



VOLCANO

Heating Unit





1.0 VTS GROUP

- 1.1 VTS GROUP
- 1.2 3 pillars of success



2.0 VOLCANO

- 2.1 VOLCANO heating units
- 2.2 Modernity
- 2.2 Innovativeness
- 2.3 Energy efficiency
- 2.4 Device overview
- 2.5 VOLCANO VR-D destratifier
- 2.6 Device type series
- 2.7 Automation
- 2.8 Assembly



3.0 TECHNICAL PARAMETERS

- 3.1 Technical parameters
- 3.2 Tables



4.0 FAQ

- 4.1 FAQ



5.0 VTS offer

- 5.1 VTS offer: WING

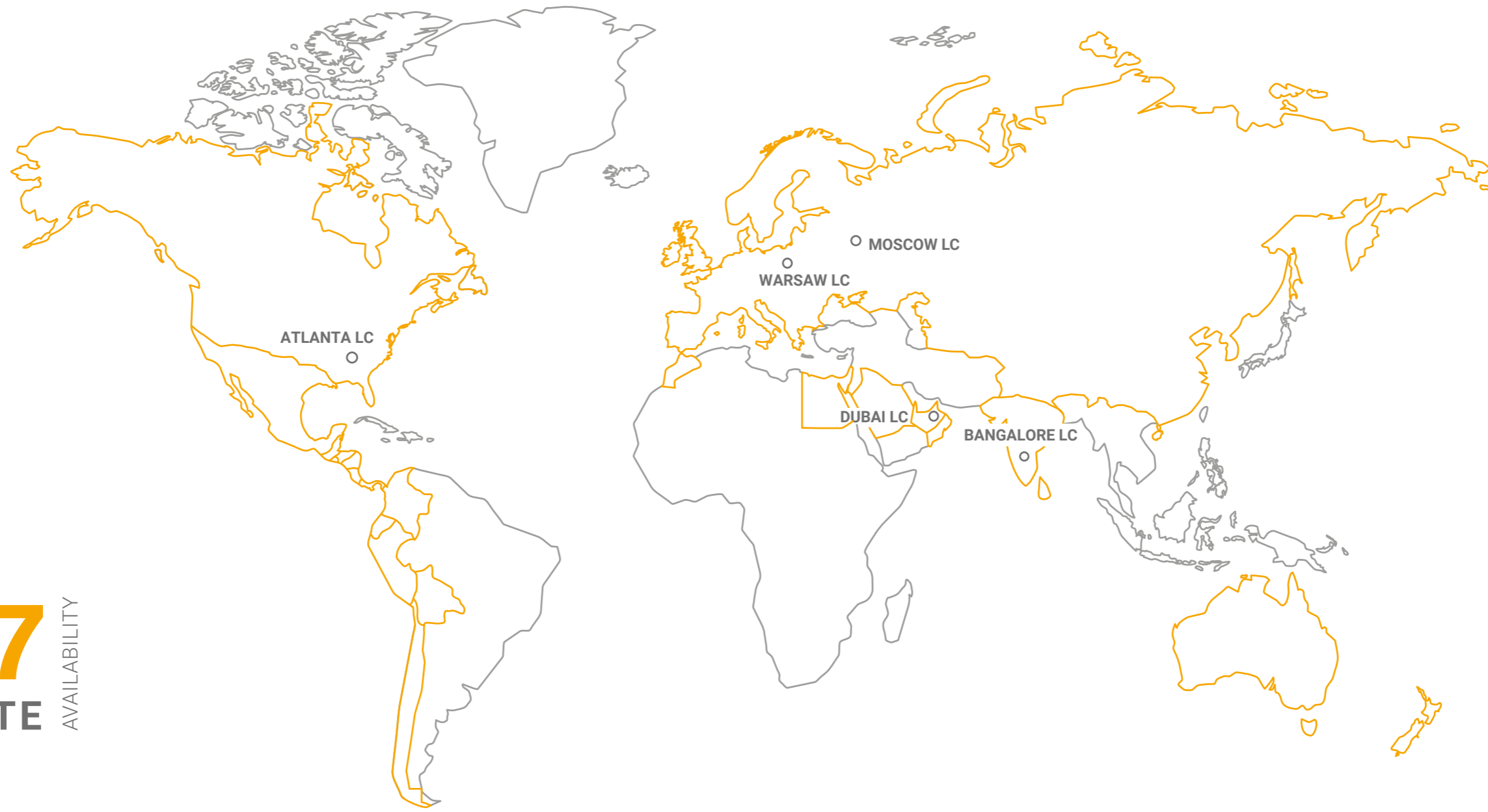
VTS GROUP

The manufacturer of technologically advanced devices for the HVAC industry applying innovative technologies in the field of design research, production and logistics.

OUR MISSION

NO 1 MANUFACTURER

IN THE WORLD



24/7

IMMEDIATE AVAILABILITY

*Logistics center





3 PILLARS OF SUCCESS

The highest quality of products. The best prices on the market. The shortest delivery time. These three pillars of our market policy are the reason why VTS is always one step ahead worldwide.

Following the best world practices from the automotive industry, VTS has created a network of 5 efficient production & logistics centers (Atlanta, Dubai, Moscow, Shanghai, Warsaw, Bangalore) to guarantee the shortest delivery time on the market, regardless of your location.

Mass production scale of universally repeatable devices allows VTS to offer them in the most competitive prices, while maintaining the highest quality.

A multi-level control system allows VTS to offer a 3-year warranty for devices as standard.

24/7
IMMEDIATE AVAILABILITY

5 CENTERS
LOGISTICS

\$ COMPETITIVE
PRICE

100 000
SOLD UNITS ANNUALLY

CROWN THE HIGHEST
QUALITY

3 YEAR GUARANTEE
FOR EACH DEVICE



VOLCANO

The Volcano heating units are a new generation of devices combining innovative technical solutions with a modern pattern design. Our precise and light casing resembles the beautiful diamond shape - ideal in its simplicity. The character of the device is emphasized by the composition of the selected materials and dynamically shaped air guide vanes.



ENERGY-SAVING
& RELIABLE
EC MOTORS



THREE-ROW WATER
EXCHANGERS



BIM COMPATIBLE REVIT® FILES



AVAILABLE
ONLINE 24/7

www.eshop.vtsgroup.com

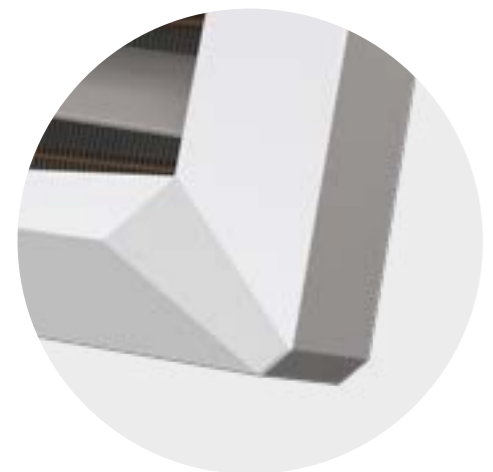
Modernity

DESIGN

Precisely designed casing form ensures optimal exchanger surface exposure at the same time hiding all of the structural elements.

MATERIAL

Made of the highest class ABS with an anti-UV pigment mixture, the casing is characterized by high mechanical strength, durability, and resistance to high temperatures. The material provides for unchangeable aesthetics, easy to clean surfaces and long-term durability.



SHAPE AND COLOR

The light and clean casing lines combined with a universal color palette provide for harmonious adaptation to every room type.



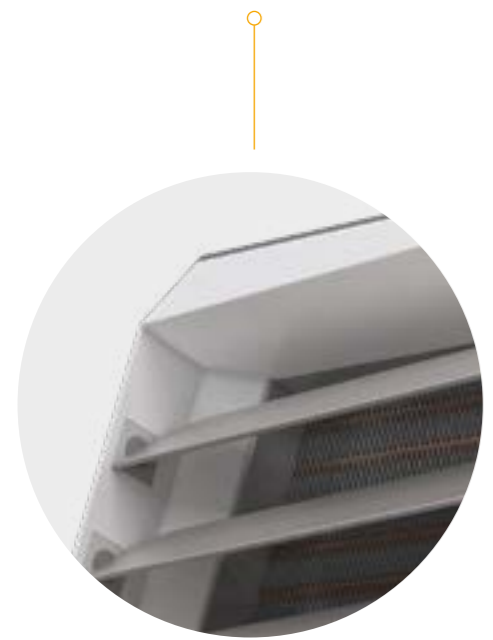
SMART LOCK

Our patented locking system guarantees a durable and precise fit for all casing elements.

Innovation

AIR GUIDE VANES

An innovative blade mount solution allows for their individual adjustment and stable positioning. The guide vane profile assures minimum air flow resistance rates.



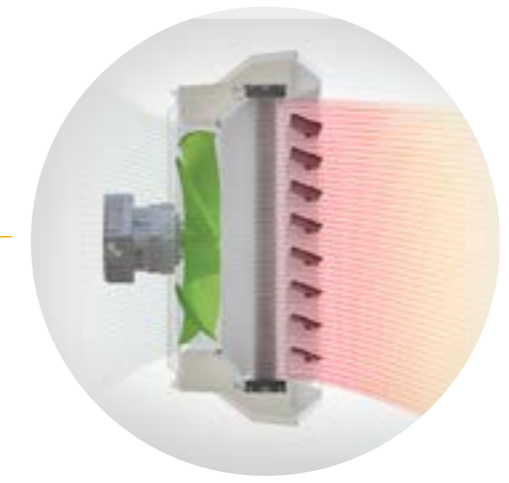
DIFFUSER

The design of the diffuser ensure total integration with the rear section of the housing and the fan.



HEAT EXCHANGERS

- 1, 2 and 3-row heaters featuring increased heat exchange surfaces guarantee optimal match of the heating power to the requirements of the facility;
- Enhanced heat transfer surface and ability to work with low temperatures agents;
- All exchangers are tested to guarantee 100% verification of tightness.



MAXIMUM AIR OUTPUT WITHOUT ANY POWER LOSS

Our ideally matching fan casing and a dedicated diffuser provide for equal distribution of air speed in the exchanger to secure small flow resistance rates and full use of the exchanger's power output.

Energy efficiency

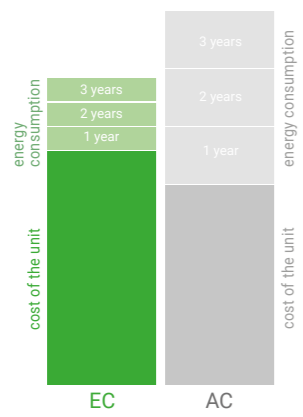
EFFICIENT FANS

Optimized profile and increased blade surfaces provide for low maintenance costs and quiet operation.



FULL RECYCLING

The device is environmentally friendly. 100% of the materials used can be recycled.



ELECTRICITY SAVINGS

Optimum shape of the fan and the use of the efficient EC engine save up to 40% of energy compared to conventional solutions. The investment pays off even after one year.

ENERGY-SAVING REGULATION

EC motors guarantee maximum unit efficiency even at reduced speed. Stepless rotation regulation is now available for EC motors allowing the unit to adapt to any requirements.

Device overview



VOLCANO

Quality and low price

- highly efficient
- reliable 3-gear motor
- 3-step fan speed regulation
- fast mounting and intuitive connections
- competitive price

VOLCANO EC

Comfort and cost efficiency

- high efficiency of the unit
- highly efficient EC motor
- stepless fan speed regulation
- up to 40% lower maintenance costs
- direct connection to BMS as an option
- silent operation even at high fan speed



HMI VOLCANO EC controller

- modern and compact design
- high contrast and clear screen
- advanced calendar for each day in the week
- ANTIFROST working mode
- BMS systems compatibility
- stepless fan speed regulation
- build-in thermostat and external temperature sensors cooperation
- valve with actuator connection possibility
- up to 8 heating units connected with the one controller



VOLCANO VR-D

Destratifier - an easy way to save energy

VR-D or VR-Mini destratifier supports the air distribution in the given room. It directs the hot air, that naturally goes up, back down, by which it is lowering the demand for heat from other sources.

Selection method based on the room size:

Assembly height should be no less than 3/4 of the height of the room, measuring from the floor up.

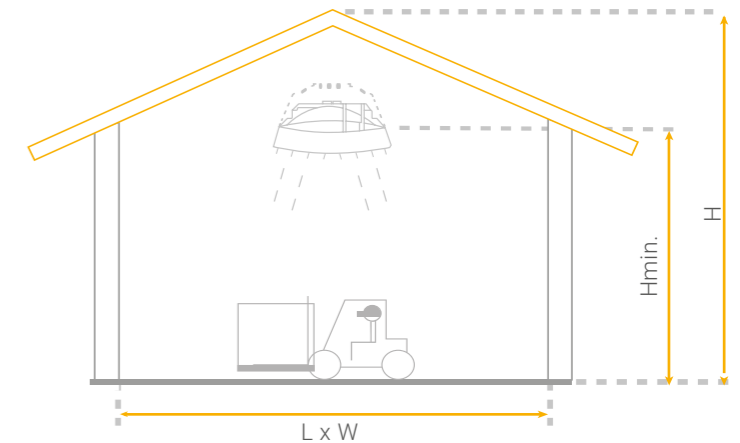
An example calculation of the minimal VOLCANO VR-D destratifier assembly height: $H_{MIN} = \frac{3}{4} \times H$

In a room of H=12m, the minimal VOLCANO VR-D destratifier assembly height will be: $H_{MIN} = \frac{3}{4} \times 12 \text{ m} = 9 \text{ m}$

The minimum number of destratifiers should be calculated in a way to allow for a 6-time exchange of the air over them in a period of one hour.

DESCRIPTION:

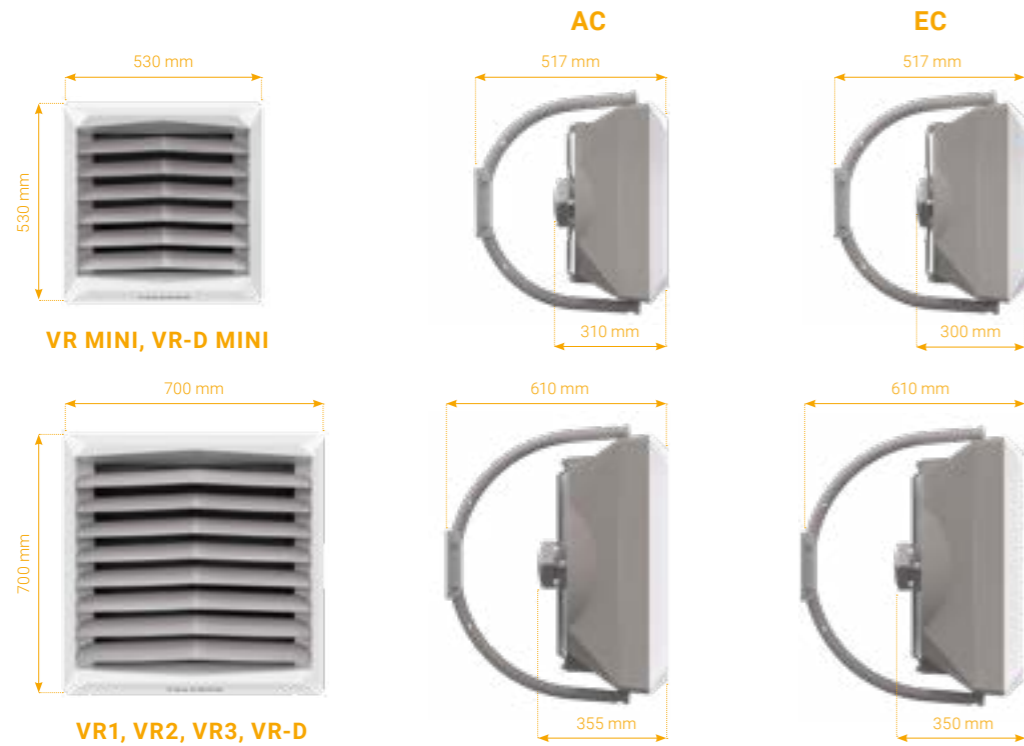
- H - height
- L - length
- W - width



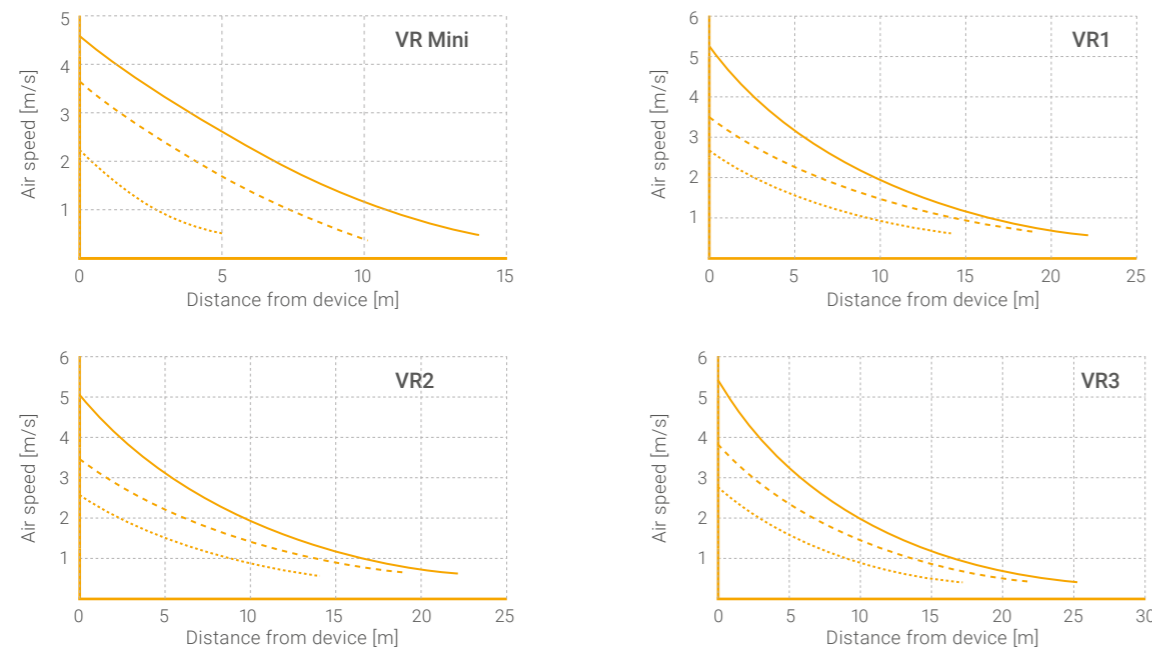
Device type series

VOLCANO	VR Mini	VR1	VR2	VR3	VR-D Mini	VR-D
HEATING POWER RANGE	3-20 kW	5-30 kW	8-50 kW	13-75 kW	-	-
MAXIMUM AIR OUTPUT*	2100 m³/h	5300 m³/h	4850 m³/h	5700 m³/h	2330 m³/h	6500 m³/h
HORIZONTAL RANGE (MAX.)	14 m	23 m	22 m	25 m	16 m	28 m
VERTICAL RANGE (MAX.)	8 m	12 m	11 m	12 m	10 m	15 m

*0,5 m/s maximum speed



AIR SPEED IN THE DISTANCE FUNCTION



Automation and accessories

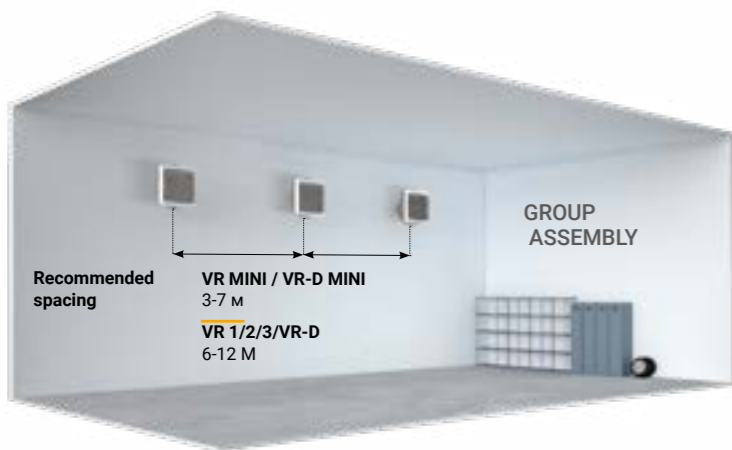
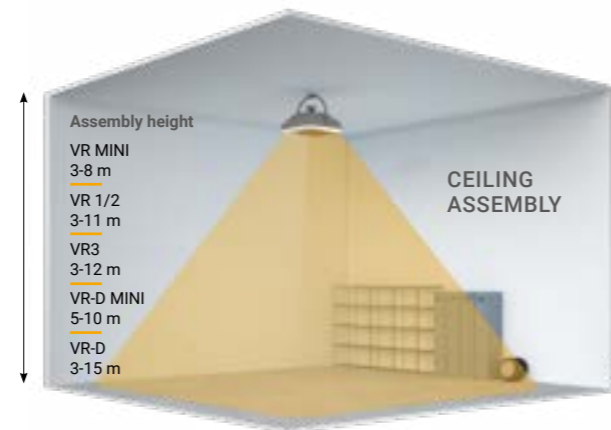
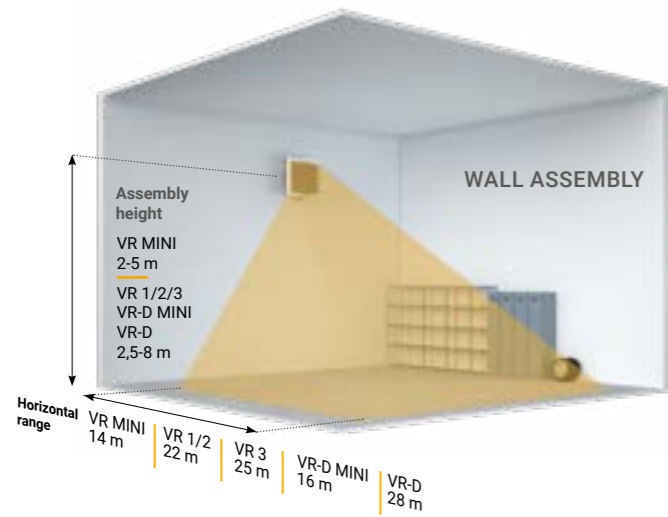
Parameters		Wall controller WING/VOLCANO	VR Thermostat	Potentiometer VR EC (0-10V)	Potentiometer with thermostat VR EC (0-10V)	HMI VOLCANO EC controller
Model		Wall controller WING/VOLCANO	VR Thermostat	Potentiometer VR EC (0-10V)	Potentiometer with thermostat VR EC (0-10V)	HMI VOLCANO EC controller
VTS product number		1-4-0101-0438	1-4-0101-0038	1-4-0101-0453	1-4-0101-0473	1-4-2801-0157
Motor support		AC		EC		
Power supply voltage	V/ph/Hz	~230/1/50	~230/1/50	~230/1/50	~230/1/50	~230/1/50
Permissible load current	A	6(3)	3	0,02 A for 0-10V		1A for 230VAC 0,02A for 0-10V
Settings range	°C	10...30	10...30	-	5...30	5...40
Work mode	--	manual	manual	manual	manual	manual/automatic
Hourly-weekly calendar	--	No	No	No	No	Yes
Clock	--	No	No	No	No	Yes
Temperature measurement	--	Integrated in the device		-	Integrated in the device	
The possibility of connecting a separate temperature sensor	pcs.	No			1 or 4	1 or 4
Output signal	--	on/off		0-10V DC		
Protection rate	IP	30		20		

	Speed regulator ARW 3.0/2	Speed regulator ARW 0.6	Valve with actuator (VA-VEH202TA)	Room NTC sensor (for the VOLCANO EC controller)	Flex. connection hoses (set)
VTS article No.	1-4-0101-0434	VTS article No. 1-4-0101-0167	VTS article No. 1-2-1204-2019	VTS article No. 1-2-1205-1007	VTS article No. 1-2-2702-0076
power supply voltage	V/ph/Hz ~230/1/50	power supply voltage V/ph/Hz ~230/1/50	power supply voltage V/ph/Hz ~230/1/50	resistance measurement element kΩ NTC 10K	length m 0,6-0,9
permissible output current	A 3	permissible input current A 0,6	Power consumption electrical W 1	assembly -- wall-mounted	connection type GW/GW 3/4"
control method	manual	control method manual	connection *	max. fluid pressure MPa 1,6	min. working temperature for water °C 5
number of steps	5	number of steps 3	connection 3/4	max. signal wire length m 100	min. working temperature for glycol °C -20
on/off switch	yes	on / off switch no	kvs m³/h 4,5	ambient temperature °C -20...+70	max. working temperature °C 130
max. ambient temperature °C	35	max. ambient temperature °C 35	opening/closing time min. 3/3	protection rating IP 66	set includes hose (2 pcs) gasket (4 pcs)
protection rating	IP 54	protection rating IP 54	protection rating IP 54		

Cooperation of controls and regulators with heating units

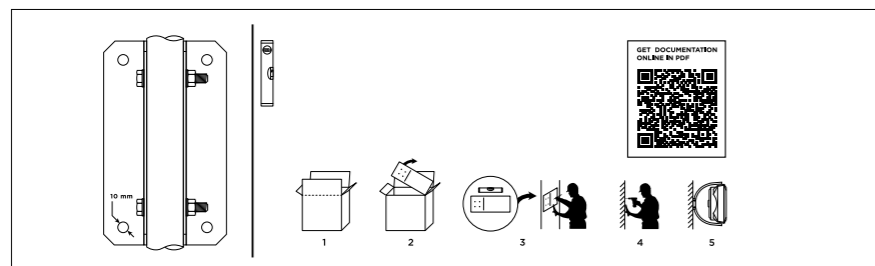
Model	WING/VOLCANO CONTROL	Speed regulator ARW 3.0/2	VR Thermostat	Speed regulator ARW 0.6	VR EC (0-10 V) Potentiometer	VR EC (0-10 V) Potentiometer with thermostat	Control panel Volcano EC
VTS article No.	1-4-0101-0438	1-4-0101-0434	1-4-0101-0038	1-4-0101-0167	1-4-0101-0453	1-4-0101-0473	1-4-0101-0457
Cooperation with motors	AC			EC			
VR Mini	pcs. 4	4	1	1	8	8	8
VR1	pcs. 2	1	1	0	8	8	8
VR2	pcs. 2	1	1	0	8	8	8
VR3	pcs. 1	1	1	0	8	8	8
VR-D	pcs. 1	1	1	0	8	8	8

Assembly



VOLCANO sets are equipped with a standard assembly console for wall and ceiling mounting of the device. The maximum vertical range of the devices is 8-15 m, depending on the type of heater. The maximum horizontal range of the devices is 14-25 m.

ASSEMBLY TEMPLATE

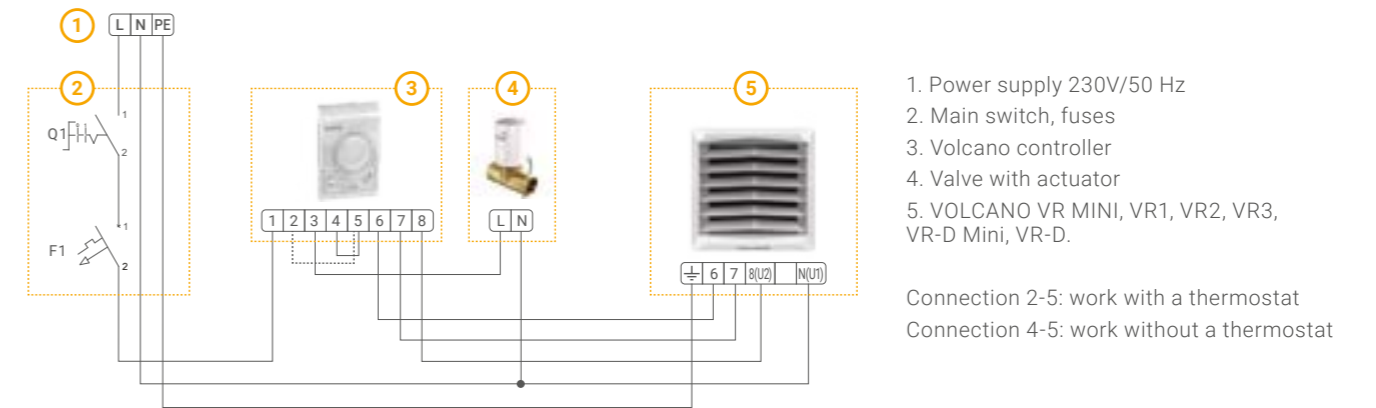


Each VOLCANO package has a printed template representing the spacing of boreholes and a leveling line to facilitate the mount of the console to the wall. Simply cut the template out of the cardboard lid and proceed to assembly.

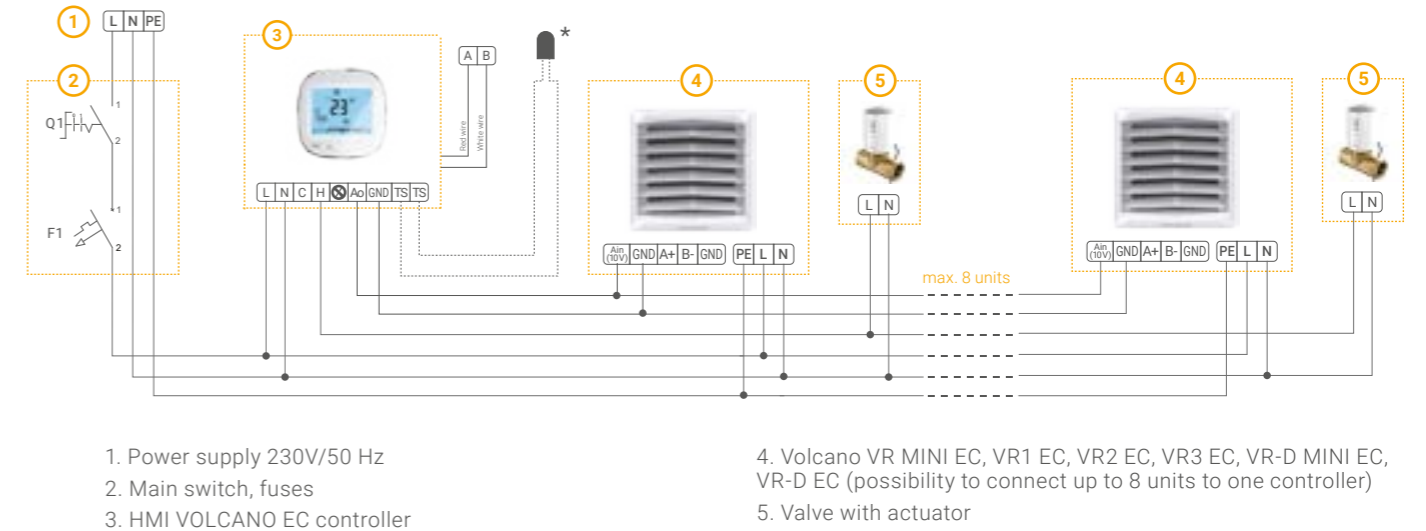


EXAMPLE OF A HEATING UNIT CONNECTION

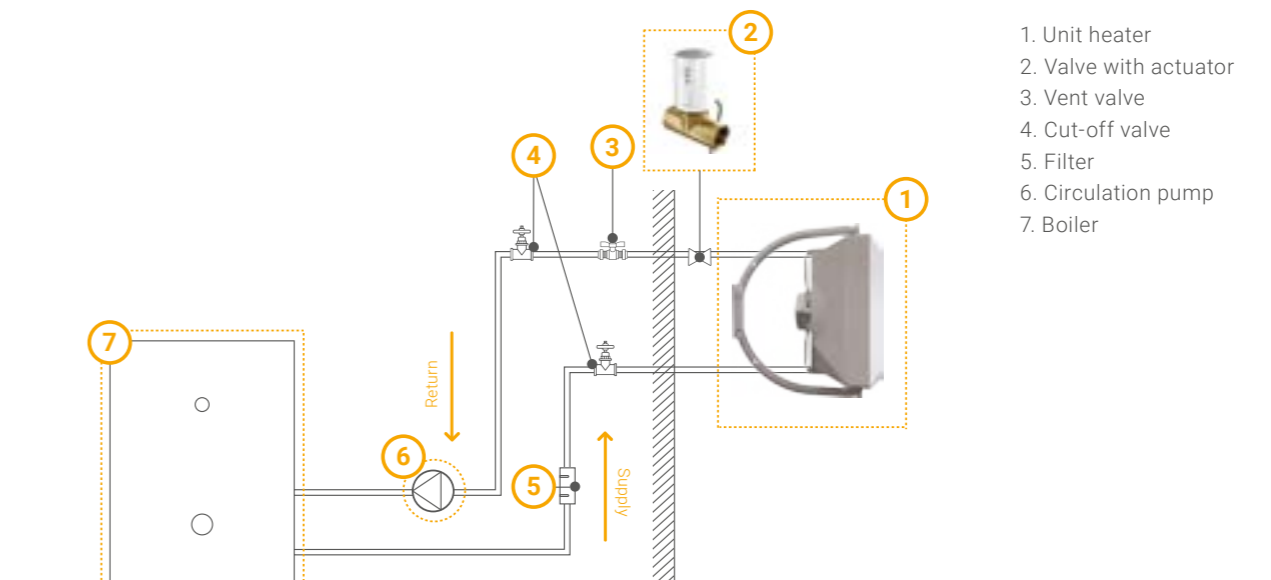
AC MOTOR VERSION



EC MOTOR VERSION



EXAMPLE OF A HYDRAULIC SYSTEM



Technical parameters

Parameter	Unit	VOLCANO VR MINI		VOLCANO VR1		VOLCANO VR2		VOLCANO VR3		VOLCANO VR-D		VOLCANO VR-D MINI	
		AC	EC	AC	EC	AC	EC	AC	EC	AC	EC	AC	EC
VTS article No.		1-4-0101-0445	1-4-0101-0455	1-4-0101-0446	1-4-0101-0442	1-4-0101-0447	1-4-0101-0443	1-4-0101-0448	1-4-0101-0444	1-4-0101-0449	1-4-0101-0450	1-4-0101-0506	1-4-0101-0498
Number of heater rows	-	2		1		2		3		---		---	
Maximum air output	m³/h	2100		5300		4850		5700		6500		2200	2330
Heating power range	kW	3-20		5-30		8-50		13-75		---		---	
Maximum temperature of the heating medium	°C	130						---		---			
Maximum working pressure	MPa	1,6						---		---			
Maximum horizontal air range	m	14		23		22		25		28		15	16
Maximum vertical air range	m	8		12		11		12		15		9	10
Water capacity	dm	1,12		1,25		2,16		3,1		---		---	
Connection pipes diameter	"	3/4						---		---			
Device weight (without water)	kg	13	14	21	21	21,5	21,5	25,5	24,5	18	15,5	10,6	8
Power supply voltage	V/Hz	1 ~ 230/50											
Motor power	kW	0,115	0,095	0,28	0,25	0,28	0,25	0,45	0,37	0,45	0,37	0,115	0,095
Rated current	A	0,53	0,51	1,3		1,95		1,7	1,95	1,7	0,53	0,51	
Rated motor rotational speed	rpm	1450	1200	1380	1430	1380	1430	1380	1400	1380	1400	1450	1200
Motor protection level	IP	54											
Casing color palette		Front: RAL 9016 Traffic White, rear + console: RAL 7036 Platinum Gray, fan (EC): RAL 6038 Green											

PIPELINE DIAMETERS*

Number of heaters connected to the main line**	VR Mini		VR1		VR2		VR3	
	Max water flow [m3/h]	Pipeline diameter ["]	Max water flow [m3/h]	Pipeline diameter ["]	Max water flow [m3/h]	Pipeline diameter ["]	Max water flow [m3/h]	Pipeline diameter ["]
1	0,9	3/4	1,3	3/4	2,2	3/4	3,3	3/4
2	1,8	3/4	2,6	3/4	4,4	1	6,6	1 1/4
3	2,7	1	3,9	1	6,6	1 1/4	9,9	1 1/2
4	3,6	1	5,2	1	8,8	1 1/4	13,2	1 1/2
5	4,5	1	6,5	1 1/4	11	1 1/2	16,5	2
6	5,4	1 1/4	7,8	1 1/4	13,2	1 1/2	19,8	2
7	6,3	1 1/4	9,1	1 1/4	15,4	2	23,1	2 1/2
8	7,2	1 1/4	10,4	1 1/2	17,6	2	26,4	2 1/2
9	8,1	1 1/4	11,7	1 1/2	19,8	2	29,7	2 1/2
10	9,0	1 1/4	13	1 1/2	22	2 1/2	33	3

* Pipeline diameters selected for maximum water flow rate up to 2,5 m/s
 ** Heaters connected successively to one main line

VOLCANO VR MINI

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	2100		1650		1100	
noise level	dB(A)	52	50	42	40	29	27
motor power**	W	115	95	68	56	48	39
electricity consumption***	W	112	91	73	32	53	13
horizontal range	m	14		8		5	
vertical range	m	8		5		3	

VOLCANO VR1

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	5300		3900		2800	
noise level	dB(A)	56	54	51	49	40	38
motor power**	W	280	250	220	190	190	162
electricity consumption***	W	280	202	220	75	190	41
horizontal range	m	23		20		15	
vertical range	m	12		9		7	

VOLCANO VR2

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	4850		3600		2400	
noise level	dB(A)	56	54	51	49	40	38
motor power**	W	280	250	220	190	190	162
electricity consumption***	W	280	226	220	89	190	45
horizontal range	m	22		19		14	
vertical range	m	11		8		6	

VOLCANO VR3

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	5700		4100		3000	
noise level	dB(A)	57	55	51	49	45	43
motor power**	W	450	370	320	285	245	218
electricity consumption***	W	450	355	320	123	245	55
horizontal range	m	25		22		17	
vertical range	m	12		9		7	

VOLCANO VR-D MINI

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	2200	2300	1730	1830	1150	1220
noise level	dB(A)	49	50	39	40	27	27
motor power**	W	115	95	68	56	48	39
horizontal range	m	15	16	9	10	6	7
vertical range	m	9	10	6	7	5	5

VOLCANO VR-D

FAN SPEED		III		II		I	
		AC	EC	AC	EC	AC	EC
fan output	m³/h	6500		4600		3400	
noise level	dB(A)	56		50		43	
motor power**	W	450	370	320	285	245	218
horizontal range	m	28		24		19	
vertical range	m	15		11		9	

* reference conditions: 1500m3 room volume, measurement performed at 5m
 ** EC motor power for the above specified fan outputs
 *** Standard laboratory conditions

VOLCANO VR MINI

Tz / Tp parameters [°C]																	
Tp1 [°C]	90/70					80/60				70/50				50/30			
	Qp [m³/h]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]
0	2100	20,7	29,5	0,92	13,9	17,9	25,4	0,79	10,7	15,1	21,4	0,66	7,9	9,2	13,1	0,4	3,4
	1650	18,1	32,6	0,8	10,7	15,6	28,2	0,69	8,3	13,1	23,7	0,58	6,1	8	14,6	0,35	2,6
	1100	14,1	38,3	0,63	6,8	12,2	33,2	0,54	5,3	10,3	27,9	0,45	3,9	6,3	17,2	0,28	1,7
5	2100	19,4	32,6	0,86	12,3	16,6	28,6	0,73	9,3	13,7	24,5	0,6	6,6	7,6	16,1	0,34	2,5
	1650	16,9	35,6	0,75	9,5	14,5	31,1	0,64	7,2	12	26,6	0,53	5,2	6,8	17,4	0,3	2
	1100	13,3	40,9	0,59	6	11,3	35,8	0,5	4,6	9,4	30,5	0,41	3,3	5,4	19,6	0,23	1,3
10	2100	18,1	35,7	0,8	10,8	15,3	31,7	0,67	8	12,4	27,6	0,54	5,5	6,4	19,1	0,28	1,7
	1650	15,8	35,5	0,7	8,4	13,3	34,1	0,59	6,2	10,8	29,5	0,47	4,3	5,6	20,1	0,24	1,4
	1100	12,4	43,5	0,55	5,3	10,4	38,3	0,46	3,9	8,5	33	0,37	2,8	4,4	21,9	0,19	0,9
15	2100	16,8	38,8	0,74	9,4	13,9	34,8	0,61	6,7	11	30,7	0,48	4,4	4,9	22	0,22	1,1
	1650	14,6	41,4	0,65	7,3	12,1	37	0,54	5,2	9,6	32,4	0,42	3,5	4,3	22,8	0,19	0,9
	1100	11,5	46,1	0,51	4,6	9,5	40,9	0,42	3,3	7,6	35,5	0,33	2,2	3,3	24,1	0,15	0,5
20	2100	15,5	41,9	0,69	8	12,6	37,9	0,56	5,6	9,7	33,7	0,42	3,5	3,3	24,7	0,14	0,5
	1650	13,5	44,3	0,6	6,2	11	39,8	0,48	4,3	8,4	35,2	0,37	2,7	2,8	25,1	0,12	0,4
	1100	10,6	48,6	0,47	4	8,6	43,4	0,38	2,8	6,6	38	0,29	1,8	1,9	25,2	0,08	0,2

VOLCANO VR1

Tz / Tp parameters [°C]																	
Tp1 [°C]	90/70					80/60				70/50				50/30			
	Qp [m³/h]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]
0	5300	29,9	16,8	1,33	26	25,8	14,5	1,14	20	21,7	12,2	0,95	14,6	13,2	7,5	0,58	6,2
	3900	25,4	19,4	1,12	19,1	21,9	16,7	0,97	14,7	18,4	14,1	0,81	10,8	11,3	8,6	0,49	4,6
	2800	21,2	22,6	0,94	13,6	18,3	19,5	0,81	10,5	15,4	16,4	0,68	7,8	9,4	10,1	0,41	3,3
5	5300	28	20,8	1,24	23	23,9	18,4	1,05	17,3	19,7	16,1	0,87	12,3	11,3	11,3	0,49	4,6
	3900	23,8	23,2	1,05	16,9	20,3	20,5	0,9	12,8	16,8	17,8	0,74	9,1	9,6	12,3	0,42	3,4
	2800	19,9	26,2	0,88	12,1	16,9	23,1	0,75	9,1	14	19,9	0,62	6,6	8	13,6	0,35	2,5
10	5300	26,1	24,7	1,16	20,2	22	22,4	0,97	14,8	17,8	20	0,78	10,2	9,2	15,2	0,4	3,2
	3900	22,2	27	0,98	14,9	18,7	24,3	0,82	10,9	15,1	21,6	0,66	7,6	7,9	16	0,34	2,4
	2800	18,5	29,7	0,82	10,6	15,6	26,6	0,69	7,8	12,7	23,5	0,56	5,4	6,6	17	0,29	1,8
15	5300	24,2	28,6	1,07	17,5	20	26,3	0,88	12,5	15,8	23,9	0,7	8,2	7,2	19	0,31	2
	3900	20,5	30,7	0,91	12,9	17	28	0,75	9,2	13,5	25,3	0,59	6,1	6,1	19,7	0,27	1,5
	2800	17,2	33,3	0,76	9,2	14,2	30,2	0,63	6,6	11,3	27	0,5	4,4	5,1	20,4	0,22	1,1
20	5300	22,2	32,5	0,99	15	18,1	30,2	0,8	10,3	13,8	27,8	0,61	6,4	5	22,8	0,22	1,1
	3900	18,9	34,5	0,84	11,1	15,4	31,8	0,68	7,6	11,8	29	0,52	4,8	4,2	23,2	0,18	0,8
	2800	15,8	36,8	0,7	7,9	12,9	33,7	0,57	5,5	9,9	30,5	0,43	3,5	3,5	23,7	0,15	0,6

VOLCANO VR2

Tz / Tp parameters [°C]																	
Tp1 [°C]	90/70					80/60				70/50				50/30			
	Qp [m³/h]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]
0	4850	50,0	30,7	2,21	23,8	43,1	26,5	1,9	18,3	36,2	22,3	1,59	13,5	22,3	13,7	0,97	5,7
	3600	41,9	34,7	1,86	17,2	36,5	30	1,6	13,3	30,5	25,3	1,34	9,8	18,8	15,6	0,82	4,2
	2400	32,7	40,6	1,45	10,8	28,3	35,2	1,25	8,4	23,9	29,7	1,05	6,2	14,8	18,4	0,64	2,7
5	4850	46,7	33,7	2,07	21,1	39,9	29,5	1,76	15,9	33,1	25,3	1,45	11,4	19	16,7	0,83	4,3
	3600	39,3	37,5	1,74	15,2	33,6	32,8	1,48	11,5	27,9	28,1	1,22	8,3	16,1	18,3	0,7	3,1
	2400	30,6	43,1	1,36	9,6	26,2	37,6	1,16	7,3	21,8	32,1	0,96	5,3	12,6	20,7	0,55	2
10	4850	43,6	36,8	1,93	18,5	36,7	32,6	1,62	13,6	29,8	28,4	1,31	9,4	15,6	19,6	0,68	3
	3600	36,6	40,4	1,62	13,4	30,9	35,6	1,36	9,9	25,2	30,9	1,11	6,8	13,2	21	0,58	2,2
	2400	28,6	45,5	1,27	8,4	24,2	40	1,07	6,3	19,7	34,5	0,87	4,4	10,4	22,9	0,45	1,4
15	4850	40,4	39,8	1,79	16	33,5	35,6	1,48	11,5	26,6	31,3	1,17	7,6	12,2	22,5	0,53	1,9
	3600	34	43,1	1,51	11,6	28,2	38,4	1,25	8,3	22,4	33,6	0,99	5,5	10,3	23,5	0,45	1,4
	2400	26,5	48	1,18	7,3	22,1	42,5	0,98	5,3	17,6	36,9	0,77	3,5	8	25	0,35	0,9
20	4850	37,2	42,8	1,65	13,7	30,3	38,6	1,34	9,5	23,3	34,3	1,02	5,9	8,4	25,2	0,37	1
	3600	31,3	45,9	1,39	10	25,5	41,1	1,13	6,9	19,7	36,3	0,86	4,3	7	25,8	0,31	0,7
	2400	24,5	50,4	1,09	6,3	20	44,8	0,88	4,4	15,5	39,2	0,68	2,8	5,3	26,6	0,23	0,4

Legend:

- T_z - device feed water temperature
- T_p - device return water temperature
- T_{p1} - device feed air temperature
- T_{p2} - device outlet air temperature
- P_g - device heating power
- Q_p - air output
- Q_w - water flow
- Δp - heat exchanger pressure loss

VOLCANO VR3

Tz / Tp parameters [°C]																	
Tp1 [°C]	90/70					80/60				70/50				50/30			
	Qp [m³/h]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]	Pg [kW]	Tp2 [°C]	Qw [m³/h]	Δp [kPa]
0	5700	75,0	39	3,31	32,6	64,5	33,8	2,85	25,1	54,3	28,4	2,39	18,4	33,6	17,6	1,46	7,8
	4100	60,6	44,1	2,69	22	52,5	38,2	2,32	17	44,3	32,2	1,95	12,5	27,5	20	1,2	5,4
	3000	49,5	49,2	2,19	15	42,9	42,7	1,89	11,6	36,3	36,1	1,59	8,6	22,6	22,5	0,98	3,7
5	5700	69,9	41,6	3,1	28,9	59,8	36,3	2,64	21,7	49,6	31	2,18	15,5	28,7	20	1,25	5,8
	4100	56,8	46,3	2,52	19,5	48,7	40,4	2,15	14,8	40,5	34,4	1,78	10,6	23,5	22,1	1,02	4
	3000	46,4	51,1	2,06	13,3	39,8	44,6	1,76	10,1	33,1	37,9	1,46	7,3	19,3	24,2	0,84	2,8
10	5700	65,2	44,1	2,89	25,3	55	38,8	2,43	18,6	44,8	33,4	1,97	12,8	23,7	22,4	1,03	4,1
	4100	53	48,6	2,35	17,1	44,9	42,6	1,98	12,7	36,6	36,6	1,61	8,8	19,4	24,1	0,84	2,8
	3000	43,3	53,1	1,92	11,7	36,7	46,5	1,62	8,7	30	39,8	1,32	6,1	15,9	25,8	0,69	2
15	5700	60,4	46,6	2,68	21,9	50,2	41,3	2,22	15,7	40	35,9	1,76	10,3	18,4	24,6	0,8	2,6
	4100	49,2	50,8	2,18	14,9	41	44,8	1,81	10,7	32,7	38,8	1,44	7,1	15,1	26	0,66	1,8
	3000	40,2	55	1,78	10,2	33,6	48,4	1,48	7,4	26,8	41,6	1,18	4,9	12,4	27,3	0,54	1,2
20	5700	55,6	49,1	2,47	18,8	45,4	43,8	2	13	35	38,3	1,54	8,1	12,8	26,7	0,56	1,3
	4100	45,3	53	2,01	12,8	37,1	47	1,64	8,9	28,7	40,9	1,26	5,6	10,4	27,5	0,45	0,9
	3000	37,1	56,9	1,64	8,8	30,4	50,2	1,34	6,1	23,6	43,4	1,04	3,9	8,3	28,2	0,36	0,6

Legend:

- T_z - device feed water temperature
- T_p - device return water temperature
- T_{p1} - device feed air temperature
- T_{p2} - device outlet air temperature
- P_g - device heating power
- Q_p - air output
- Q_w - water flow
- Δp - heat exchanger pressure loss

FAQ DEVICES

1. HOW DO I CORRECTLY SELECT A VOLCANO HEATER?

Step one: determine the temperature inside the target room and its heat demand for heating purposes. Air heating is one of the most dynamic methods of heating rooms, allowing for the application of temporary (e.g. overnight) temperature lowering in the heating room and its fast heating soon before entering it. This allows for significant reductions in heat consumption, but does not require any heating power surpluses to be added to the devices for quick heating.

Step two: determine the location for the heaters and the necessary air stream range to ensure the achievement of suitable temperatures in the areas of the room you are interested in. Notice that the air speed should not exceed the permissible values in human occupancy zones or on any other sensitive areas, e.g. in the vicinity of industrial processes.

Step three: obtain information on the temperature of the heating medium available in the building.

Step four: Once you have all the above data, take the VOLCANO catalogue and look for devices which fulfill the criteria of the required air stream and required heating power, considering the possibility of work at varying outputs (first, second or third speed). Use the charts presenting air speeds in the distance function to determine the range for each device size. Alternatively, use the chart on page 18, presenting the range for limit speed of 0,5 m/s. Determine the heating power for each device speed and for various heating medium temperatures using the tables on pages 22-23.

Easy selection "shortcut": To make your work easier, use a selection program available at: ehcad.vtsgroup.com

2. WHAT IS THE DIFFERENCE IN CONTROL BETWEEN 3-SPEED AC MOTORS AND EC MOTORS?

VOLCANO heaters equipped with AC motors have the possibility to switch between 3 speeds, and those equipped with EC motors have stepless regulation. In the unit equipped with AC motor it is performed by switching of the given winding leads with use of a simple control panel equipped with relay outputs and there is no need to use any voltage regulator.

In the unit equipped with EC motor the fan speed regulation is performed by 0-10V signal. We can use either a simple

wall-mounted potentiometer allowing for a stepless control of the speed, or an advanced control with microprocessor, which except for a choice of 3 programmed efficiency steps, can also have numerous other functions (temperature control in the room, weekly programmable ON/OFF calendar, work parameters settings, anti-freeze modes etc.)

3. HOW SHOULD WE CHOOSE THE FEEDING PIPELINE DIAMETER WHEN CONNECTING MORE HEATERS?

The main pipeline diameter should be chosen in a way, so the water flow is not higher than 2,5 m/s. It is due to a compromise between the investment costs connected with the used pipes diameters, and maintenance costs, connected with water flow resistance. We suggest the following minimum pipeline diameters depending on the quantity and type of the heaters connected to the main line according to the table on p. 20. In case of a complex installation, that is when the units are at least 40 m from the heat source, one has to correct the pipe diameters recalculating them for smaller water flow speeds.

4. HOW TO CONNECT THE THERMOSTAT, SO THE AC FAN TURNS OFF TOGETHER WITH CLOSING OF THE VALVE?

VOLCANO technical documentation contains electrical connection schemes for various work modes. It is the easiest to achieve the close of the fan together with the closing of the valve by connecting the whole unit to a power grid, protected by a redundant circuit breaker, through a thermostat. In such case one has to pay attention to the maximum thermostat input load; the load should be at least 3 (10) A per one VOLCANO unit. If the thermostat input load is too small, or the higher number of the units controlled with the use of the thermostat, one has to use an electric relay, with a coil fed from a thermostat (230V AC), work input voltage will be 230 V AC, and work input load will be adjusted to the number of VOLCANOS under control.

5. CAN I CONNECT A FEED PIPELINE TO THE UPPER HEAT EXCHANGER MANIFOLD?

Yes, you can, although a heat exchanger powered by an upper manifold will be more difficult to vent. Remember to leave sufficient space for mounting a valve actuator, which should be installed on the return stub pipe.

6. HOW TO CONNECT A VALVE TO THE VOLCANO EC CONTROL PANEL, SO IT WILL CLOSE WHEN THE FAN IS TURNED OFF?

Connection of the valve with actuator to the Volcano EC controller is possible through dedicated input. This input on controller is marked as H1. On H1 input, 230 V AC voltage appears when the controller changes modes for worked mode. It transfers the 0-10V DC voltage to the fan and 230V AC voltage to actuator of the valve, which opens it.

7. CAN I FEED VOLCANO VR MINI / VR1 / VR2 / VR3 HEATERS WITH A NON-FREEZE MEDIUM?

Yes, you can. The most frequently used non-freeze medium is a water solution of ethylene glycol. The heaters mounted in VOLCANO can support up to 50% mixtures. Make sure to check, however, if other elements of the technological heat installation (valves, pump, etc.) are adapted to work on glycol mix. To do this, check the recommendations of the manufacturers of particular components used. Remember that the use of glycol mixes, which are usually characterized by higher viscosity and lower thermal capacity, compared to water, increases the resistance of heating medium flow and reduces the heating power of the device.

8. CAN THE VOLCANO VR MINI/VR1 / VR2/ VR3 HEATER BE USED TO COOL DOWN AIR AS WELL?

Yes, but only when the temperature of the working medium is higher than the dew point of the cooled air, since VOLCANO devices are not equipped with drip trays and we shouldn't lead to the condensation of humidity. To switch a VOLCANO device to the cooling function, connect an ice water installation. When there is the risk that the temperature of the working medium could fall below the dew point of the cooled air, make sure to build a drip tray and install it under the device. In this case, the VOLCANO device will be able to work with the horizontal air outlet only. The use of a VOLCANO device with vertical air outlet can result in flooding the fan motor or the space under the device, since mounting a drip tray in this position of the device is impossible.

VOLCANO is not equipped with a drip tray, which is why you should always reduce its work efficiency in the cooling mode, in order to eliminate the phenomenon of drip-trapping by the air flowing through the heat exchanger.

9. CAN VOLCANO VR MINI / VR1 / VR2 / VR3 HEATERS SUPPORT HEAT PUMPS?

Yes, VOLCANO water heaters can cooperate with heat pumps. However, when selecting the size of the device, take the low temperature of the heating medium into account. We recommend the use of heaters with large heat exchange surfaces. For this type of installation, we recommend the VR3 heater equipped with a three-row heat exchanger. Make sure to check VR Mini and VR2 with two-row heat exchangers as well.

10. IS THERE A POSSIBILITY TO CONNECT A CIRCULATION PUMP TO THE VOLCANO EC CONTROLLER?

Yes, there is such a possibility. One has to use H1 clamp on the controller, and for security additionally use an electric relay. On the H1 input, and then on the electric relay a 230 V AC voltage will appear when the controller turns into work mode. This way, provided the relay is correctly chosen, and can turn the circulation pump on and off.



FAQ
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Check in VTS offer: **WING**

WING is the new generation device created from a passion for a light and modern design representing characteristics of gliders. A minimal casing with a streamlined form of a wing seems to float in the air. The diamond style side panels hide the excellent components in an innovative curtain body to set new standards for air curtains. WING combines the unique design and excellent efficiency to redefine the air curtain image.



WING *W*

WATER HEAT EXCHANGER

HEATING POWER RANGE:
4 – 47 kW

EXHAUST FLOW RATE:
1850-4400 m³/h

MAXIMUM AIR COVERAGE:
3,7 m

WING *E*

ELECTRIC HEATING COIL

HEATING POWER RANGE:
2 – 15 kW

EXHAUST FLOW RATE:
1850-4400 m³/h

MAXIMUM AIR COVERAGE:
3,7 m

WING *C*

WITHOUT HEAT EXCHANGER (AMBIENT)

MAXIMUM AIR COVERAGE:
4 m

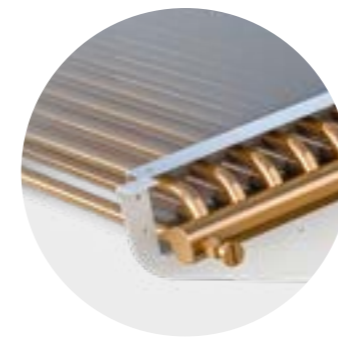
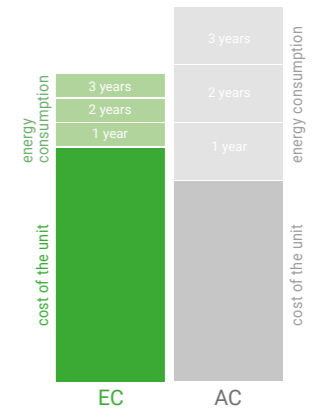
EXHAUST FLOW RATE:
1950-4600 m³/h

1 m 1,5 m 2 m

AIR CURTAINS AVAILABLE IN FOLLOWING SIZES

ENERGY EFFICIENT EC MOTORS

Modern design of the engine and fan saves up to 60% of energy compared to conventional solutions.



WATER HEATER

The high-performance, two-row water heater is adapted to operate with low parametric factors.



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Low-temperature electric heating coil with high power allows for a safe work of the unit without the fan coast. Asymmetric heat power distribution allows to adapt it to the individual needs of the user.



FUNCTIONALITY AND UNIQUE DESIGN

Thanks to the optimized construction of the covers, cleaning the curtain is comfortable and does not require the disassembly of any part, always ensuring hygienic operation.

Minimalistic form and smooth shape conceals strength of the device. Air curtain WING is made to silently ensure the purity of your environment.



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