FLOWAIR
intelligent air flow

LEO INOX FAN HEATER

LEO INOX

2015

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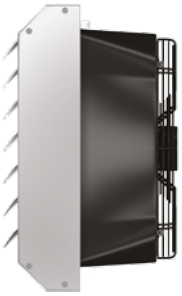
GENERAL CHARACTERISTICS



	INOX 25	INOX 45	INOX 65
Heating capacity (kW)	10–25	25–47	44–65
Air flow (m^3/h)	900–4400		
Weight (kg)	16,1–25,4		
Casing	stainless steel		

LEO INOX fan heaters are designed to operate indoors. They are used to heating buildings with big cubic measure. They are adapted for operation in high humidity, so they can be installed in food industry buildings, gastronomic buildings, greenhouses etc.

There two types of units available:

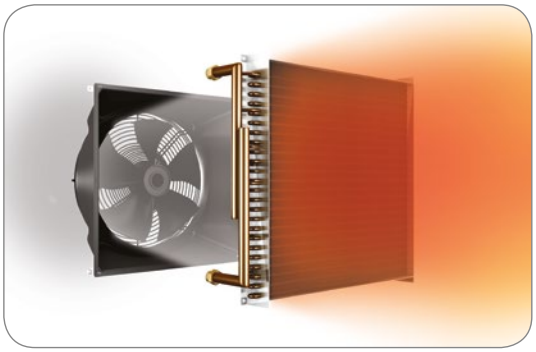
LEO INOX M

fan heater with energy-efficient EC fan controlled by external 0-10V signal, which enables fan speed regulation in 0-100% range (VNTLCD and VNT20 controllers);

LEO INOX S/V

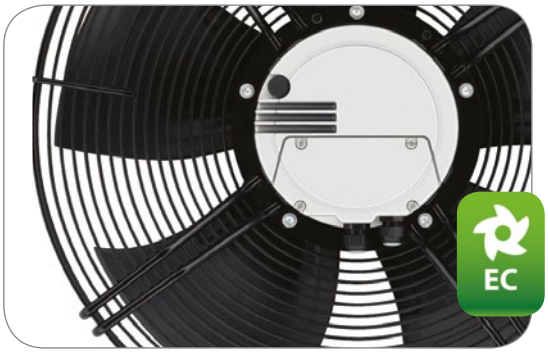
fan heater with standard fan. Air flow can be controlled by transformer speed regulators (TR, TRd).

CONSTRUCTION



AIR NOZZLE

It directs air onto the whole surface of heat exchanger. Specially designed profile made of plastic, reduces air flow noise.



FAN

LEO INOX type M heaters are equipped with energy-efficient fan with EC motor (electronically commutated). This type of air fan reduces power consumption even by 40%.

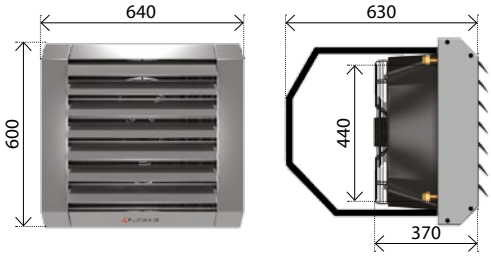
CASING

Attractive and modern design. Casing of the unit is made of stainless steel (AISI 316L), which ensures its resistance to corrosives.

AIR OUTLET

Air outlet is equipped with air blades made of stainless steel. They can be installed vertically or horizontally in the air outlet and enable to direct the air stream freely.

DIMENSIONS



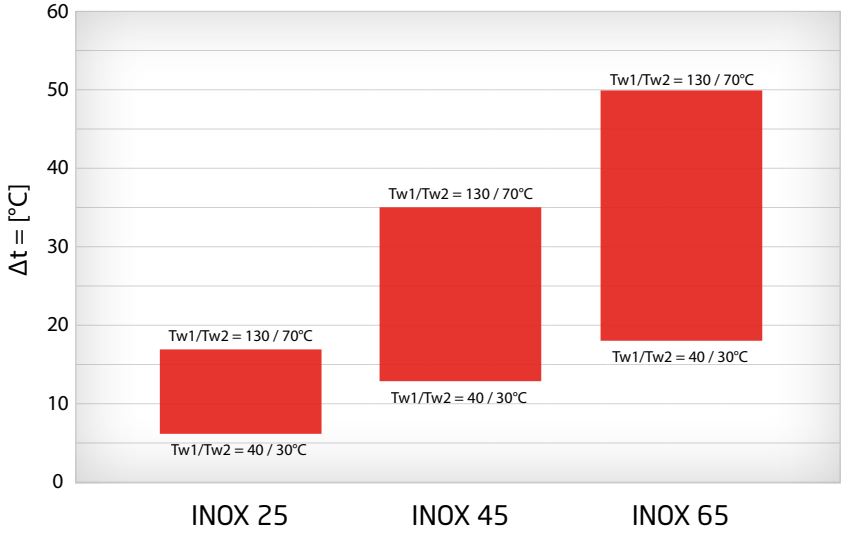
TECHNICAL DATA

	INOX 25S	INOX 25V	INOX 25M	INOX 45S	INOX 45V	INOX 45M	INOX 65S	INOX 65V	INOX 65M
Fan	LEO INOX S/V - axial, single phase, AC LEO INOX M - axial with electronically commutated (EC) motor, single phase, AC								
Max. air flow [m³/h]	4400			4100			3900		
Power supply [V/Hz]	230/50								
Max. current consumption [A]	1,2	1,3	0,7	1,2	1,3	0,7	1,2	1,3	0,7
Max. power consumption [W]	280	300	170	280	300	170	280	300	170
IP / Insulation class	54/F								
Max. acoustic pressure level* [dB(A)]	51,0								
Max. air stream range** [m]	26,0			24,0			22,0		
Heat exchanger	Cu – Al., one row			Cu – Al., two row			Cu – Al., three row		
Nominal heating capacity*** [kW]	25,4			46,8			64,6		
Air temperature rise (ΔT)*** [°C]	16,0			32,0			46,0		
Max. water temperature [°C]	130,0								
Max. water pressure [MPa]	1,6								
Connection [″]	¾								
Casing	stainless steel + plastic								
Colour	silver - grey								
Place of installation	indoors								
Max. ambient temperature [°C]	60,0								
Installation position	any								
Unit weight [kg]	18,0	19,4	16,1	19,4	20,8	17,5	21,3	22,7	19,4
Weight of unit filled with water [kg]	19,0	20,4	17,1	21,4	22,8	19,5	24,0	25,4	22,1

* Acoustic pressure level measured in the room with average sound absorption, capacity 1500 m³, at distance of 5 m from the unit.
** Horizontal range of isothermal stream (at velocity boundary equal to 0,5 m/s).
*** At max. air flow stream, inlet/outlet water temperature 90/70°C, inlet air temperature 0°C.

AIR TEMPERATURE RISE

INOX 25|45|65

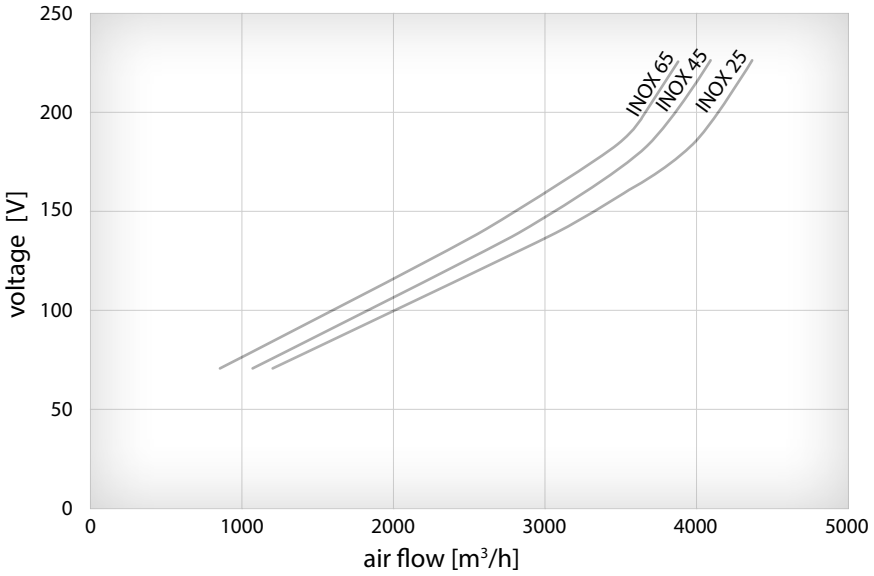


Air temperature rise at unit's maximum air flow. Inlet air temperature 0°C.

Tw1/Tw2 - inlet/outlet water temperature.

AIR FLOW REGULATION

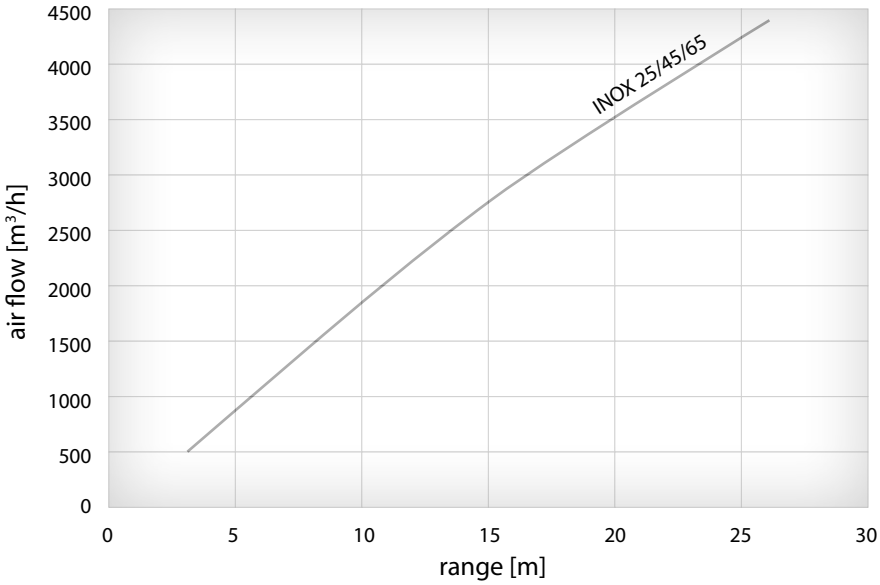
INOX 25|45|65



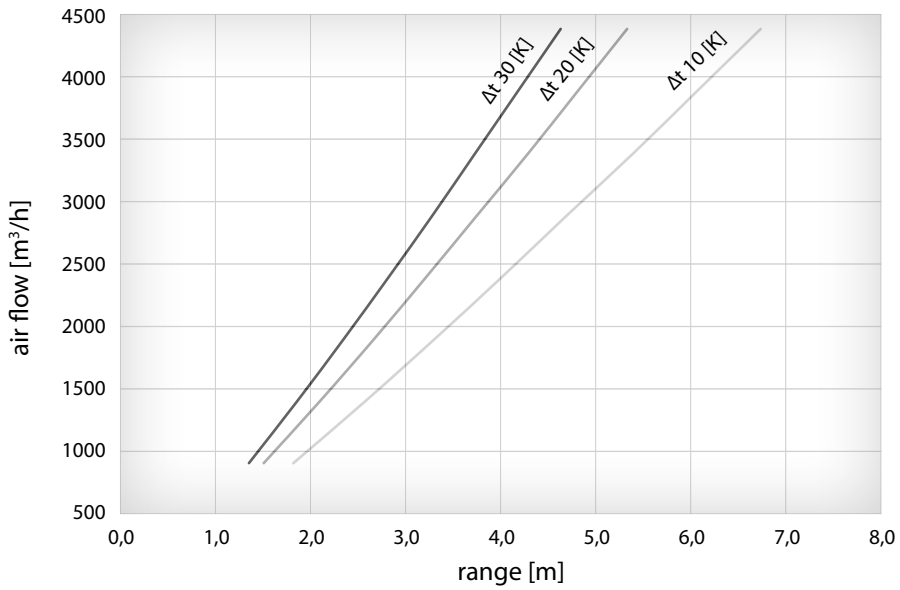
HORIZONTAL RANGE OF AIR STREAM

ISOTHERMAL

INOX 25|45|65



Horizontal range of isothermal stream (at velocity boundary equal to 0,5 m/s).

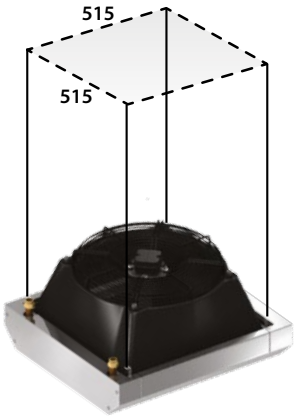


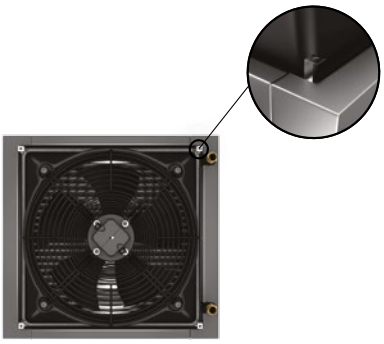
Vertical range of non-isothermal stream (at velocity boundary equal to 0,5 m/s).

INSTALLATION

AIR BLADES | HOLDERS

LEO INOX fan heaters can be installed in any position on vertical and horizontal surfaces. They are equipped with air blades, which can be installed vertically or horizontally in air outlet. This solution makes possible to direct stream in any direction.

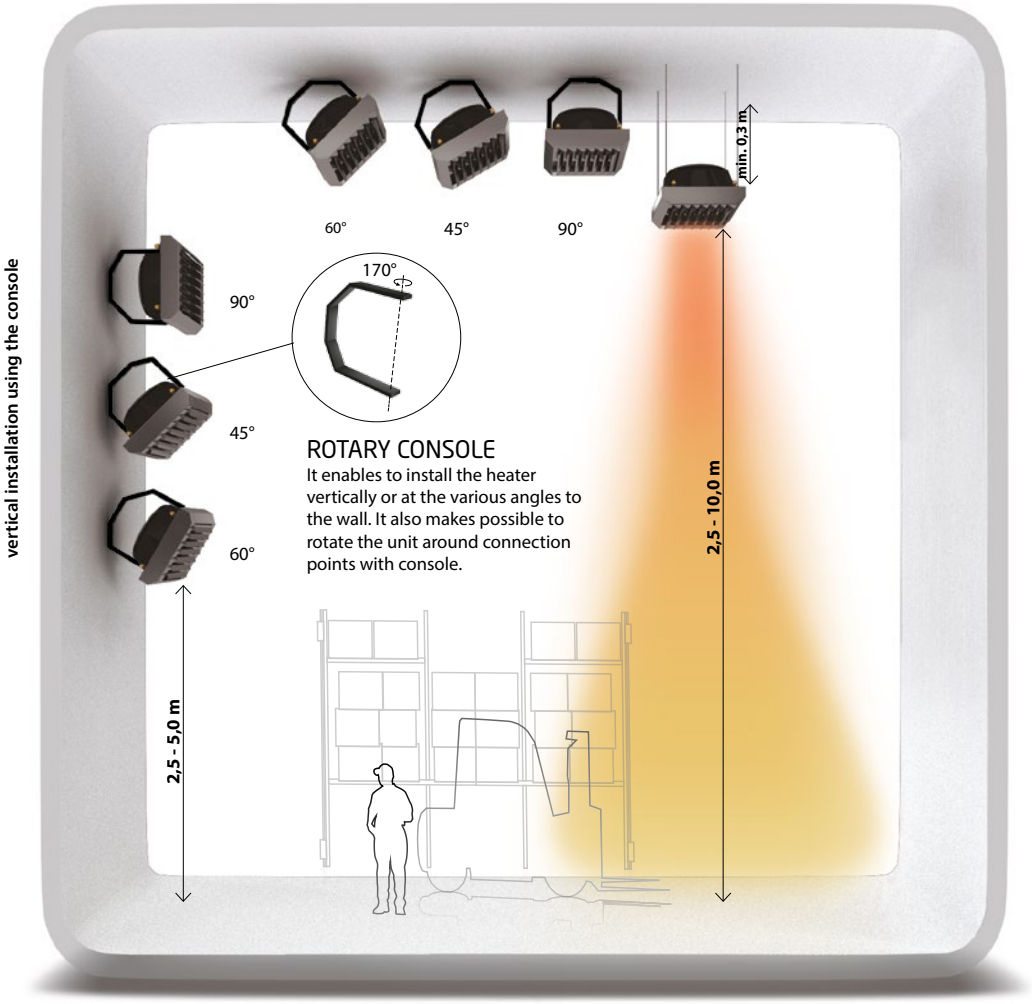




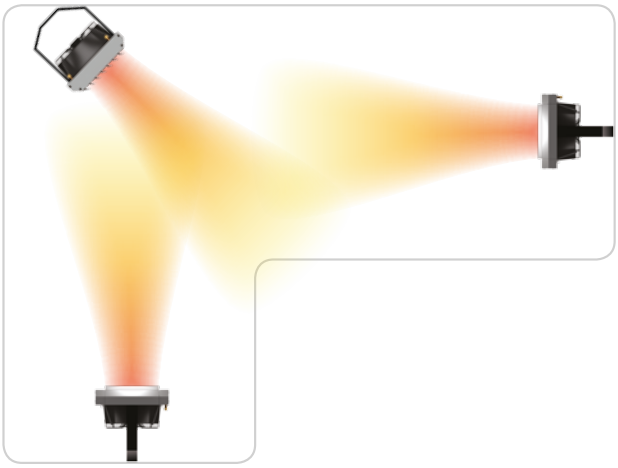
LEO INOX fan heaters are equipped with holders in 4 corners. They make much easier installation and leveling the heater under the ceiling.

INSTALLATION OPTIONS

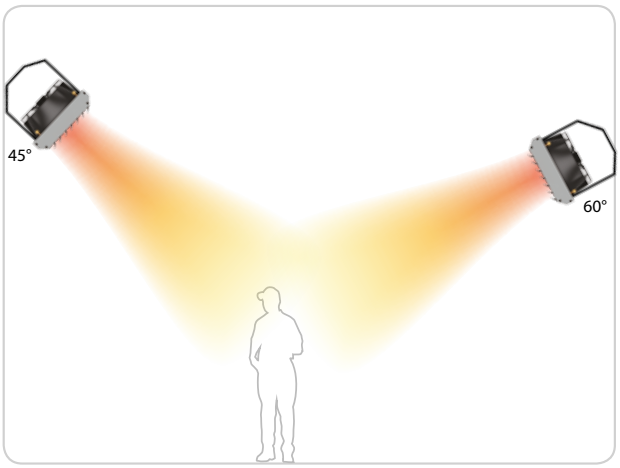
installation under the ceiling



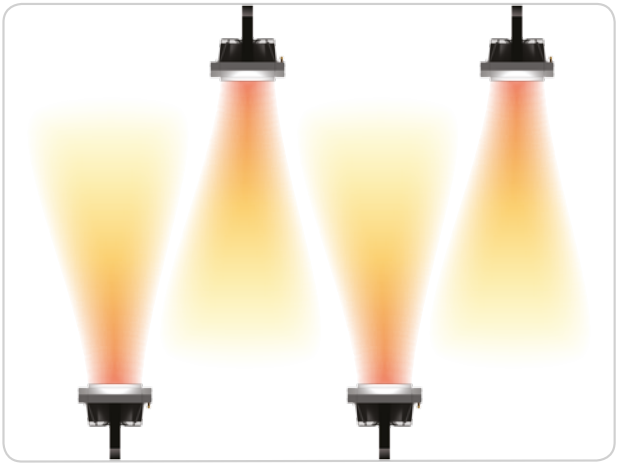
INSTALLATION TIPS



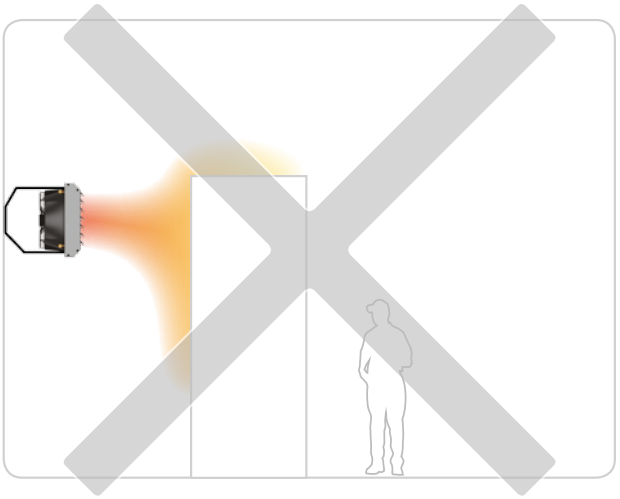
Steady air circulation should be provided in the entire room.



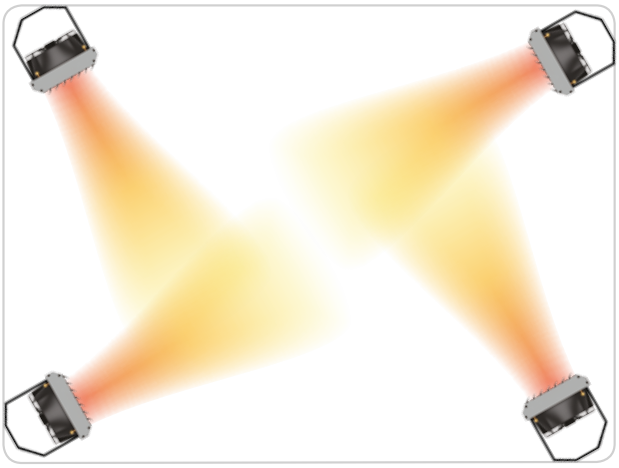
Correctly installed heaters should direct the air to the occupied zone.



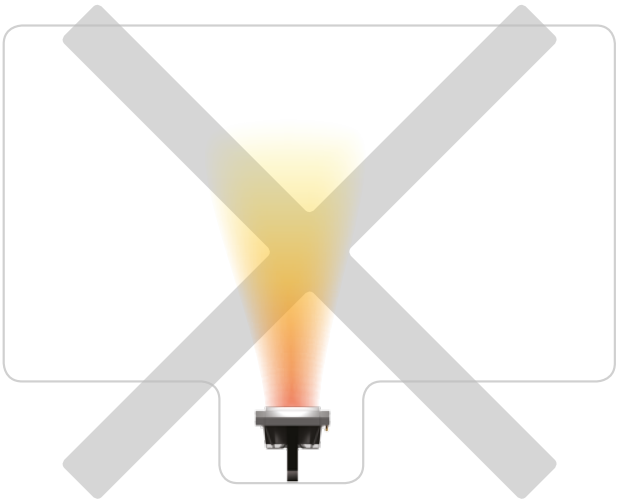
Heaters installed on the opposite walls should be overlapped.



Air flow stream should not be limited.



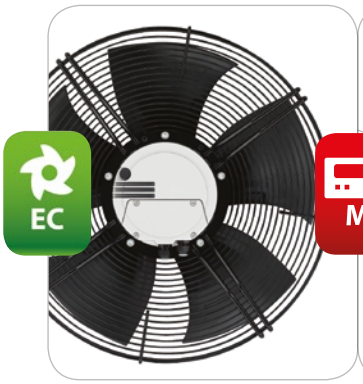
Heaters installed in the corners should direct the air to the center of the room.



Air inlet should not be limited.

CONTROL SYSTEMS

MODULATED CONTROL SYSTEM



SRQ2d
two-way valves
with actuator

SRQ3d
three-way valves
with actuator

VNT20
control panel
with built-in room
thermostat

VNTLCD
control panel with weekly
programmer and built-in room
thermostat

PT-1000 IP65
wall-mounted
temperature sensor

It is is energy-efficient heating system prepared for buildings with medium and big cubic measure. Airflow and heating capacity are automatically controlled depending on actual temperature - air flow is adjusted to current heat demand. Control panel (VNTLCD or VNT20) automatically and stepless change the speed of the fan according to difference between air temperature set on panel and measured by air temperature sensor.

This control system works perfectly with modern gas boilers, which have modulated gas burners. When measured air temperature is close to air temperature set on the control panel, there is lower demand on heat. In this situation gas boiler reduces its power and saves gas fuel.

FEATURES:

Low thermal inertia.

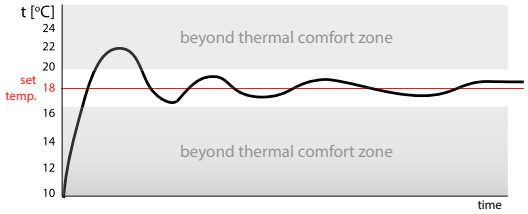
Lower power consumption due to EC fans.

Better thermal comfort due to maintaining set temperature.

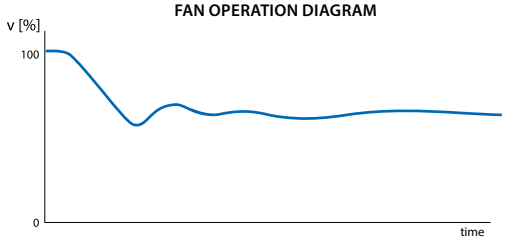
Less noise due to as low fan revs as possible.

Possibility to control up to 10 units with one control panel.

TEMPERATURE DIAGRAM

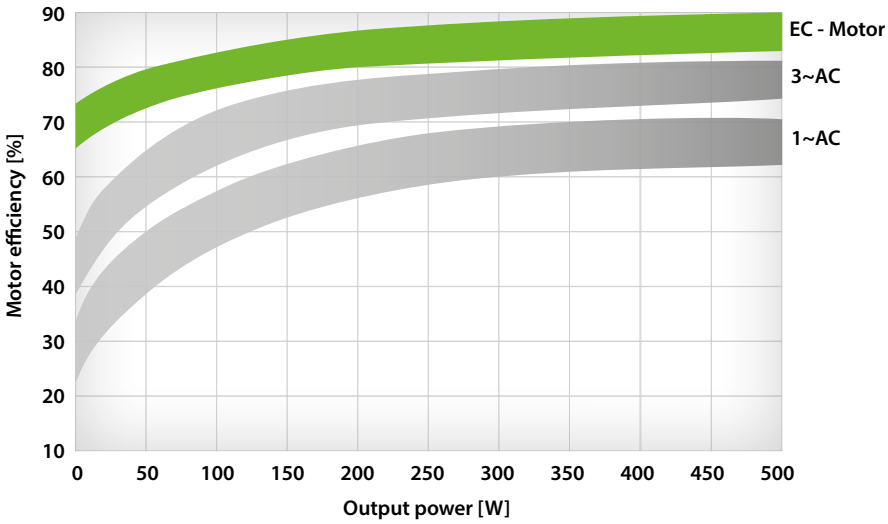


FAN OPERATION DIAGRAM



EC FAN

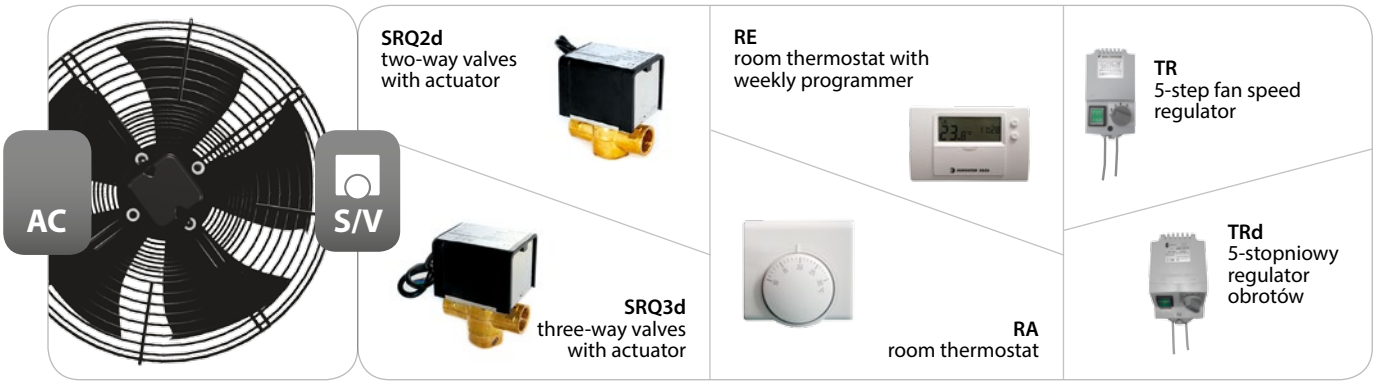
MOTOR EFFICIENCY



Electronically commutated motors have efficiency of 95%. This result was achieved thanks to reduction of losses associated with motor slip and special construction of the motor.

High efficiency is also maintained during the regulation - up to 60%. Standard electric motors have efficiency at 20-40% level.

ON/OFF CONTROL SYSTEM

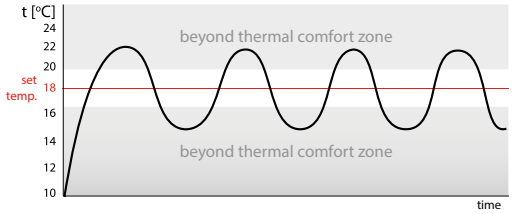


It is the simplest ON/OFF regulation system. Fan heater is controlled by room thermostat, which turns on the unit (or/and opens the valve) when measured temperature drops below set temperature. Air flow is regulated by transformer regulator.

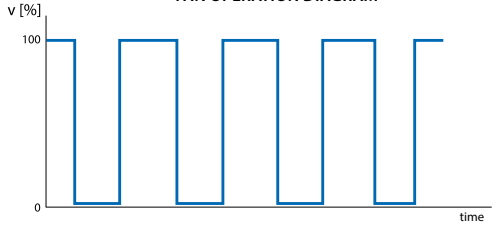
It is most commonly used in objects, where independent and simply regulation of every single unit is needed.

FEATURES:
Low thermal inertia.
Low investment costs.
Easy to use.
Independent regulation of every single unit.
Gradual regulation of air flow.

TEMPERATURE DIAGRAM

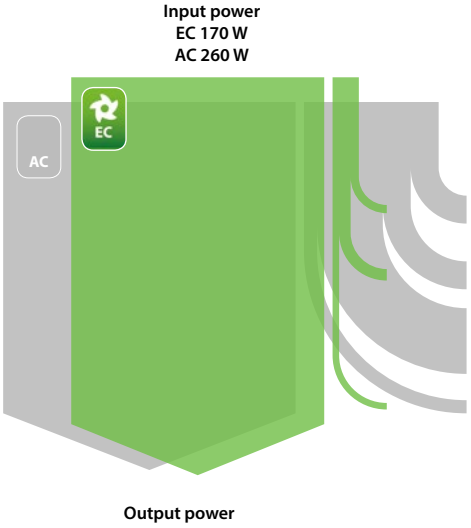


FAN OPERATION DIAGRAM



EC FAN

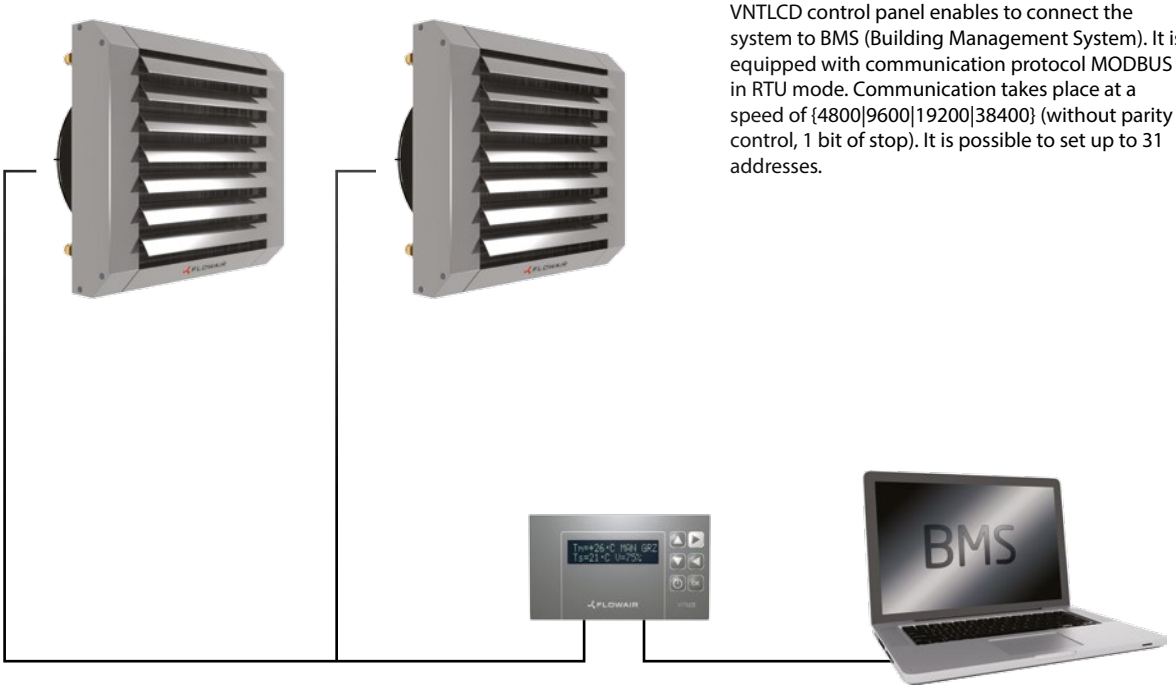
ENERGY SAVINGS



AC	EC	
17 W	5 W	Laminar losses
17 W	7 W	Losses in winding
40 W	0 W	Slip losses
8 W	4 W	Control losses
82 W	16 W	Total losses

LEO INOX M heaters, equipped with fans with EC motors, reduce energy costs by 40%. Such large savings are possible through high efficiency of the fan, achieved by elimination of slip and construction losses.

BMS PROGRAMMING



VNTLCD control panel enables to connect the system to BMS (Building Management System). It is equipped with communication protocol MODBUS in RTU mode. Communication takes place at a speed of {4800|9600|19200|38400} (without parity control, 1 bit of stop). It is possible to set up to 31 addresses.

Address	Parameter	Access	[bit]	Parameter range		Scale factor	Unit	Description
				Min	Max			
0x00	INT_SENS	R	[0-15]	-	-	1/16	C	Temperature of internal sensor
0x01	EXT_SENS	R	[0-15]	-	-	1/16	C	Temperature of external sensor including temperature correction
0x02	PROCESS_TEMP	R	[0-15]	-	-	1/16	C	Temperature input to the regulator
0x03	DIG_OUT	R	[8-15]	0	1	1	-	Status of heating/cooling relay
	ANALOG_OUT		[1-7]	2	11	1/11	V	Output voltage on AOUT contact
0x04	CURR_SPEED	R	[8-15]	0	99	1	%	Current speed of fans
	TAF_SET_TEMP		[0-7]	0	12	1	C	Temperature of antifreeze protection
0x05	TZAD_SET_TEMP	R	[8-15]	5	50	1	C	Set temperature
	CRS1_T1		[7]	0	1	1	-	Status of selected master sensor 0 - internal sensor 1 - external sensor
	CRS1_MODE2		[6]	0	1	1	-	Status of operation mode 0:0 - heating 0:1 - ventilation 1:0 - cooling 1:1 - empty
	CRS1_MODE1		[5]	0	1	1	-	
	CRS1_MODE0		[4]	0	1	1	-	Status of control 0 - manual control 1 - automatic control
	CRS1_CAL_FORCE_RUN		[3]	0	1	1	-	Status of unit's operation in programmer mode 0 - STOP 1 - START
	CRS1_RUN		[2]	0	1	1	-	Status of unit's operation 0 - STOP 1 - START
	CRS1_REG_AFTm		[1]	0	1	1	-	Status determining activation of antifreeze protection 0 - Tm<TAF 1 - Tm>TAF
	CRS1_REG_AF		[0]	0	1	1	-	Status of antifreeze protection 0 - OFF 1 - ON
0x06	CRS2_REG	R	[8]	0	1	1	-	Status of fan's operation in manual mode 0 - continuous operation 1 - thermostatic operation
	LCD_CONTRAST		[0-7]	1	8	1	-	Contrast of the display
0x07	LCD_BACKLIGHT	R	[0-15]	1	8	1/256	-	Brightness of the display's background

Address	Parameter	Access	[bit]	Parameter range		Scale factor	Unit	Description
				Min	Max			
0x08	TZAD_MANUAL	R	[8-15]	5	50	1	C	Set temperature in manual mode
	TZAD_AUTO		[0-7]	5	50	1	C	Set temperature in automatic mode
0x09	VSPEED_HI	R	[8-15]	30	99	1	%	Upper limit of fans speed
	VSPEED_LO		[0-7]	30	99		%	Lower limit of fans speed
0x0A	ALARM_ID	R	[8-15]	0	1	1	-	Unit's internal error alarms (broken solder joints, communication errors)
	VSPEED_CORR		[0-7]	0	30	1	%	Correction of fans speed
0x0B	TEMP_CORR	R	[0-15]	-9	9	1/16	C	Temperature correction of external sensor
0x0C	PLANT_COEFF	R	[0-15]	1	5	1	-	Status of temperature regulator setting
0x0D	VSPEED_MANUAL	R	[8-15]	0	99	1	%	Fans speed in manual mode
	VSPEED_AUTO		[0-7]	0	99	1	%	Fans speed in automatic mode
0x0E	VSPEED_AF	R	[8-15]	0	99	1	%	Fans speed when antifreeze protection is active
0x0F	CRS3_REG	R	[8-10]	0	1	1	-	Status of programmer 0 - OFF 1 - 1d 2 - 5d + 2d 3 - 7d
	SOFT_VER		[0-7]	-	-	-	-	Software version
0x10	TEMP_HIST_HI	R	[8-15]	-2	2	1	C	Upper limit of temperature hysteresis.*
	TEMP_HIST_LO		[0-7]	-2	2	1	C	Lower limit of temperature hysteresis.*
0x11	DATE_REG1	R	[8-15]	2000	2099	-	-	Current year
	DATE_REG2		[0-7]	1	12	-	-	Current month
0x12	DATE_REG3	R	[8-15]	1	31	-	-	Current day
	TIME_REG1		[0-7]	1	23	-	h	Hour
0x13	TIME_REG2	R	[8-15]	0	59	-	m	Minutes
	CURR_ZONE		[0-7]	0	6	-	-	Number of active time zone for weekly programmer
0x14	-	RW	[12-15]	-	-	-	-	-
	SET_REG1.COM_PRA-CA_WENT		[11]	0	1	1	-	Selection of fans operation in manual mode 0 - continuous operation 1 - thermostatic operation
	SET_REG1.COM_T1		[10]	0	1	1	-	Selection of master sensor 0 - internal sensor 1 - external sensor
	SET_REG1.COM_MODE0		[9]	0	1	1	-	Selection of control 0 - manual control 1 - automatic control
	SET_REG1.COM ctrlSTART_bit		[8]	0	1	1	-	Turning on the unit via COM connector 0 - ON 1 - OFF
	TAF_SET_TEMP_WR		[0-7]	0	12	1	C	Setting of antifreeze protection temperature Tf
0x15	TZAD_MANUAL_WR	RW	[8-15]	5	50	1	C	Setting of set temperature Ts in manual mode
	TZAD_AUTO_WR		[0-7]	5	50	1		Setting of set temperature Ts in automatic mode
0x16	VSPEED_MANUAL_WR	RW	[8-15]	1	99	1	%	Setting of fans speed V in manual mode
	PLANT_COEFF_WR		[0-7]	1	5	1	-	Setting of temperature regulator
0x17	SEL_CALENDAR_TYPE	RW	[8-10]	0	1	1	-	Selection of programmer mode 0:0:0 - OFF 0:0:1 - 1d 0:1:0 - 5d + 2d 0:1:1 - 7d

* TEMP_HIST_HI = (MSB - 100) / 10
* TEMP_HIST_LO = (LSB - 100) / 10

MODULATED CONTROL SYSTEM

Category	Symbol	Picture	Technical data
0-10V controllers	**VNTLCD** **control panel with weekly programer and built-in room thermostat** p. 18 p. 19		Power supply: 230 V 50 Hz Protection degree: IP20 Temperature adjustment range: +5 … +50°C Operating temperature range: -10 … +60°C Output control signal: analog 0-10 V Way of control: buttons, LCD display Velocity control range: 0-100 % Temperature sensor: built-in (optional PT-1000) Contacts load: inductive 3 A, resistance 8 A Dimensions (HxWxL): 70x120x25 mm Max. wire diameter: 2 mm²
	VNT20 **control panel with built-in room thermostat** p. 18 p. 19		Power supply: 230 V 50 Hz Protection degree: IP20 Temperature adjustment range: +5 … +35°C Operating temperature range: -10 … +60°C Output control signal: analog 0-10 V Way of control: buttons, LED display Velocity control range: 0-100% Temperature sensor: built-in (optional PT-1000) Contacts load: inductive 3 A, resistance 8 A Dimensions (HxWxL): 70x120x25 mm Max. wire diameter: 2 mm²
additional equipment	**PT-1000 IP65** **wall-mounted temperature sensor IP65**		Protection degree: IP65 Operating temperature range: -20...+80°C Max. wire diameter: 2 mm²
	R10 **signal splitter**		Protection degree: IP54 Operating temperature range: 0 … +40°C Max. wire diameter: 2 mm²

MODULATED / ON/OFF CONTROL SYSTEM

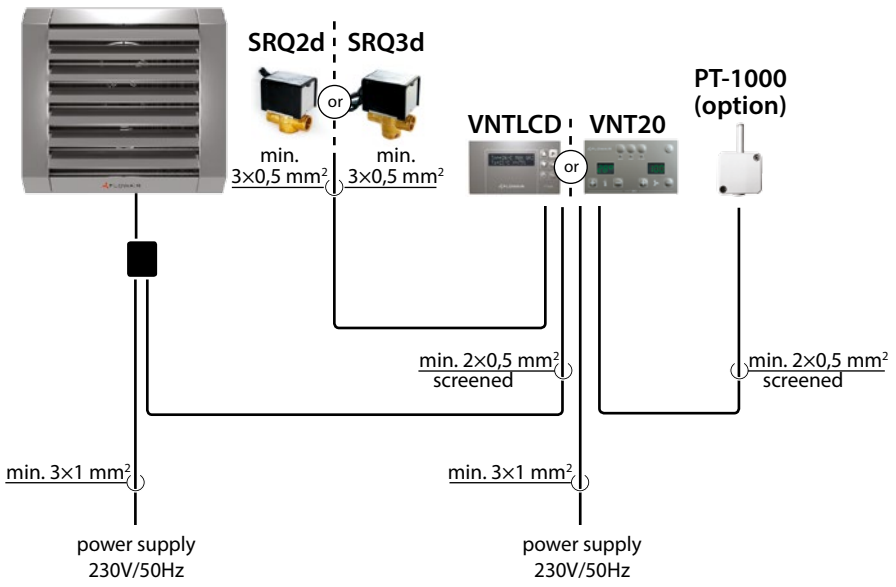
Category	Symbol	Picture	Technical data
valves	**SRQ2d-3/4** **two-way valve 3/4" with actuator**		Protection degree: IP20 Power supply: 200-240 V 50/60 Hz Max. water temperature: +93°C Max. operating pressure: 1,6 MPa Kvs: 6,5 m³/h Installation: on water outlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 112x86x66 mm
	SRQ3d-3/4 **three-way valve 3/4" with actuator**		Protection degree: IP20 Power supply: 200-240 V 50/60 Hz Max. water temperature: +93°C Max. operating pressure: 2,0 MPa Kvs: 6,5 m³/h Installation: on water inlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 122x86x66 mm

<table>
<tr><th>Category</th><th>Symbol</th><th>Picture</th><th>Technical data</th></tr>
<tr><td rowspan="3">thermostats</td><td>RA
room thermostat</td><td>  </td><td>Temperature adjustment range: +10 … +30°C
Operating temperature range: 0 … +40°C
Protection degree: IP30
Contacts load: inductive 3 A, resistance 10 A
Dimensions (HxWxL): 84x84x40 mm
Max. wire diameter: 2,5 mm^2</td></tr>
<tr><td>RE
room thermostat
with weekly programmer</td><td>  </td><td>Temperature adjustment range: +5 … +45°C
Operating temperature range: -10 … +50°C
Protection degree: IP20
Contacts load: inductive 3,5 A, resistance 16 A
Power supply: 2x1,5 V AA batteries
Dimensions (HxWxL): 86x138x25 mm
Max. wire diameter: 2 mm^2</td></tr>
<tr><td>R55
room thermostat
with high protection degree</td><td>  </td><td>Temperature adjustment range: 0 … +40°C
Protection degree: IP55
Contacts load: inductive 4 A, resistance 16 A
Dimensions (HxWxL): 130x105x86 mm
Max. wire diameter: 1,5 mm^2</td></tr>
<tr><td></td><td>TR / TRd
5-step fan speed regulator
p. 18 p. 19</td><td> 
  </td><td>Power supply: 230 V 50/60 Hz
Protection degree: IP54
Operating temperature range: 0 … +40°C
Steps of regulation:
<table>
<tr><td>step</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td colspan="6">Ur [V] / Ir [A]</td></tr>
<tr><td>TR</td><td>115/1,5</td><td>135/1,5</td><td>155/1,5</td><td>180/1,5</td><td>230/1,5</td></tr>
<tr><td>TRd</td><td>115/3,3</td><td>135/3,3</td><td>155/3,3</td><td>180/3,5</td><td>230/3,5</td></tr>
</table>
Weight: TR: 1,5 kg; TRd: 2,7 kg
Dimensions (HxWxL): TR: 165x75x60 mm
TRd: 185x102x100 mm
Max. wire diameter 2,5 mm^2

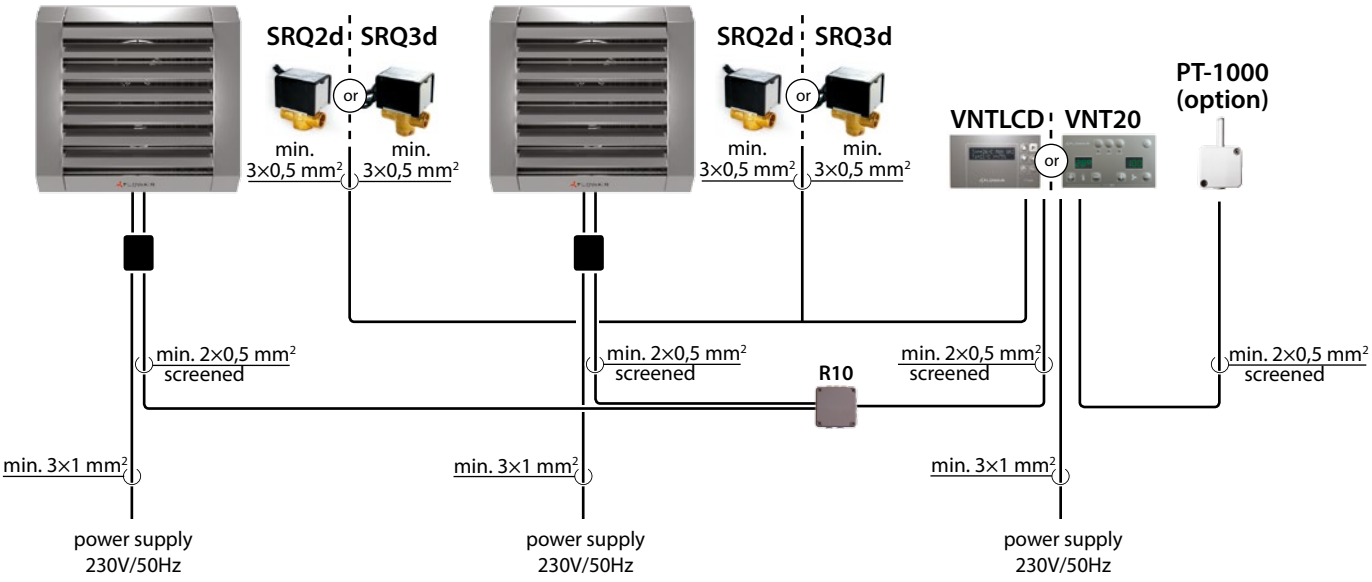
TR works with:
LEO INOX 25|45|65 - 1 unit

TRd works with:
LEO INOX 25|45|65 - up to 2 units</td></tr>
</table>

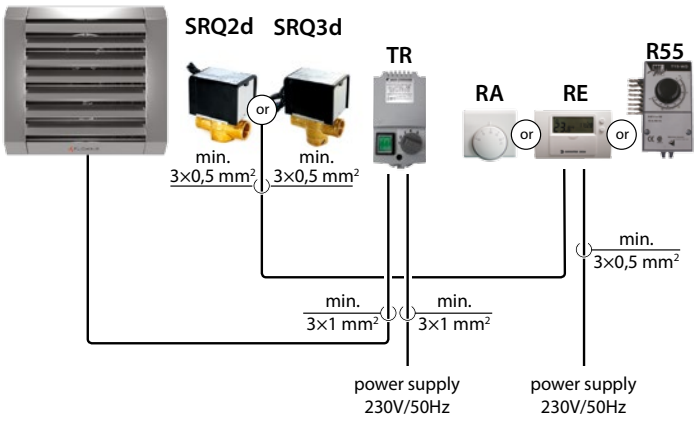
• VNTLCD (VNT20) controls the valve and the fan speed



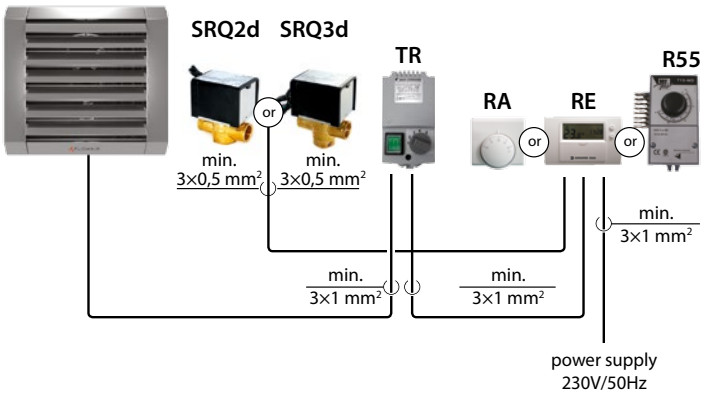
• VNTLCD (VNT20) controls valve and fan speed
• possibility to control up to 10 units by one controller using R10 signal splitter



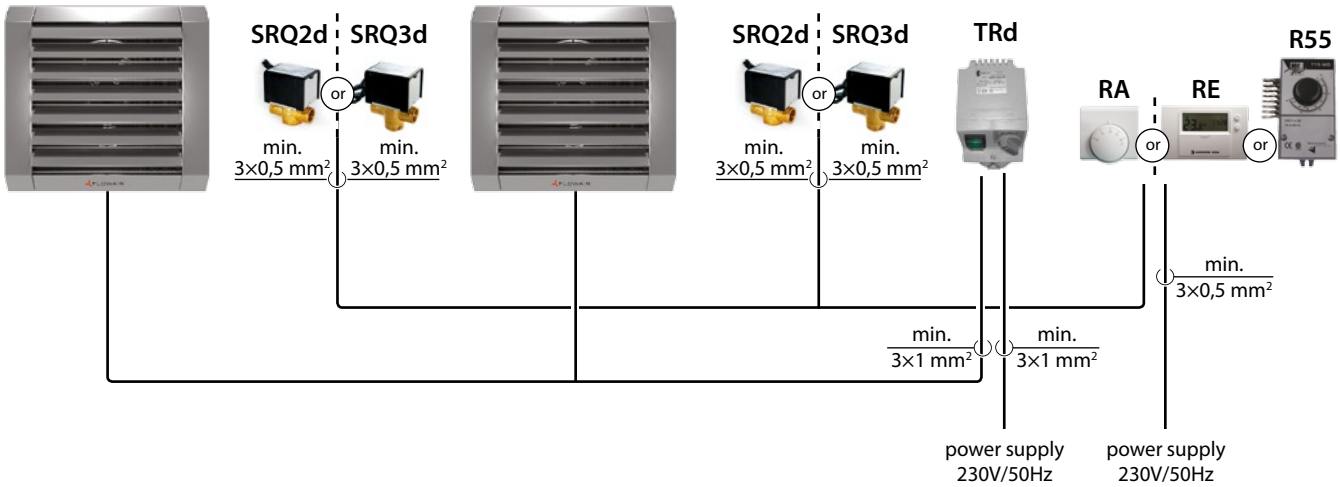
- RA (RE, R55) thermostat controls SRQ valve
- TR speed regulator enables 5-step fan speed regulation



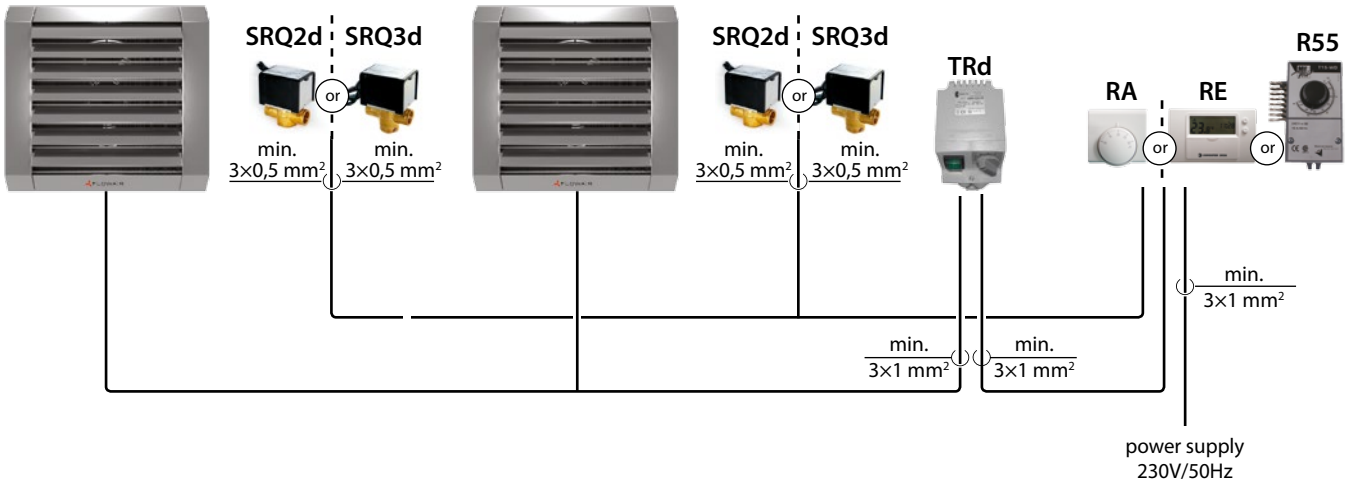
- RA (RE, R55) thermostat controls SRQ valve and TR speed regulator
- TR speed regulator enables 5-step fan speed regulation



- RA (RE, R55) thermostat controls SRQ valves
- TRd speed regulator enables 5-step fans speed regulation

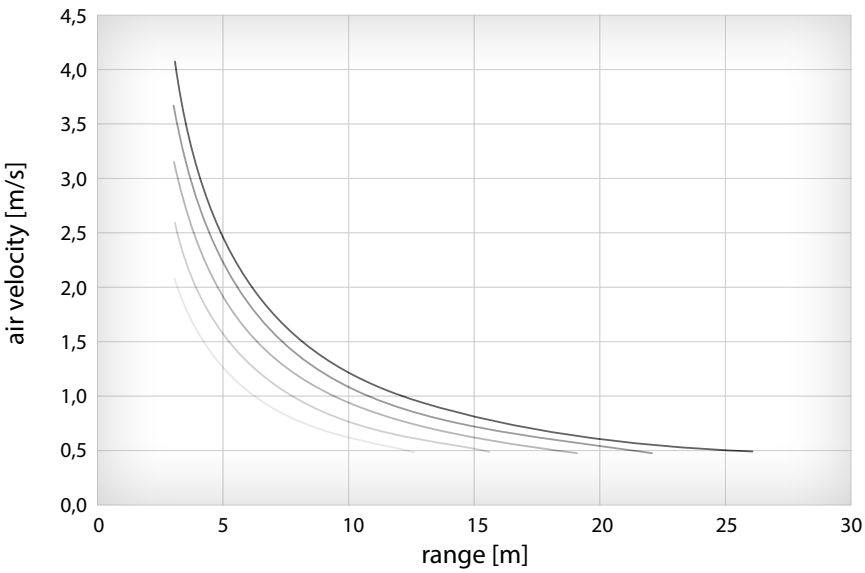


- RA (RE, R55) thermostat controls SRQ valves and TRd speed regulator
- TRd speed regulator enables 5-step fans speed regulation



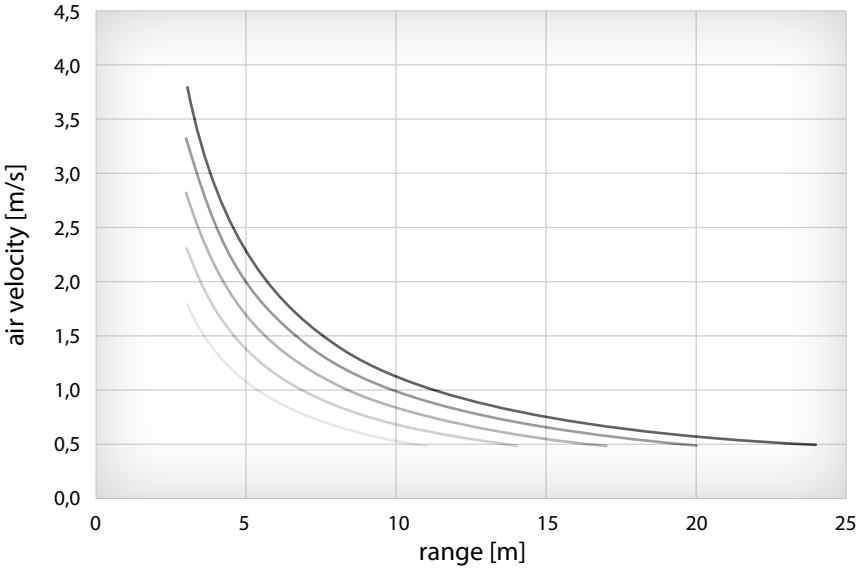
VELOCITY OF THE AIR FLOW

INOX 25



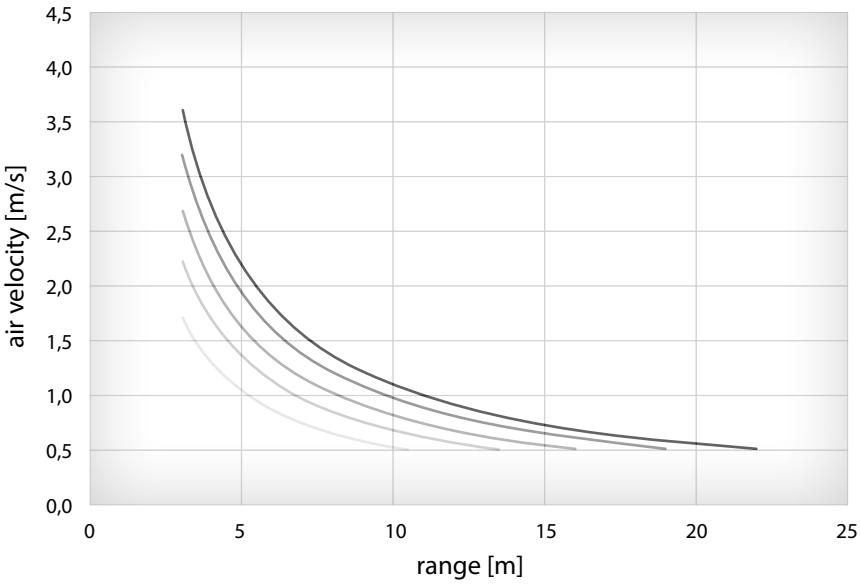
- 1st step - TR/TRd or 45% of air flow set on VNTLCD/VNT20
- 2nd step - TR/TRd or 55% of air flow set on VNTLCD/VNT20
- 3rd step - TR/TRd or 65% of air flow set on VNTLCD/VNT20
- 4th step - TR/TRd or 75% of air flow set on VNTLCD/VNT20
- 5th step - TR/TRd or 100% of air flow set on VNTLCD/VNT20

INOX 45



- 1st step - TR/TRd or 45% of air flow set on VNTLCD/VNT20
- 2nd step - TR/TRd or 55% of air flow set on VNTLCD/VNT20
- 3rd step - TR/TRd or 65% of air flow set on VNTLCD/VNT20
- 4th step - TR/TRd or 75% of air flow set on VNTLCD/VNT20
- 5th step - TR/TRd or 100% of air flow set on VNTLCD/VNT20

INOX 65



- 1st step - TR/TRd or 45% of air flow set on VNTLCD/VNT20
- 2nd step - TR/TRd or 55% of air flow set on VNTLCD/VNT20
- 3rd step - TR/TRd or 65% of air flow set on VNTLCD/VNT20
- 4th step - TR/TRd or 75% of air flow set on VNTLCD/VNT20
- 5th step - TR/TRd or 100% of air flow set on VNTLCD/VNT20

AIR FLOW REGULATION - TECHNICAL DATA

MODULATED CONTROL SYSTEM

LEO INOX 25|45|65M - air flow regulation by the VNTLCD/VNT20 control panel						
Setting of VNTLCD/VNT20		**45%**	**55%**	**65%**	**75%**	**100%**
Air flow [m³/h]	INOX 25M	2250	2800	3400	3950	4400
	INOX 45M	1950	2500	3050	3600	4100
	INOX 65M	1850	2400	2900	3450	3900
Power consumption [W]	INOX 25M	50	50	70	95	170
	INOX 45M					
	INOX 65M					
Acoustic pressure level [dB(A)]*	INOX 25M	44	46	48	50	51
	INOX 45M					
	INOX 65M					

* Acoustic pressure level measured in the room with average sound absorption, capacity 1500 m³, at distance of 5 m from the unit.

ON/OFF CONTROL SYSTEM

LEO INOX 25|45|65 S/V - air flow regulation by the TR (TRd) speed regulator						
Step of TR / TRd		**1st step**	**2nd step**	**3rd step**	**4th step**	**5th step**
Air flow [m³/h]	INOX 25 S/V	2250	2800	3400	3950	4400
	INOX 45 S/V	1950	2500	3050	3600	4100
	INOX 65 S/V	1850	2400	2900	3450	3900
Power consumption [W]	INOX 25 S/V	92/185	122/230	155/240	190/250	280/300
	INOX 45 S/V					
	INOX 65 S/V					
Acoustic pressure level [dB(A)]*	INOX 25 S/V	44	46	48	50	51
	INOX 45 S/V					
	INOX 65 S/V					

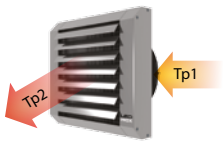
* Acoustic pressure level measured in the room with average sound absorption, capacity 1500 m³, at distance of 5 m from the unit.

Air flow regulation by the TR/TRd regulator or by the VNTLCD/VNT20 control panel																			
Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
1st step TR/TRd / 45% - of air flow set on VNTLCD/VNT20 / V=2250 m³/h																			
Tw1/Tw2 = 130/70°C					Tw1/Tw2 = 90/70°C					Tw1/Tw2 = 80/60°C					Tw1/Tw2 = 70/50°C				
0	19,1	283	0,9	23,5	0	17,7	783	6,1	22,0	0	15,1	664	4,6	18,5	0	12,4	544	3,3	15,5
5	17,7	263	0,8	27,0	5	16,4	724	5,2	25,5	5	13,8	606	3,9	22,5	5	11,1	487	2,7	19,0
10	16,3	243	0,7	31,0	10	15,1	665	4,5	29,0	10	12,5	548	3,3	26,0	10	9,8	430	2,2	22,5
15	15,0	223	0,6	34,5	15	13,8	608	3,8	33,0	15	11,2	491	2,7	29,5	15	8,6	374	1,7	26,0
20	13,7	203	0,5	38,0	20	12,5	551	3,2	36,5	20	9,9	435	2,1	33,0	20	7,3	318	1,3	29,5
Tw1/Tw2 = 70/40°C					Tw1/Tw2 = 60/40°C					Tw1/Tw2 = 50/40°C					Tw1/Tw2 = 40/30°C				
0	9,7	282	1,0	12,0	0	9,7	423	2,2	12,0	0	9,7	848	7,8	12,0	0	7,1	614	4,5	8,5
5	8,3	243	0,8	15,5	5	8,4	366	1,7	15,5	5	8,5	736	6,0	15,5	5	5,8	503	3,2	12,5
10	7,0	202	0,6	19,0	10	7,1	309	1,2	19,0	10	7,2	625	4,5	19,0	10	4,5	392	2,0	16,0
15	5,4	158	0,4	22,0	15	5,8	251	0,9	22,5	15	5,9	515	3,2	22,5	15	3,2	277	1,1	19,0
20	3,2	92	0,1	24,0	20	4,5	190	0,5	26,0	20	4,7	406	2,1	26,0	20	1,5	126	0,3	22,0
2nd step TR/TRd / 55% - of air flow set on VNTLCD/VNT20 / V=2800 m³/h																			
Tw1/Tw2 = 130/70°C					Tw1/Tw2 = 90/70°C					Tw1/Tw2 = 80/60°C					Tw1/Tw2 = 70/50°C				
0	21,5	319	1,1	21,0	0	20,0	883	7,5	20,0	0	17,0	748	5,7	17,0	0	14,0	614	4,1	14,0
5	19,9	296	1,0	25,0	5	18,5	816	6,5	23,5	5	15,5	683	4,9	20,5	5	12,6	549	3,4	17,5
10	18,4	273	0,9	29,0	10	17,0	750	5,6	27,5	10	14,1	618	4,0	24,5	10	11,1	486	2,7	21,5
15	16,9	251	0,7	32,5	15	15,5	686	4,7	31,5	15	12,6	554	3,3	28,0	15	9,7	422	2,1	25,0
20	15,4	229	0,6	36,5	20	14,1	621	4,0	35,0	20	11,2	491	2,7	32,0	20	8,2	359	1,6	28,5
Tw1/Tw2 = 70/40°C					Tw1/Tw2 = 60/40°C					Tw1/Tw2 = 50/40°C					Tw1/Tw2 = 40/30°C				
0	11,0	319	1,3	11,0	0	11,0	477	2,7	11,0	0	11,0	957	9,7	11,0	0	8,0	694	5,6	8,0
5	9,5	275	1,0	14,5	5	9,5	413	2,1	14,5	5	9,5	830	7,5	14,5	5	6,6	569	3,9	11,5
10	7,9	230	0,7	18,0	10	8,0	349	1,6	18,0	10	8,1	705	5,6	18,5	10	5,1	443	2,5	15,0
15	6,3	183	0,5	21,5	15	6,5	285	1,1	22,0	15	6,7	582	3,9	22,0	15	3,6	316	1,4	18,5
20	4,1	119	0,2	24,5	20	5,0	218	0,7	25,5	20	5,3	459	2,6	25,5	20	1,6	134	0,3	21,5
3rd step TR/TRd / 65% - of air flow set on VNTLCD/VNT20 / V=3400 m³/h																			
Tw1/Tw2 = 130/70°C					Tw1/Tw2 = 90/70°C					Tw1/Tw2 = 80/60°C					Tw1/Tw2 = 70/50°C				
0	23,8	353	1,3	19,5	0	22,2	980	9,1	18,0	0	18,9	831	6,9	15,5	0	15,6	681	5,0	12,5
5	22,1	328	1,2	23,5	5	20,5	906	7,9	22,0	5	17,3	758	5,9	19,5	5	13,9	610	4,1	16,5
10	20,4	303	1,0	27,0	10	18,9	833	6,8	26,0	10	15,6	686	4,9	23,0	10	12,3	539	3,3	20,5
15	18,7	278	0,9	31,0	15	17,2	761	5,7	30,0	15	14,0	615	4,0	27,0	15	10,7	469	2,5	24,0
20	17,1	253	0,7	35,0	20	15,6	690	4,8	33,5	20	12,4	545	3,2	31,0	20	9,1	399	1,9	28,0
Tw1/Tw2 = 70/40°C					Tw1/Tw2 = 60/40°C					Tw1/Tw2 = 50/40°C					Tw1/Tw2 = 40/30°C				
0	12,2	355	1,6	10,0	0	12,2	530	3,3	10,0	0	12,2	1062	11,8	10,0	0	8,9	770	6,8	7,0
5	10,5	306	1,2	13,5	5	10,5	459	2,5	13,5	5	10,6	922	9,1	14,0	5	7,3	632	4,8	11,0
10	8,8	257	0,9	17,5	10	8,9	388	1,9	17,5	10	9,0	784	6,8	17,5	10	5,7	493	3,1	15,0
15	7,1	206	0,6	21,0	15	7,3	318	1,3	21,5	15	7,4	646	4,8	21,5	15	4,1	353	1,7	18,5
20	5,1	147	0,3	24,5	20	5,6	245	0,8	25,0	20	5,9	510	3,1	25,0	20	2,2	188	0,6	22,0

For operating parameters concerning other water temperatures, please contact Sales Office.

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature
Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
4th step TR/TRd / 75% - of air flow set on VNTLCD/VNT20 / V=3950 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	25,7	381	1,6	18,0	0	24,0	1060	10,6	17,0	0	20,5	899	8,0	14,5	0	16,8	737	5,7	12,0
5	23,8	354	1,4	22,0	5	22,2	980	9,1	20,5	5	18,7	820	6,8	18,5	5	15,1	660	4,7	16,0
10	22,0	327	1,2	26,0	10	20,4	901	7,8	25,0	10	16,9	743	5,6	22,5	10	13,3	583	3,8	19,5
15	20,2	300	1,0	30,0	15	18,7	824	6,6	29,0	15	15,2	666	4,6	26,0	15	11,6	507	2,9	23,5
20	18,4	274	0,9	33,0	20	16,9	747	5,5	33,0	20	13,4	590	3,7	30,0	20	9,9	432	2,2	27,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	13,2	384	1,8	9,0	0	13,2	573	3,8	9,0	0	13,2	1150	13,6	9,5	0	9,6	834	7,9	7,0
5	11,4	332	1,4	13,0	5	11,4	497	2,9	13,0	5	11,5	998	10,5	13,0	5	7,9	684	5,5	10,5
10	9,6	279	1,0	17,0	10	9,7	421	2,2	17,0	10	9,6	848	7,8	17,0	10	6,2	535	3,5	14,5
15	7,7	225	0,7	20,5	15	7,9	344	1,5	21,0	15	8,0	700	5,5	21,0	15	4,4	384	2,0	18,5
20	5,7	165	0,4	24,0	20	6,1	266	1,0	24,5	20	6,4	553	3,6	24,0	20	2,5	215	0,7	22,0
5th step TR/TRd / 100% - of air flow set on VNTLCD/VNT20 / V=4400 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	27,1	402	1,7	17,0	0	25,4	1121	11,7	16,0	0	21,6	950	8,9	13,5	0	17,8	779	6,4	11,0
5	25,2	374	1,5	21,0	5	23,5	1037	10,1	20,0	5	19,7	867	7,5	17,5	5	15,9	697	5,2	15,0
10	23,3	345	1,3	25,0	10	21,6	953	8,7	24,0	10	17,9	785	6,3	21,5	10	14,1	617	4,2	19,0
15	21,4	317	1,1	29,0	15	19,7	871	7,4	28,0	15	16,0	704	5,1	25,5	15	12,3	537	3,2	23,0
20	19,5	289	0,9	33,0	20	17,9	790	6,2	32,0	20	14,2	624	4,1	29,5	20	10,5	457	2,4	27,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	13,9	406	2,0	9,0	0	13,9	606	4,2	9,0	0	14,0	1216	15,1	9,0	0	10,2	882	8,7	6,0
5	12,1	351	1,5	12,5	5	12,1	525	3,2	12,5	5	12,1	1056	11,6	13,0	5	8,4	724	6,1	10,5
10	10,2	296	1,1	16,5	10	10,2	445	2,4	16,5	10	10,3	897	8,6	16,5	10	6,5	566	3,9	14,5
15	8,2	239	0,8	20,5	15	8,4	365	1,7	20,5	15	8,5	740	6,1	20,5	15	4,7	407	2,2	18,0
20	6,1	177	0,5	24,0	**20**	6,5	283	1,1	24,5	**20**	6,7	585	4,0	24,5	**20**	2,7	232	0,8	22,0

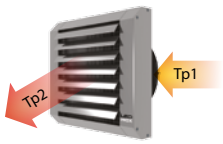


Air flow regulation by the TR/TRd regulator or by the VNTLCD/VNT20 control panel																			
Tp1	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
1st step TR/TRd / 45% - of air flow set on VNTLCD/VNT20 / V=1950 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	33,1	491	1,2	47,0	0	29,6	1308	7,6	42,0	0	25,4	1116	5,9	36,0	0	21,1	925	4,3	30,0
5	30,8	457	1,1	49,5	5	27,4	1208	6,6	44,5	5	23,2	1018	5,0	38,5	5	19,0	829	3,5	32,5
10	28,5	423	0,9	52,0	10	25,1	1109	5,6	47,0	10	21,0	922	4,1	41,0	10	16,8	735	2,9	34,5
15	26,2	389	0,8	54,0	15	23,0	1013	4,8	49,5	15	18,9	828	3,4	43,0	15	14,7	642	2,2	37,0
20	24,0	356	0,7	56,5	20	20,8	919	4,0	51,5	20	16,7	735	2,8	45,5	20	12,6	551	1,7	39,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	17,3	503	1,5	24,5	0	16,8	732	2,9	24,0	0	16,3	1422	9,9	23,0	0	12,1	1050	6,0	17,0
5	15,1	439	1,2	27,0	5	14,6	638	2,3	26,0	5	14,2	1237	7,7	25,5	5	10,0	868	4,3	19,5
10	12,9	374	0,9	29,0	10	12,5	545	1,7	28,5	10	12,1	1054	5,8	28,0	10	7,9	688	2,8	21,5
15	10,6	309	0,6	31,0	15	10,4	452	1,3	30,5	15	10,1	875	4,1	30,0	15	5,8	507	1,6	23,5
20	8,2	240	0,4	32,5	20	8,2	359	0,8	32,5	20	8,0	699	2,8	32,0	20	3,6	312	0,7	25,5
2nd step TR/TRd / 55% - of air flow set on VNTLCD/VNT20 / V=2500 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	38,7	574	1,6	43,0	0	34,7	1533	10,1	38,5	0	29,8	1308	7,8	33,0	0	24,8	1083	5,7	27,5
5	36,0	534	1,4	45,5	5	32,1	1416	8,8	41,0	5	27,2	1194	6,6	35,5	5	22,2	972	4,7	30,0
10	33,3	494	1,2	48,0	10	29,5	1302	7,5	44,0	10	24,6	1082	5,5	38,0	10	19,7	862	3,8	32,5
15	30,7	455	1,1	50,5	15	26,9	1189	6,4	46,5	15	22,1	971	4,6	41,0	15	17,2	754	3,0	35,0
20	28,1	417	0,9	53,0	20	24,4	1078	5,3	49,0	20	19,6	863	3,7	43,0	20	14,8	647	2,3	37,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	20,3	590	2,0	22,5	0	19,7	858	3,9	22,0	0	19,2	1668	13,2	21,0	0	14,2	1232	8,0	15,5
5	17,7	515	1,5	25,0	5	17,2	748	3,1	24,5	5	16,7	1451	10,2	24,0	5	11,8	1019	5,7	18,0
10	15,1	440	1,2	27,5	10	14,7	639	2,3	27,0	10	14,2	1237	7,7	26,5	10	9,3	808	3,7	20,5
15	12,5	365	0,8	29,5	15	12,2	532	1,7	29,0	15	11,8	1028	5,5	29,0	15	6,9	597	2,2	23,0
20	9,9	287	0,6	31,5	20	9,7	423	1,1	31,5	20	9,4	821	3,7	31,0	20	4,4	377	1,0	25,0
3rd step TR/TRd / 65% - of air flow set on VNTLCD/VNT20 / V=3050 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	43,6	648	2,0	39,5	0	39,3	1733	12,7	35,5	0	33,6	1478	9,7	30,5	0	28,0	1224	7,1	25,5
5	40,6	602	1,8	42,5	5	36,3	1602	11,0	38,5	5	30,7	1350	8,3	33,5	5	25,1	1098	5,9	28,0
10	37,6	558	1,5	45,5	10	33,4	1473	9,4	41,5	10	27,8	1223	6,9	36,0	10	22,3	974	4,7	31,0
15	34,6	514	1,3	48,0	15	30,5	1346	8,0	44,0	15	25,0	1099	5,7	39,0	15	19,5	852	3,7	33,5
20	31,7	470	1,1	51,0	20	27,7	1221	6,7	47,0	20	22,2	976	4,6	41,5	20	16,7	732	2,8	36,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	22,9	666	2,4	21,0	0	22,2	969	4,9	20,0	0	21,7	1887	16,5	19,5	0	16,1	1393	9,9	14,5
5	20,0	582	1,9	23,5	5	19,4	846	3,8	23,0	5	18,9	1642	12,8	22,5	5	13,3	1152	7,1	17,5
10	17,1	498	1,5	26,0	10	16,6	723	2,9	25,5	10	16,1	1400	9,6	25,0	10	10,6	914	4,7	20,0
15	14,2	414	1,1	28,5	15	13,8	602	2,1	28,0	15	13,4	1163	6,9	28,0	15	7,8	677	2,7	22,5
20	11,3	328	0,7	31,0	20	11,0	480	1,4	30,5	20	10,7	929	4,6	30,5	20	5,0	433	1,2	25,0

For operating parameters concerning other water temperatures, please contact Sales Office.

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature
Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
4th step TR/TRd / 75% - of air flow set on VNTLCD/VNT20 / V=3600 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	48,1	714	2,4	37,0	0	43,4	1915	15,2	33,5	0	37,2	1633	11,7	28,5	0	30,9	1352	8,6	23,5
5	44,7	664	2,1	40,0	5	40,1	1770	13,2	36,5	5	33,9	1491	9,9	31,5	5	27,7	1213	7,0	26,5
10	41,4	615	1,8	43,0	10	36,9	1628	11,3	39,5	10	30,8	1352	8,3	34,5	10	24,6	1076	5,7	29,5
15	38,2	567	1,6	46,0	15	33,7	1487	9,6	42,5	15	27,6	1214	6,8	37,5	15	21,5	942	4,5	32,5
20	34,9	519	1,4	49,0	20	30,6	1350	8,0	45,0	20	24,6	1079	5,5	40,0	20	18,5	809	3,4	35,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	25,3	735	2,9	19,5	0	24,6	1070	5,8	19,0	0	24,0	2085	19,8	18,5	0	17,8	1539	11,9	13,5
5	22,1	643	2,3	22,5	5	21,4	934	4,5	22,0	5	20,9	1814	15,4	21,5	5	14,7	1273	8,4	16,5
10	18,9	551	1,7	25,0	10	18,3	799	3,4	24,5	10	17,8	1548	11,5	24,0	10	11,7	1011	5,6	19,5
15	15,8	459	1,3	28,0	15	15,3	665	2,5	27,5	15	14,8	1286	8,2	27,0	15	8,7	750	3,3	22,0
20	12,6	365	0,8	30,5	20	12,2	532	1,7	30,0	20	11,8	1027	5,5	29,5	20	5,6	483	1,5	24,5
5th step TR/TRd / 100% - of air flow set on VNTLCD/VNT20 / V=4100 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	51,8	769	2,7	35,0	0	46,8	2067	17,5	31,5	0	40,1	1762	13,4	27,0	0	33,3	1459	9,8	22,5
5	48,2	716	2,4	38,0	5	43,3	1911	15,2	34,5	5	36,6	1610	11,4	30,0	5	29,9	1309	8,1	25,5
10	44,7	663	2,1	41,0	10	39,8	1758	13,0	38,0	10	33,2	1459	9,5	33,0	10	26,6	1162	6,5	28,5
15	41,1	611	1,8	44,0	15	36,4	1607	11,0	41,0	15	29,9	1312	7,8	36,0	15	23,2	1017	5,1	31,5
20	37,6	559	1,5	47,0	20	33,1	1459	9,2	44,0	20	26,5	1166	6,3	39,0	20	20,0	874	3,9	34,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	27,2	793	3,3	18,5	0	26,5	1155	6,7	18,0	0	25,9	2251	22,7	17,5	0	19,2	1661	13,6	13,0
5	23,8	694	2,6	21,5	5	23,1	1008	5,2	21,0	5	22,5	1959	17,7	20,5	5	15,9	1375	9,7	16,0
10	20,4	595	2,0	24,5	10	19,8	862	3,9	24,0	10	19,2	1672	13,2	23,5	10	12,6	1092	6,4	19,0
15	17,0	496	1,4	27,0	15	16,5	719	2,8	26,5	15	16,0	1389	9,5	26,5	15	9,4	810	3,8	21,5
20	13,6	395	1,0	29,0	**20**	13,2	575	1,9	29,5	**20**	12,8	1109	6,3	29,0	**20**	6,0	524	1,7	24,5

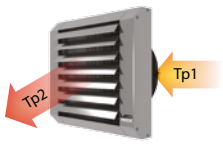


Air flow regulation by the TR/TRd regulator or by the VNTLCD/VNT20 control panel																			
Tp1	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
1st step TR/TRd / 45% - of air flow set on VNTLCD/VNT20 / V=1850 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	44,1	655	2,8	66,0	0	36,8	1624	15,0	55,0	0	31,9	1400	11,8	47,5	0	26,9	1178	8,9	40,0
5	41,2	612	2,4	67,5	5	34,1	1504	13,0	57,0	5	29,2	1283	10,1	49,5	5	24,3	1062	7,4	42,0
10	38,4	570	2,1	69,5	10	31,4	1386	11,2	58,5	10	26,6	1168	8,5	51,0	10	21,7	949	6,1	43,5
15	35,6	529	1,9	71,0	15	28,8	1270	9,6	60,5	15	24,0	1054	7,1	53,0	15	19,2	838	4,9	45,0
20	32,8	488	1,6	72,5	20	26,2	1157	8,1	62,0	20	21,5	943	5,8	54,5	20	16,7	729	3,8	46,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	23,4	681	3,4	35,0	0	21,9	954	6,4	35,0	0	20,3	1769	19,6	30,5	0	15,4	1338	12,4	23,0
5	20,7	603	2,8	36,5	5	19,3	841	5,1	35,5	5	17,8	1548	15,4	32,0	5	12,9	1121	9,1	24,5
10	18,1	526	2,2	38,0	10	16,7	729	4,0	36,0	10	15,3	1331	11,8	33,5	10	10,5	908	6,2	26,0
15	15,4	450	1,6	39,5	15	14,2	619	3,0	37,5	15	12,9	1119	8,6	35,0	15	8,0	695	3,9	27,5
20	12,8	372	1,2	40,5	20	11,7	509	2,1	38,5	0	10,5	909	6,0	36,5	20	5,5	480	2,0	29,0
2nd step TR/TRd / 55% - of air flow set on VNTLCD/VNT20 / V=2400 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	52,4	778	3,7	60,5	0	44,0	1943	20,7	50,5	0	38,1	1673	16,3	44,0	0	32,1	1406	12,3	37,0
5	49,0	727	3,3	62,5	5	40,8	1799	18,0	53,0	5	34,9	1533	13,9	46,0	5	29,0	1268	10,2	39,0
10	45,6	677	2,9	64,5	10	37,6	1658	15,5	55,0	10	31,8	1395	11,7	48,0	10	25,9	1133	8,3	41,0
15	42,3	628	2,6	66,5	15	34,4	1520	13,3	57,0	15	28,7	1260	9,7	49,0	15	22,9	1000	6,7	43,0
20	39,0	579	2,2	68,0	20	31,4	1384	11,2	58,5	20	25,7	1127	8,0	51,5	20	19,9	870	5,2	44,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	27,8	810	4,6	32,0	0	26,1	1137	8,7	30,0	0	24,3	2117	27,1	28,0	0	18,5	1599	17,1	21,5
5	24,6	717	3,8	34,0	5	23,0	1002	6,9	32,0	5	21,3	1852	21,3	30,0	5	15,5	1340	12,4	23,0
10	21,5	626	3,0	35,5	10	20,0	869	5,4	34,0	10	18,3	1593	16,2	32,0	10	12,5	1084	8,5	25,0
15	18,4	535	2,2	37,5	15	16,9	738	4,0	35,5	15	15,4	1338	11,9	33,5	15	9,6	830	5,3	26,5
20	15,2	443	1,6	39,0	20	13,9	607	2,9	37,0	20	12,5	1087	8,2	35,5	20	6,6	574	2,8	28,0
3rd step TR/TRd / 65% - of air flow set on VNTLCD/VNT20 / V=2900 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	59,1	877	4,7	56,5	0	49,9	2202	26,0	47,5	0	43,2	1896	20,4	41,0	0	36,4	1591	15,3	34,5
5	55,2	820	4,1	58,5	5	46,2	2040	22,7	50,0	5	39,5	1737	17,4	43,5	5	32,8	1436	12,7	37,0
10	51,4	764	3,6	61,0	10	42,6	1880	19,5	52,0	10	36,0	1581	14,7	45,5	10	29,3	1283	10,4	39,0
15	47,7	708	3,2	63,0	15	39,1	1724	16,7	54,0	15	32,5	1428	12,2	47,5	15	25,9	1133	8,3	41,0
20	44,0	653	2,7	65,0	20	35,6	1570	14,1	56,5	20	29,1	1277	10,0	49,5	20	22,5	984	6,5	43,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	31,4	914	5,8	30,0	0	29,5	1287	10,9	28,0	0	27,6	2401	34,1	26,5	0	20,9	1812	21,3	20,0
5	27,8	810	4,7	32,0	5	26,0	1134	8,7	30,5	5	24,2	2101	26,7	28,5	5	17,5	1518	15,5	22,0
10	24,3	707	3,7	34,0	10	22,6	983	6,7	32,5	10	20,8	1806	20,4	30,5	10	14,2	1228	10,6	24,0
15	20,8	604	2,8	36,0	15	19,1	834	5,0	34,0	15	17,4	1517	14,9	32,5	15	10,9	941	6,6	26,0
20	17,2	501	2,0	37,5	20	15,7	686	3,5	36,0	20	14,2	1232	10,2	34,5	20	7,5	651	3,5	27,5

For operating parameters concerning other water temperatures, please contact Sales Office.

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature
Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2	Tp1	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C	°C	kW	l/h	kPa	°C
4th step TR/TRd / 75% - of air flow set on VNTLCD/VNT20 / V=3450 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	65,8	977	5,6	52,5	0	55,8	2462	32,0	44,5	0	48,2	2119	25,0	38,5	0	40,6	1778	18,7	32,5
5	61,5	913	5,0	55,0	5	51,7	2281	27,8	47,0	5	44,2	1942	21,3	41,0	5	36,7	1604	15,6	35,0
10	57,3	850	4,4	57,5	10	47,7	2103	24,0	49,5	10	40,2	1768	18,0	43,5	10	32,8	1433	12,7	37,0
15	53,1	788	3,8	60,0	15	43,7	1928	20,5	52,0	15	36,3	1596	14,9	45,5	15	28,9	1265	10,1	39,5
20	49,0	727	3,3	62,0	20	39,8	1757	17,3	54,0	20	32,5	1428	12,2	48,0	20	25,1	1099	7,9	41,5
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	35,0	1019	7,0	28,0	0	33,0	1436	13,2	26,5	0	30,9	2686	41,8	25,0	0	23,4	2025	26,1	18,5
5	31,0	903	5,7	30,5	5	29,0	1266	10,5	28,5	5	27,0	2351	32,8	27,0	5	19,6	1696	19,0	20,0
10	27,1	788	4,4	32,5	10	25,2	1097	8,2	31,0	10	23,2	2021	24,9	29,5	10	15,8	1372	13,0	23,0
15	23,1	673	3,4	34,5	15	21,4	931	6,1	33,0	15	19,5	1697	18,2	31,5	15	12,1	1050	8,1	25,0
20	19,2	558	2,4	36,5	20	17,6	765	4,3	35,0	20	15,8	1377	12,5	33,5	20	8,4	727	4,2	27,0
5th step TR/TRd / 100% - of air flow set on VNTLCD/VNT20 / V=3900 m³/h																			
Tw1/Tw2 = 130/70°C					**Tw1/Tw2 = 90/70°C**					**Tw1/Tw2 = 80/60°C**					**Tw1/Tw2 = 70/50°C**				
0	70,8	1051	6,4	50,0	0	64,6	2660	36,8	46,0	0	56,1	2288	28,7	40,0	0	47,1	1919	21,5	33,5
5	66,2	983	5,7	53,0	5	60,2	2464	32,0	48,5	5	51,3	2097	24,5	42,0	5	42,5	1731	17,9	35,5
10	61,7	915	5,0	55,5	10	55,4	2272	27,6	50,5	10	46,7	1909	20,7	44,5	10	37,9	1547	14,6	38,0
15	57,2	849	4,4	57,5	15	50,1	2084	23,6	53,0	15	42,1	1725	17,2	46,5	15	33,4	1366	11,6	40,0
20	52,7	783	3,8	60,0	20	46,2	1899	19,9	55,0	20	37,6	1543	14,1	48,5	20	28,9	1187	9,1	42,0
Tw1/Tw2 = 70/40°C					**Tw1/Tw2 = 60/40°C**					**Tw1/Tw2 = 50/40°C**					**Tw1/Tw2 = 40/30°C**				
0	37,7	1098	8,0	27,0	0	35,6	1549	15,2	25,0	0	33,4	2902	48,1	23,5	0	25,2	2187	29,9	18,0
5	33,4	973	6,5	29,0	5	31,3	1365	12,1	27,5	5	29,2	2540	37,7	26,0	5	21,1	1831	21,8	20,5
10	29,2	849	5,1	31,5	10	27,2	1183	9,3	30,0	10	25,1	2183	28,7	28,5	10	17,1	1481	14,9	22,5
15	24,9	725	3,8	33,0	15	23,0	1004	7,0	32,0	15	21,1	1833	20,9	30,5	15	13,1	1133	9,2	25,0
20	20,7	601	2,8	35,5	20	18,9	825	4,9	34,5	20	17,1	1488	14,4	33,0	20	9,1	784	4,8	27,0



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