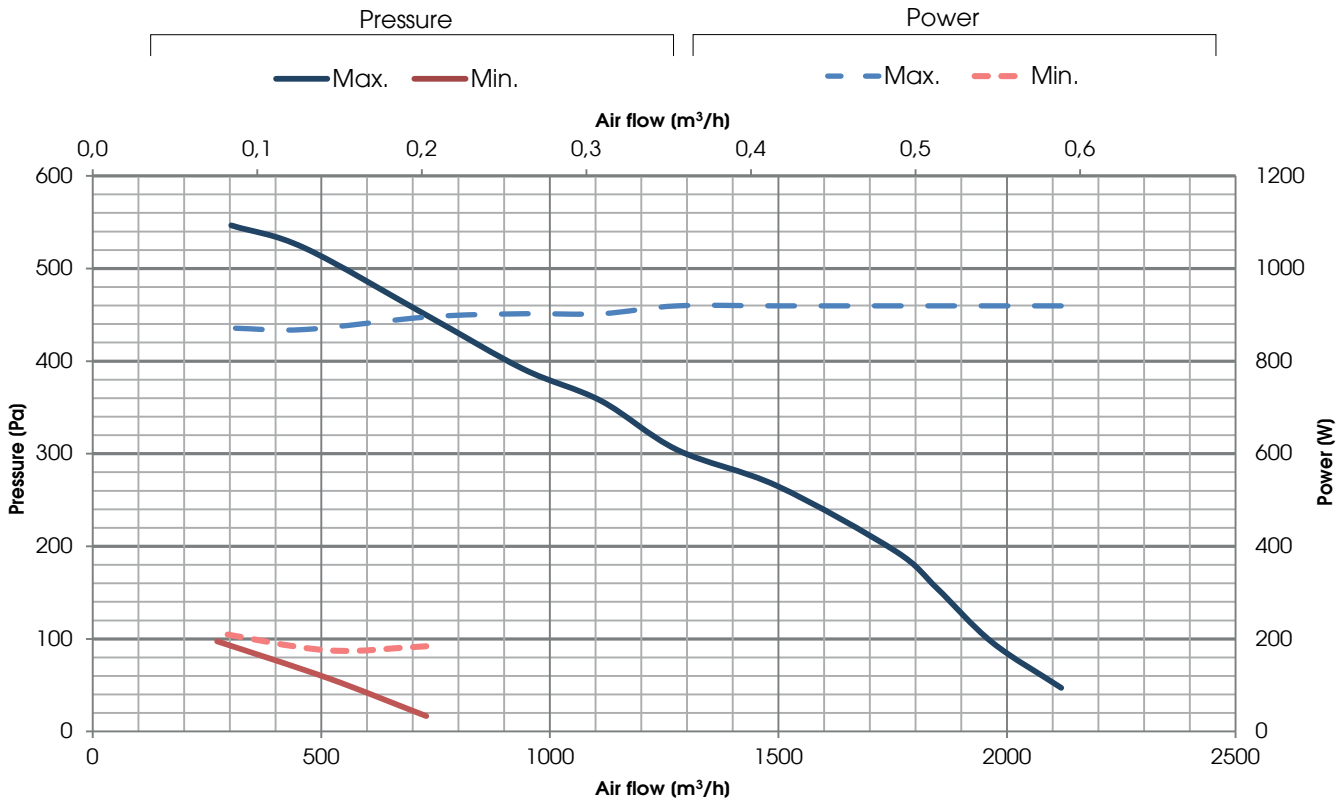
PERFORMANCES (UNI EN 13141-7)

The unit must be ducted properly: **Western** authorizes the use only according to its performance diagram shown into this catalogue
The declared performances are with CLEAN filters, and guaranteed ONLY with the original filters low pressure drop.

ROTOR H-EC 1 Variable Air Volume (VAV)



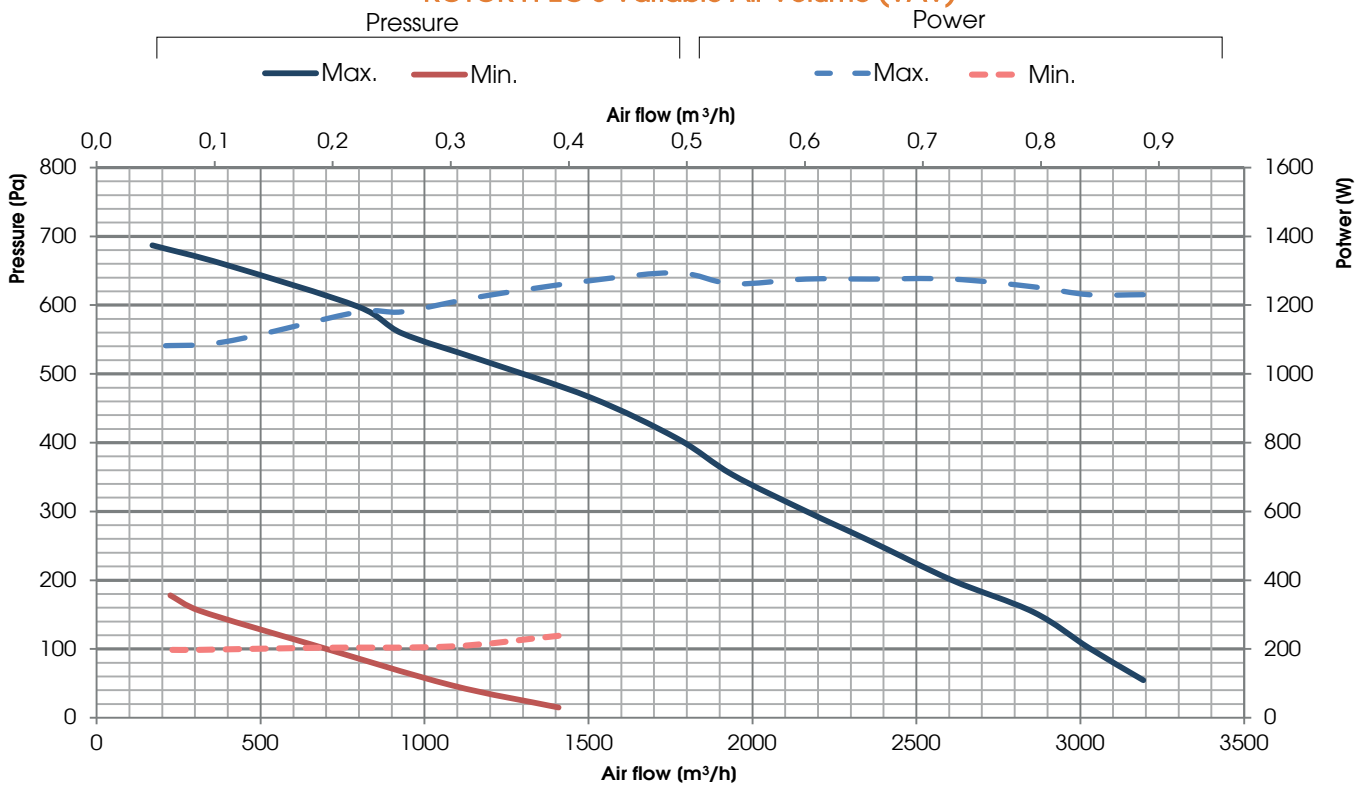
ROTOR H-EC 2 Variable Air Volume (VAV)



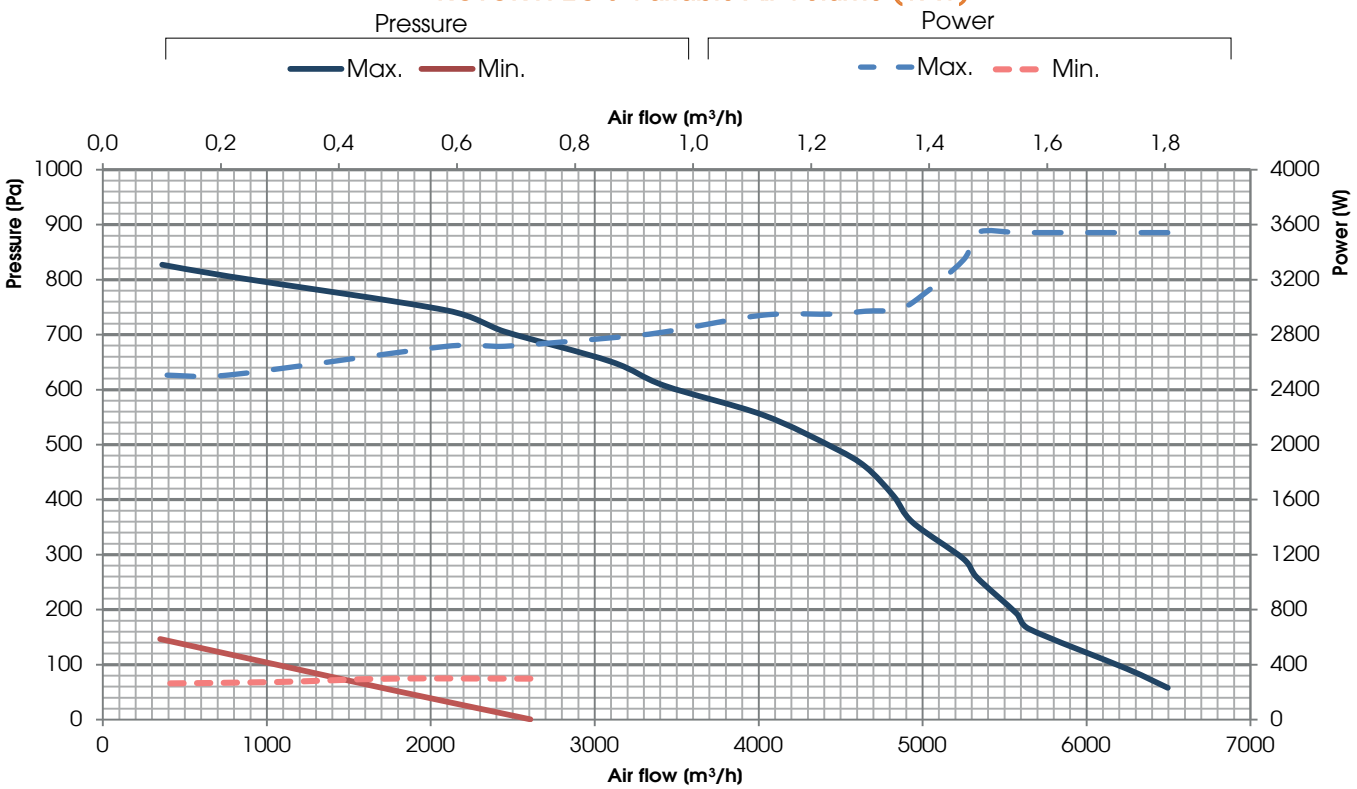
PERFORMANCES (UNI EN 13141-7)

The unit must be ducted properly: Western authorizes the use only according to its performance diagram shown into this catalogue
The declared performances are with CLEAN filters, and guaranteed ONLY with the original filters low pressure drop.

ROTOR H-EC 3 Variable Air Volume (VAV)

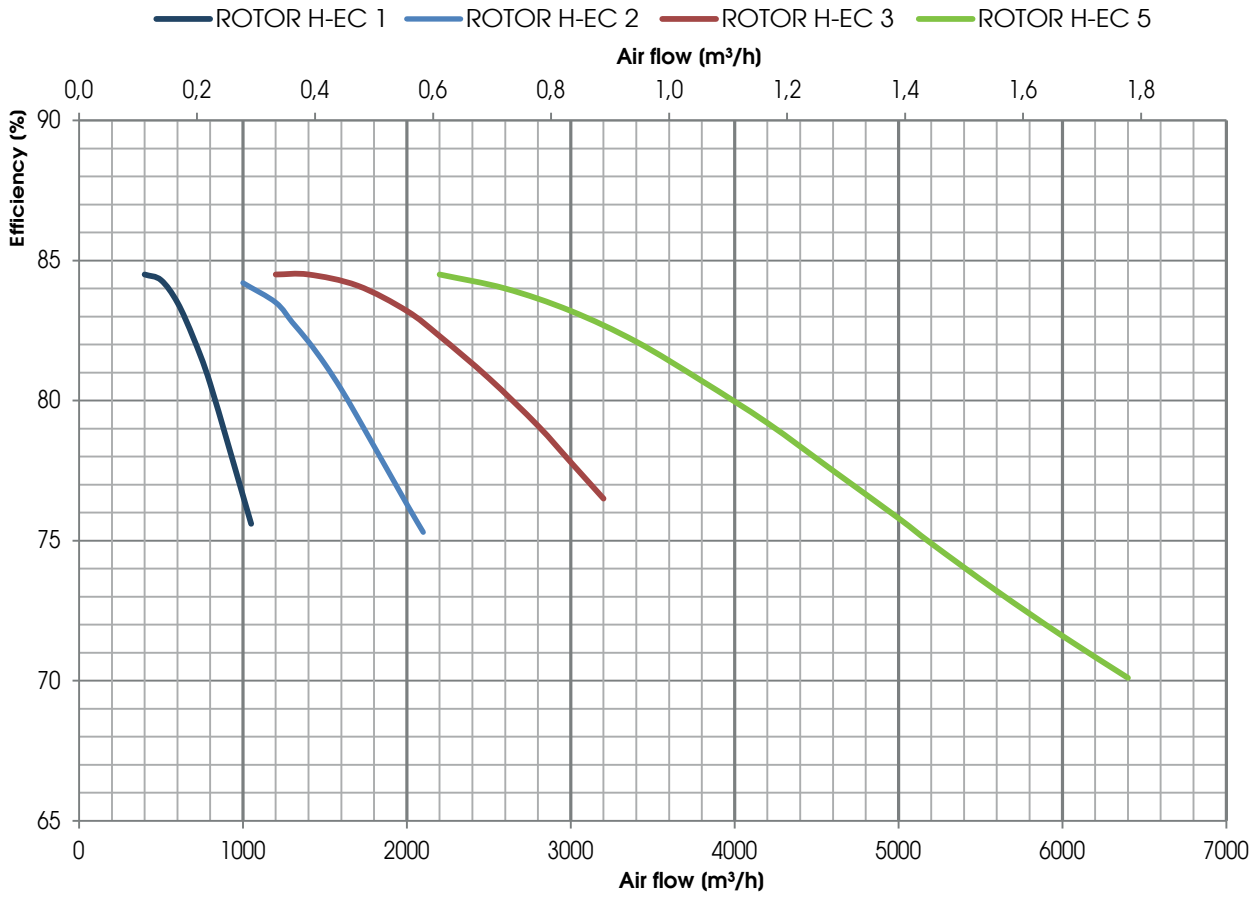


ROTOR H-EC 5 Variable Air Volume (VAV)



HEAT RECOVERY PERFORMANCE (sensible efficiency)

Values refered to the following conditions (UNI EN 13141-7): Tbs external air 5°C; U.R. esternal 72%; Tbs enviorment 25°C; U.R. enviorment 28%



ECODESIGN

MODELLO	η_{t_nvru} (%)	q_{nom} (m³/s)	$\Delta p_{s,ext}$ (Pa)	P (kW)	SFPint (W/(m³/s))	SFPint_lim 2016 (W/(m³/s))	SFPint_lim 2018 (W/(m³/s))	FACE VELOCITY (m/s)	$\Delta p_{s,int}$ (Pa)	η_{Fan} (%)	* Internal LEAKAGE (%)	* External LEAKAGE (%)
ROTOR H-EC 1	83,5	0,17	200	0,33	1035	1669	1389	0,98	588	56,0	-	7,5
ROTOR H-EC 2	79,1	0,48	200	0,92	1074	1490	1210	1,51	668	63,0	-	3,5
ROTOR H-EC 3	80,2	0,72	200	1,28	969	1487	1207	1,81	615	56,7	-	3,4
ROTOR H-EC 5	76,9	1,32	430	2,98	1002	1299	1019	1,88	787	64,6	-	3,4

* Percentage of the nominal flow

VALUES ACCORDING UNI EN 1886: 2008

UNIT	CASING STRENGTH	CASING LEAKAGE	FILTER CLASS	THERMAL TRANSMITTANCE	THERMAL BRIDGE
ROTOR H-EC 1	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
ROTOR H-EC 2	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
ROTOR H-EC 3	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
ROTOR H-EC 5	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)

NOISE LEVEL

Lw Sound power level taken in accordance to UNI EN ISO 3747 - CLASS 3

	NOISE FROM THE CASE (dB)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 1	Lw Vmax	69,5	64,0	55,3	44,4	40,3	30,7	21,9	58,9

	NOISE IN THE DUCTS (Hz)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 1	Lw Vmax	69,5	69,1	56,9	52,8	51,6	45,4	40,4	63,0

	NOISE FROM THE CASE (dB)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 2	Lw Vmax	71,8	69,1	57,0	53,8	45,8	37,4	28,7	63,1

	NOISE IN THE DUCTS (Hz)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 2	Lw Vmax	73,9	75,1	64,2	63,3	55,8	50,6	44,9	69,6

	NOISE FROM THE CASE (dB)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 3	Lw Vmax	64,4	67,1	60,4	59,9	52,4	45,0	34,2	64,1

	NOISE IN THE DUCTS (Hz)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 3	Lw Vmax	74,8	76,2	73,1	69,0	61,7	54,4	50,7	74,2

	NOISE FROM THE CASE (dB)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 5	Lw Vmax	77,3	77,6	66,5	69,0	60,8	50,9	42,6	73,2

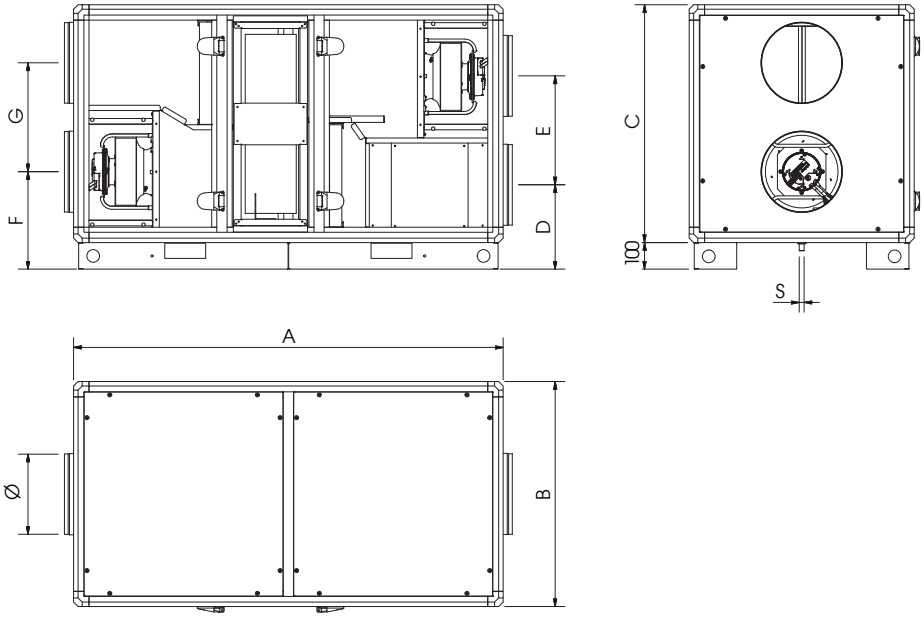
	NOISE IN THE DUCTS (Hz)								
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w dB(A)
ROTOR H-EC 5	Lw Vmax	80,2	83,5	70,6	71,8	63,8	54,8	48,6	77,6

ELECTRICAL DATA

MATCHING	FANS				UNIT ROTOR H-EC		
	Power (W)	Supply	Current max.(A)	Insulation class	Supply	Current max.(A)	Insulation class
ROTOR H-EC 1	2 x 170	230V 50/60 Hz 1F	2 x 1,4	IP54 CLASS B	230V 50 Hz 1F	3,0	IP 20
ROTOR H-EC 2	2 x 448	230V 50/60 Hz 1F	2 x 2,8	IP54 CLASS B	230V 50 Hz 1F	6,0	IP 20
ROTOR H-EC 3	2 x 715	230V 50/60 Hz 1F	2 x 3,1	IP54 CLASS B	230V 50 Hz 1F	7,0	IP 20
ROTOR H-EC 5	2 x 1850	400V 50/60 Hz 3F	2 x 2,9	IP54 CLASS B	400V 50 Hz 3F	7,2	IP 20

DIMENSIONS (mm) WEIGHT (kg)

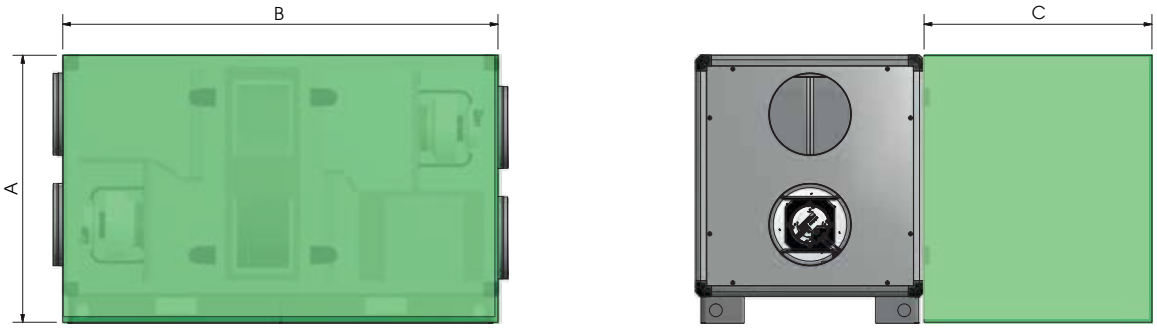
UNIT	Dimensions (mm)									
	A	B	C	D	E	F	G	S	Ø	Weight(kg)
ROTOR H-EC 1	1680	680	930	330	419	388	419	1/2"	315	187
ROTOR H-EC 2	1680	880	930	330	426	381	426	1/2"	315	269
ROTOR H-EC 3	1680	1080	1130	372	588	372	588	1/2"	400	338
ROTOR H-EC 5	1980	1280	1330	470	645	470	645	1/2"	500	466



INSTALLATION

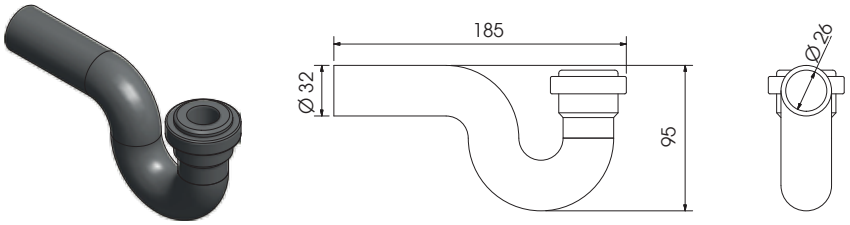
HORIZONTAL FLOOR MOUNTED

Minimum required space for maintenance (mm)



UNIT	Dimensions (mm)		
	A	B	C
ROTOR H-EC 1	1030	1680	1000
ROTOR H-EC 2	1030	1680	1200
ROTOR H-EC 3	1230	1680	1400
ROTOR H-EC 5	1430	1980	1600

STANDARD SIPHON (mm)

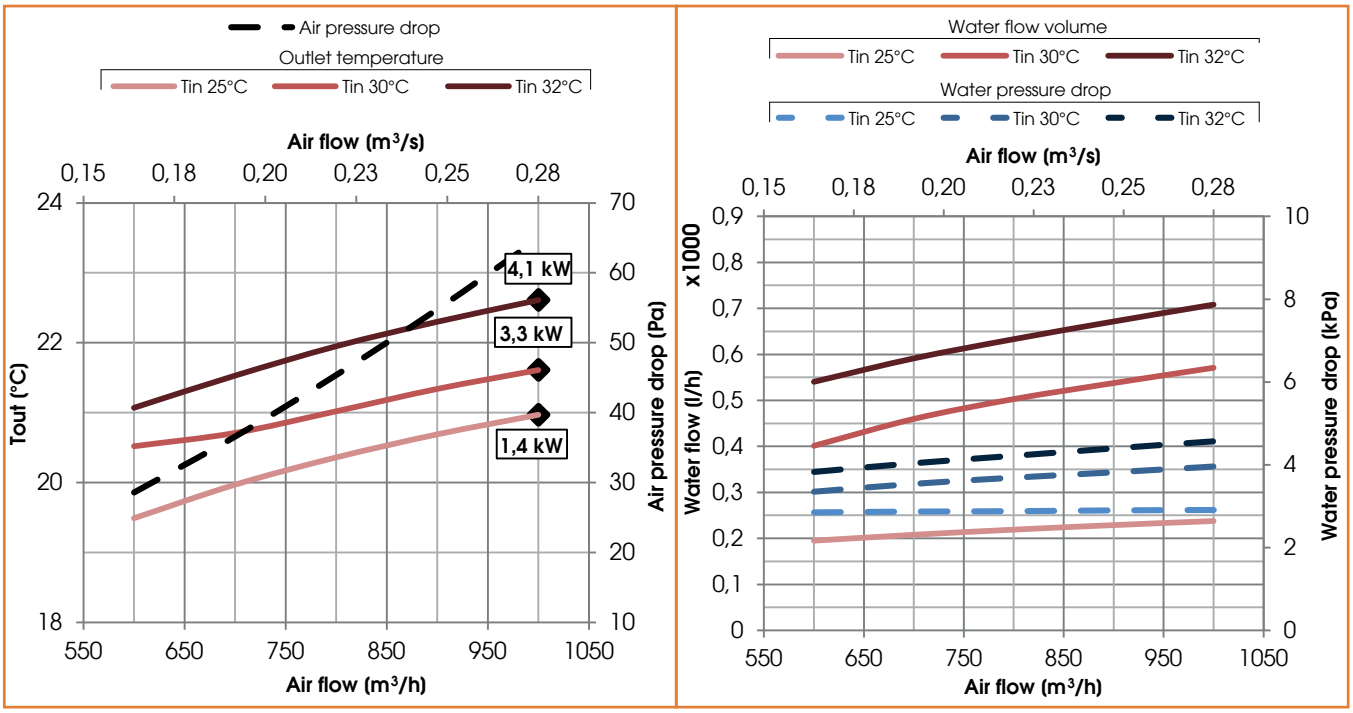


The way to read the graphs is specified within the accessories techno-list

COILS ROTOR H-EC 1

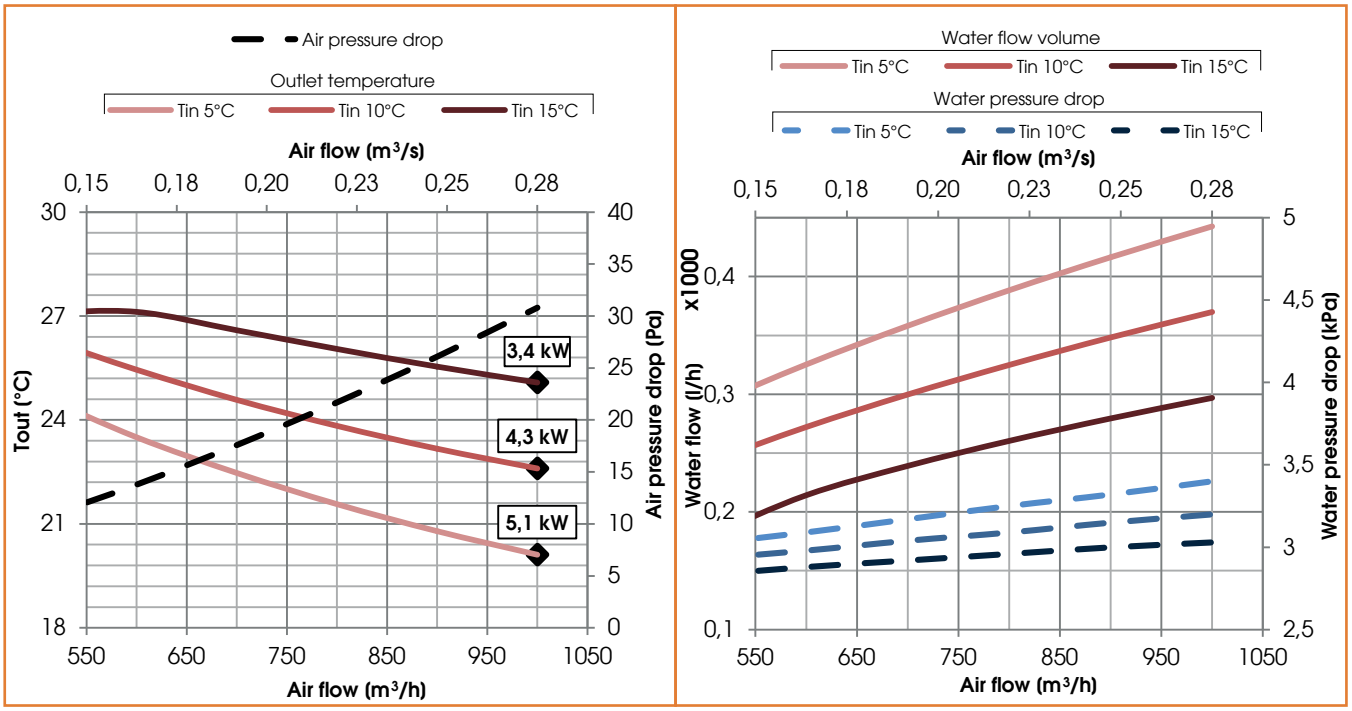
Cooling water coil (7°C/12°C)

Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	MATERIALS		
				TUBES	FINS	FRAME
3/4"	3	2,5	2	Cu	Al	Fe Zn



Heating water coil (45°C/35°C)

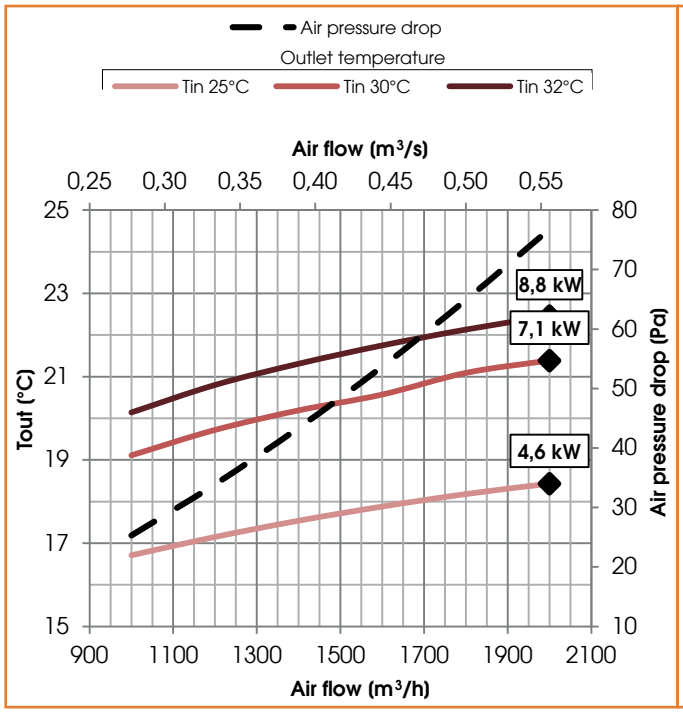
Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	MATERIALS		
				TUBES	FINS	FRAME
3/4"	3	2,5	2	Cu	Al	Fe Zn

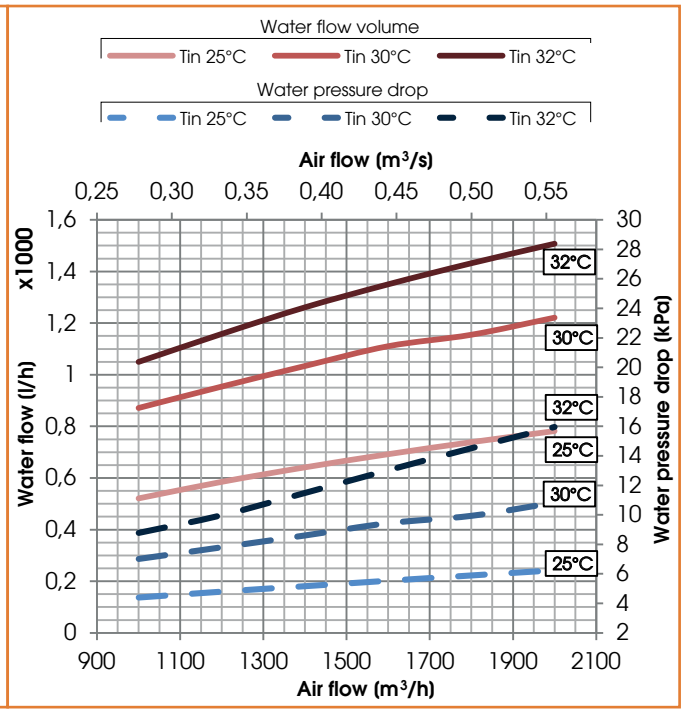


COILS ROTOR H-EC 2

Cooling water coil (7°C/12°C)

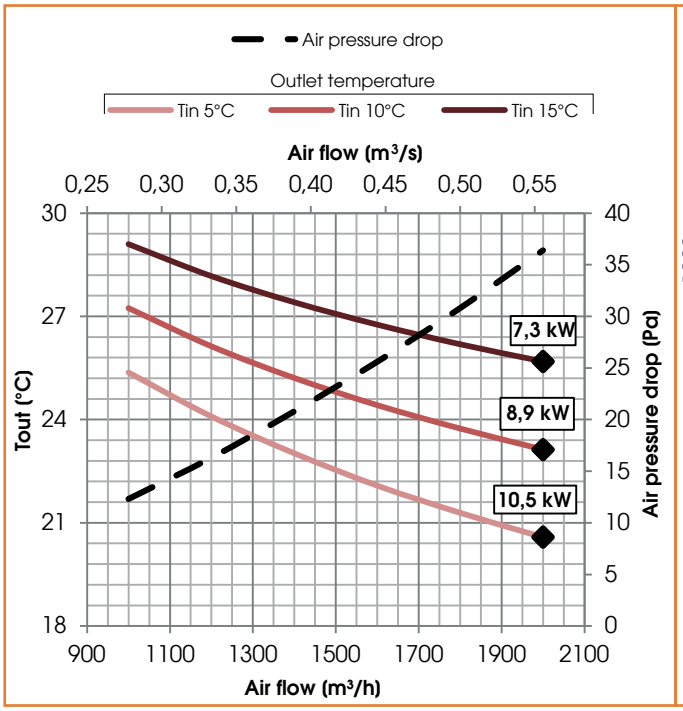
				MATERIALS		
Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
3/4"	3	2,5	3	Cu	Al	Fe Zn

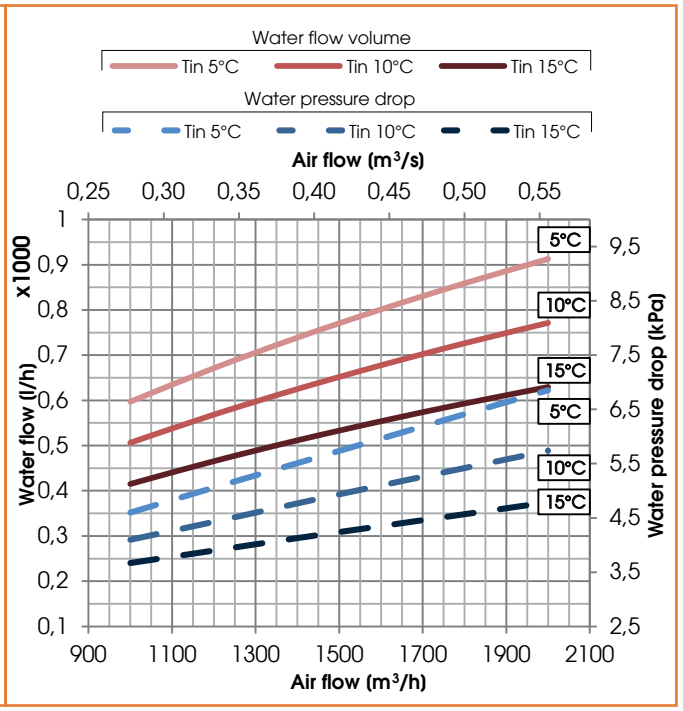




Heating water coil (45°C/35°C)

				MATERIALS		
Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
3/4"	3	2,5	3	Cu	Al	Fe Zn

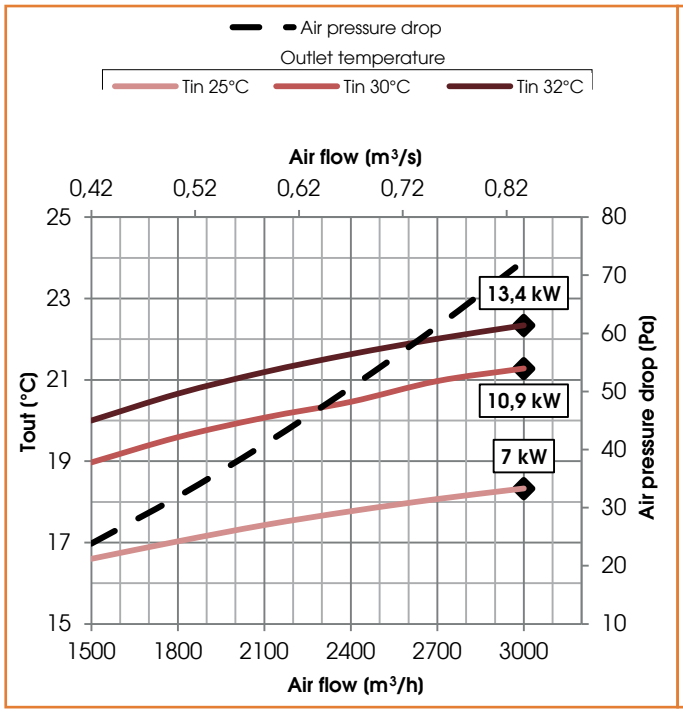


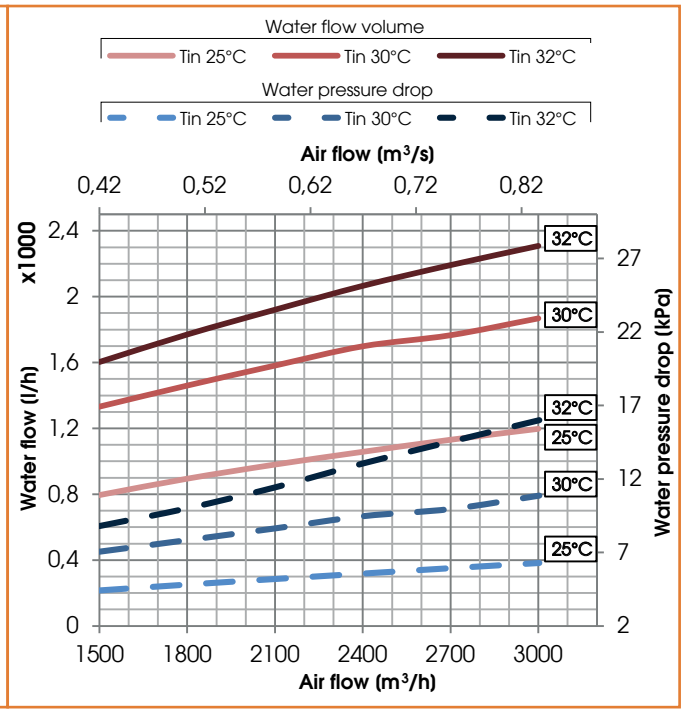


COILS ROTOR H-EC 3

Cooling water coil (7°C/12°C)

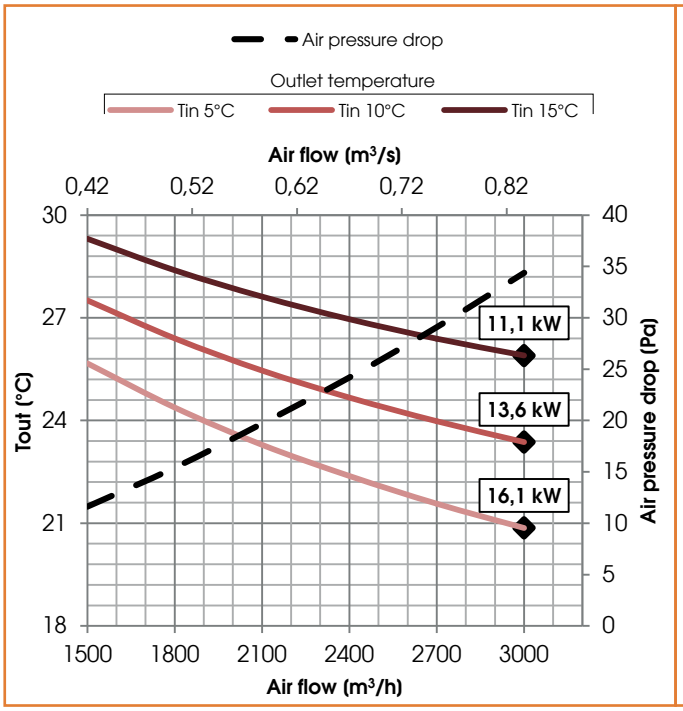
				MATERIALS		
Ø WATER (”gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
1”	3	2,5	5	Cu	Al	Fe Zn

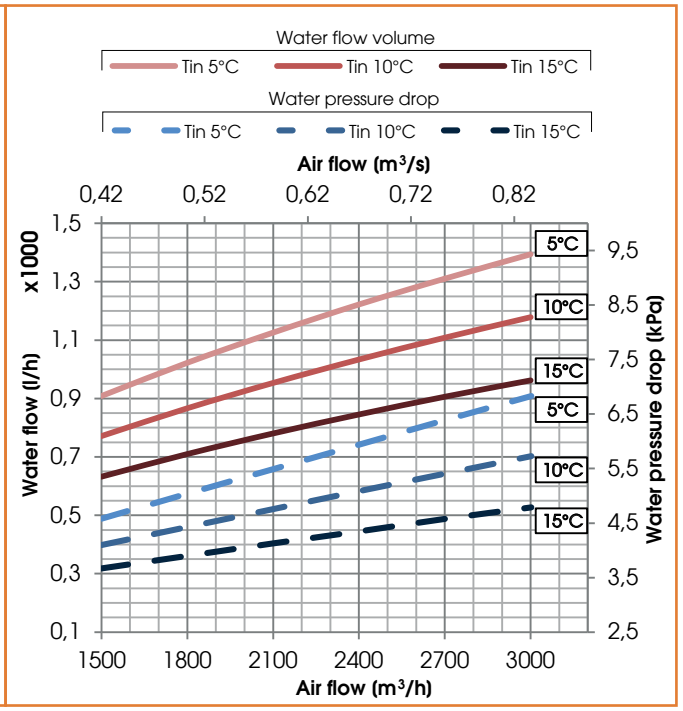




Heating water coil (45°C/35°C)

				MATERIALS		
Ø WATER (”gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
1”	3	2,5	5	Cu	Al	Fe Zn

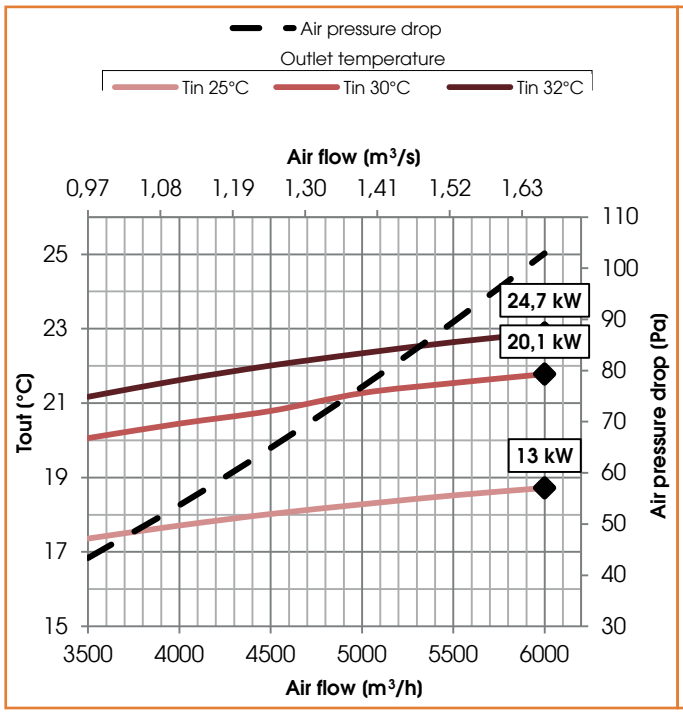


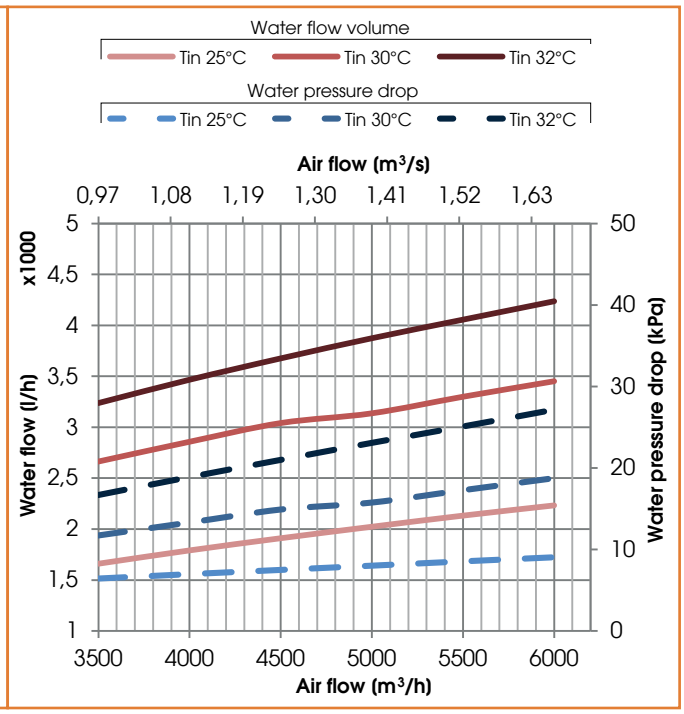


COILS ROTOR H-EC 5

Cooling water coil (7°C/12°C)

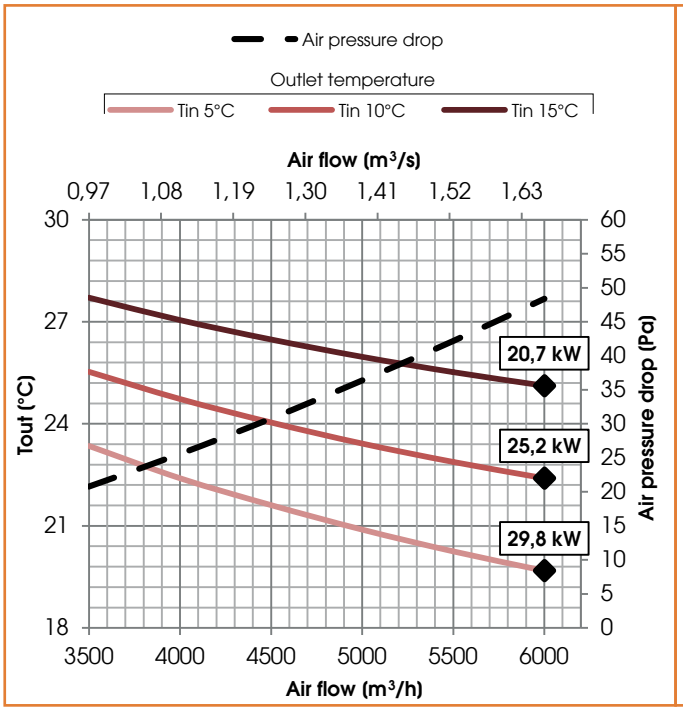
				MATERIALS		
Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
1"1/4	3	2,5	8	Cu	Al	Fe Zn

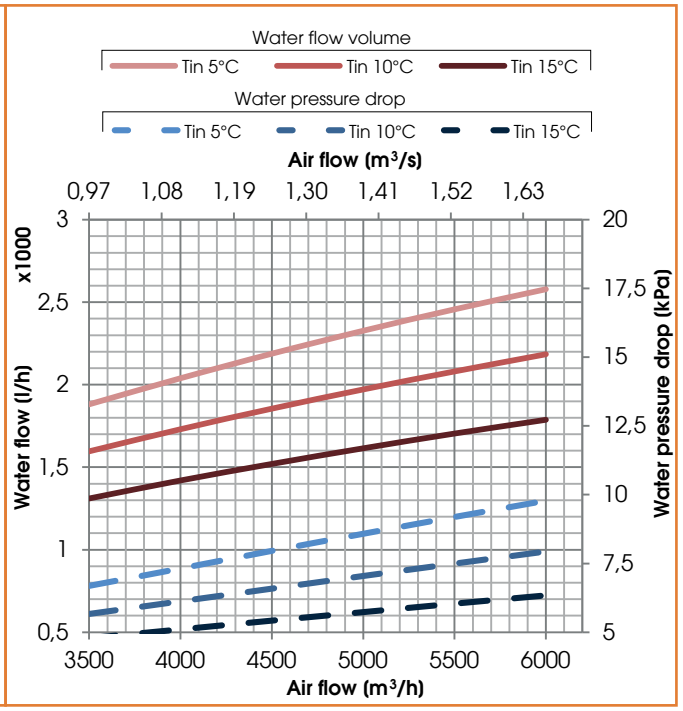




Heating water coil (45°C/35°C)

				MATERIALS		
Ø WATER ("gas)	N. ROWS	FIN PITCH (mm)	INT.VOL. (dm³)	TUBES	FINS	FRAME
1"1/4	3	2,5	8	Cu	Al	Fe Zn





DX coil ROTOR 1

DIRECT EXPANSION COIL (R410A) TECHNICAL DATA						
Air flow (m³/h)	Tin (C°)	R.H in (%)	Power (kW)	Tout (°C)	R.H: out (%)	Air pressure drop (Pa)
1000	28	68	6,4	19	92	86

Ø Connection (mm)	Fin pitch (mm)	N. Rows	Int.Vol. (dm³)	T evap (°C)	T cond (°C)
22-16	2,5	3	2	5	50

DX coil ROTOR 2

DIRECT EXPANSION COIL (R410A) TECHNICAL DATA						
Air flow (m³/h)	Tin (C°)	R.H in (%)	Power (kW)	Tout (°C)	R.H: out (%)	Air pressure drop (Pa)
2000	28	68	12	20	92	114

Ø Connection (mm)	Fin pitch (mm)	N. Rows	Int.Vol. (dm³)	T evap (°C)	T cond (°C)
28-16	2,5	3	3	5	50

DX coil ROTOR 3

DIRECT EXPANSION COIL (R410A) TECHNICAL DATA						
Air flow (m³/h)	Tin (C°)	R.H in (%)	Power (kW)	Tout (°C)	R.H: out (%)	Air pressure drop (Pa)
3000	28	50	14	17	82	103

Ø Connection (mm)	Fin pitch (mm)	Nr. Rows	Int.Vol. (dm³)	T evap (°C)	T cond (°C)
28-16	2,5	3	4	4	50

DX coil ROTOR 5

DIRECT EXPANSION COIL (R410A) TECHNICAL DATA						
Air flow (m³/h)	Tin (C°)	R.H in (%)	Power (kW)	Tout (°C)	R.H: out (%)	Air pressure drop (Pa)
5700	29	67	29	21	88	136

Ø Connection (mm)	Fin pitch (mm)	Nr. Rows	Int.Vol. (dm³)	T evap (°C)	T cond (°C)
35-28	2,5	3	7	5	50

Electrical heater

PRE-POST ELECTRICAL HEATER TECHNICAL DATA				
Unit	Power supply	Power (kW)	Current (A)	N. stages
ROTOR 1	230V, 50Hz,1F	4	17,4	1
ROTOR 2	230V, 50Hz,1F	6	26,1	1
ROTOR 3	400V, 50Hz,3F	8	11,6	1
ROTOR 5	400V, 50Hz,3F	16	23,2	1

N.B. – for other batteries PRE or POST treatment see the Techno-list of ACCESSORIES

A	Manufacturer's name				
B	Manufacturer's model identifier	ROTORH-EC 1 VAV EVO-PH SH	ROTORH-EC 2 VAV EVO-PH SH	ROTORH-EC 3 VAV EVO-PH SH	ROTORH-EC 5 VAV EVO-PH SH
C	Declared typology	UVNR / UVB	UVNR / UVB	UVNR / UVB	UVNR / UVB
D	Type of drive installed	Multiple speeds	Multiple speeds	Multiple speeds	Multiple speeds
E	Type of HRS	other	other	other	other
F	Thermal efficiency of heat recovery (%)	83,5	79,1	80,2	76,9
G	Nominal NRVU flow rate (m^3/s)	0,166	0,483	0,725	1,32
H	Effective electric power input (kW)	0,33	0,92	1,28	2,98
I	SFPint ($W/(m^3/s)$)	1033	1073	968	1002
J	Face velocity at design flow rate (m/s)	1,0	1,5	1,8	1,88
K	Nominal external pressure (Pa)	200	200	200	430
L	Internal pressure drop of ventilation components (Pa)	588	668	615	787
M	Optional: internal pressure drop of non-ventilation components	-	-	-	-
N	Static efficiency of fans used in accordance with Regulation (EU) No 327/2011 (%)	56,0	63,0	56,7	64,6
O	Declared maximum external leakage rate of the casing of ventilation units (%)	7,5	3,5	3,4	3,4
	Declared maximum internal leakage rate of bidirectional ventilation units or carry over (for regenerative heat exchangers only) (%)	0,0	0,0	0,0	0,0
P	Energy performance, preferably energy classification, of the filters (declared information about the calculated annual energy consumption	F7/M5	F7/M5	F7/M5	F7/M5
Q	Position and description of visual filter warning for RVUs intended for use with filters, including text pointing out the importance of regular filter changes for performance and energy efficiency of the unit	Filter warning is signaled on the display of the control system: the flashing writing "DirtyFilters" will appear. "To preserve the energy efficiency of the NRVU, it's recommended to replace the filters when signaled." Positioned near the filters inspection			
R	Casing sound power level (LWA) (dB)	59	63	64	73
S					

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WESTERN™
AIRCONDITIONING