



# LEO

Air heating  
and ventilation



We are an expert in providing complete heating and ventilation solutions for medium and big cubature buildings.  
Our offer consists of three main product groups:

- air heating and ventilation:  
fan heaters, gas heaters, electric heaters, mixing chambers, fan heaters for specialized buildings like chicken coops, pools, washes – LEO,
- air curtains and air curtain-fan heater combo units – ELiS,
- ductless ventilation with heat recovery – OXeN.

## System FLOWAIR

is a pioneering solution that enables integration of operation of heating and ventilation units and control their operation **with only one controller**. Innovative control **SYSTEM** makes possible to take advantage of features that were previously reserved for extensive building management system BMS.



### JUST ONE CONTROLLER IS NEEDED

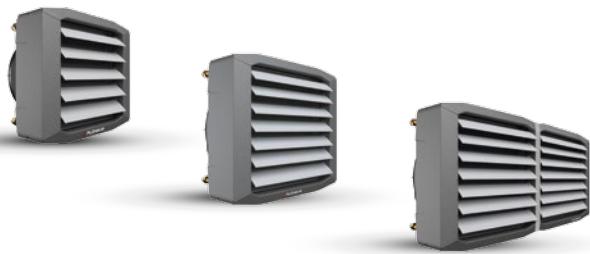
- control of all units from one place
- quick access to operating parameters of the units



## Main features

### WIDE RANGE OF HEATERS

Enables accurate adjustment to the requirements of the building, not only in terms of power, but also air temperature, range of air stream and acoustics.



### QUICK INSTALLATION

Heater is equipped with mountings for console assembly. Drilling holes in the casing is not required. Installation of the unit is performed in 3 steps only.



### 3-STEP FANS

LEO V-type fan heaters are equipped in standard with fans with 3-step motor. In contrast to conventional motor, this does not require to use of additional transformer speed regulator. To switch steps only the TS 3-step fan speed controller is needed.



### EPP CASING

Mechanical strength, resistance to dirt, low weight and aesthetic look. Thanks to casing made of EPP, LEO FB fan heaters appoint a new quality of use.



### MODERN CONTROL SYSTEMS

Modern control systems make possible to regulate air flow and heating capacity as well as minimize operating costs associated with heating.



### MODERN DESIGN

Modern design enables application of heaters in representative rooms, where aesthetics is a very important element.





## Fan heaters LEO FB



### Fan heaters LEO FB

Heating capacity [kW]	2–100
Air flow [m <sup>3</sup> /h]	150–8500
Weight [kg]	9,3–32,3
Colour	grey
Casing	EPP (expanded polypropylene)

### Application:

Big cubature buildings: industrial halls, warehouses, department stores, production halls, sports halls, sacral buildings, etc., as well as smaller rooms, like: workshops, garages, stores, car show rooms, gas stations, etc..

### Available types of units:

LEO FB V-type

Fan with AC fan, with possibility of 3-step air flow regulation.

## Technical data

	<b>FB 10V</b>	<b>FB 20V</b>	<b>FB 30V</b>	<b>FB 25V</b>	<b>FB 45V</b>	<b>FB 65V</b>	<b>FB 95V</b>
Max. air flow stream [m <sup>3</sup> /h]	2100	2000	1900	4400	4100	3900	8500
Max. range of air stream [m] <sup>(1)</sup>	14,5	14,0	13,0	26,0	24,0	22,0	33,0
Power supply [V/Hz]	230/50	230/50	230/50	230/50	230/50	230/50	230/50
Max. current consumption [A]	0,5	0,5	0,5	1,4	1,4	1,4	2x1,4 (2,8)
Max. power consumption [W]	110	110	110	320	320	320	2x320 (640)
IP / Insulation class	54 /F						
Max. acoustic pressure level [dB(A)] <sup>(2)</sup>	47	47	47	54	54	54	57
Max. heating water temperature [°C]	120	120	120	120	120	120	120
Max. operating pressure [MPa]	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Connection ["]	½	½	½	¾	¾	¾	¾
Maks. operating temperature [°C]	50	50	50	60	60	60	60
Weight of unit [kg]	9,3	10,2	11,3	14,8	16,0	18,3	32,2
Weight of unit filled with water [kg]	10,0	11,4	12,7	15,8	18,0	21,0	35,7

<sup>(1)</sup> Range of horizontal isothermal air stream, at 0,5 m/s velocity limit

<sup>(2)</sup> Acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m<sup>3</sup> of cubature



## Dimensions

LEO FB 10 | 20 | 30



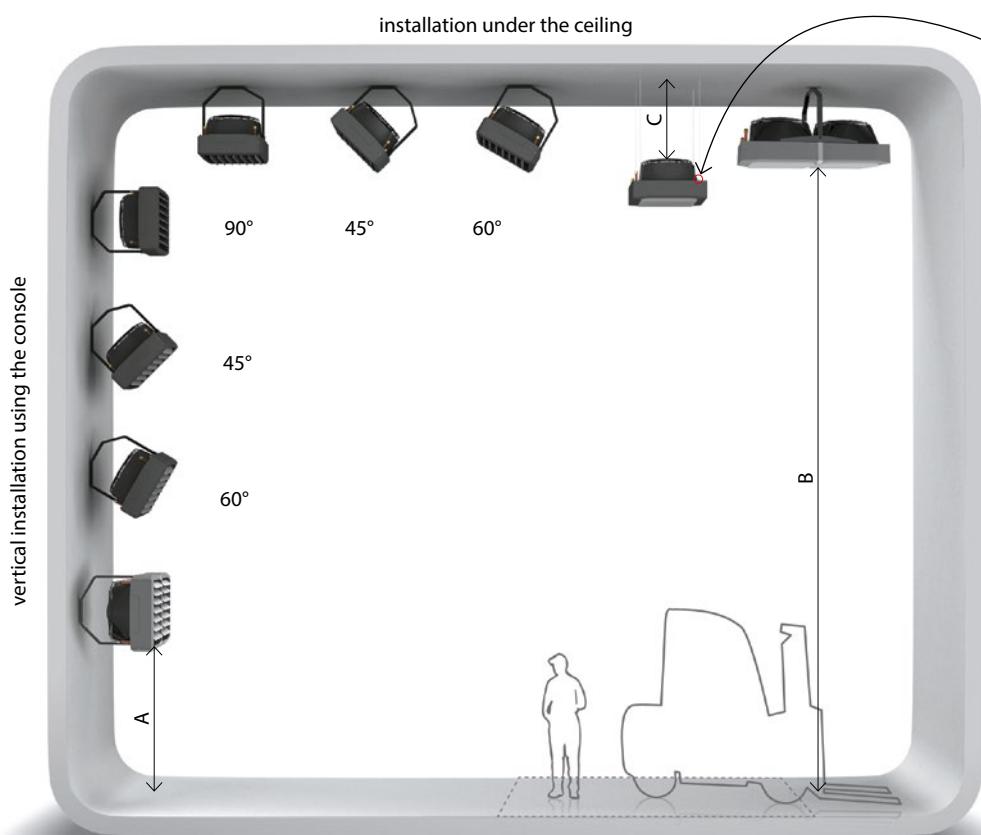
LEO FB 25 | 45 | 65



LEO FB 95



## Installation



### Corner holders

There are available corner holders, which make easier installation and leveling the heater.

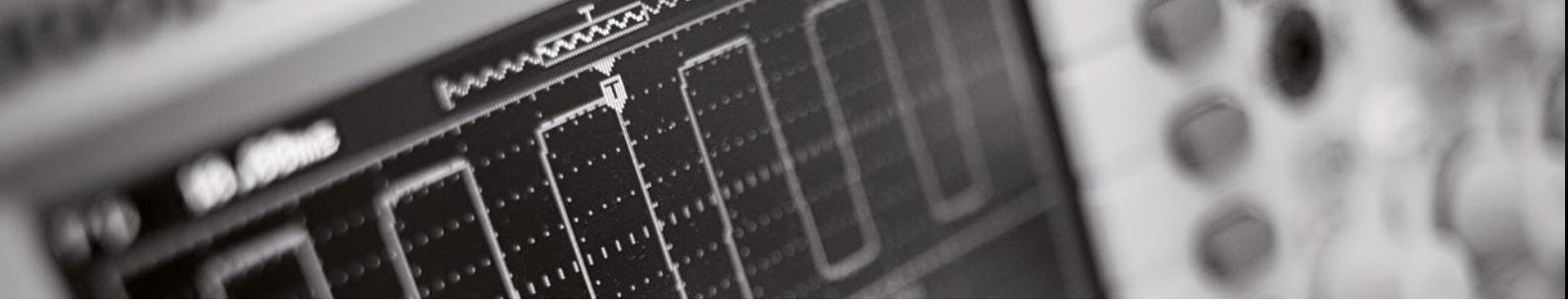


### Rotary console

It enables to install the heater perpendicularly or at the various angles to the wall. It also makes possible to rotate the unit by the angle of 170°.

### Recommended installation distance [m]

	FB 10	FB 20	FB 30	FB 25	FB 45	FB 65	FB 95
A	max. 3,0	max. 3,0	max. 3,0	2,5–8,0	2,5–8,0	2,5–8,0	2,5–10,0
B	2,5–5,0	2,5–5,0	2,5–5,0	2,5–10,0	2,5–10,0	2,5–10,0	2,5–12,0
C	min. 0,3						



## Control systems



### TS REGULATION

It is the simplest regulation system of 3-step fans. Fan heater operation is controlled by 3-step fan speed controller with thermostat.

### HMI REGULATION

It is the advanced regulation system of 3-step fans via HMI programmable controller.

### T-box REGULATION

It is the smart regulation with fits into individual needs thanks to the controller T-box with touch screen.

Fan heater  
LEO V

#### TS regulation



#### HMI regulation



#### T-box regulation



#### Controlling options

Manual 3-step air flow regulation



Automatic 3-step air flow regulation



#### Modes

Heating / Cooling / Ventilation



Operation in continuous or thermostatic mode



Weekly programmer



BMS



Antifreeze



Integration with FLOWAIR SYSTEM



#### Max. number of connected units

Via controller

7<sup>(1)</sup>

2<sup>(2)</sup>

31

Via additional splitters

36<sup>(3)</sup>

36<sup>(3)</sup>

n/d

<sup>(1)</sup> 7 units FB 10 | 20 | 30 V; 3 units FB 25 | 45 | 65 | 95 V

<sup>(2)</sup> 2 units FB 10 | 20 | 30 V; 1 unit FB 25 | 45 | 65 | 95 V

<sup>(3)</sup> 36 units FB 10 | 20 | 30 V; 18 units FB 25 | 45 | 65 | 95 V



## Control elements

### RX splitter



Splitter of control signal for connection of several LEO V-type units with 3-step fans to one controller. It is possible to combine max. 3 splitters RX, so that the single controller can control up to 36 units simultaneously.

**Max. number of controlled units via single controller**

	LEO FB 10 V	LEO FB 20 V	LEO FB 30 V	LEO FB 25 V	LEO FB 45 V	LEO FB 65 V	LEO FB 95 V
1 pc. RX		12				6	
2 pcs. RX		24				12	
3 pcs. RX		36				18	

### Wall-mounted temperature sensors



Wall-mounted temperature sensor allows measurement in other zones than controller installation place

**Possibility of temperature sensor connection**

Regulation	Temperature sensor	Connection of wall-mounted temperature sensor	Max. number of wall-mounted temperature sensors
TS	integrated	n/d	n/d
HMI	NTC or integrated	to HMI controller	1
T-box	PT-1000 or integrated	to DRV control module	1, 4, 16, to each DRV module

### SRQ valves

For control the heating medium flow, the two- or three-way valves with electric actuator can be applied.



**Compatibility of valves with LEO FB fan heaters**

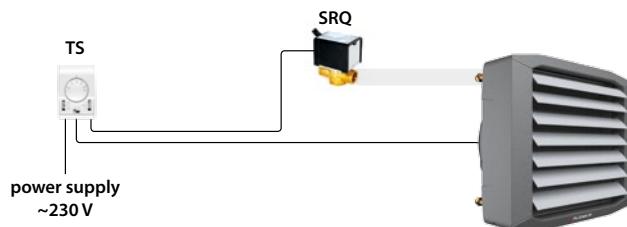
Valve	LEO FB 10	LEO FB 20	LEO FB 30	LEO FB 25	LEO FB 45	LEO FB 65	LEO FB 95
SRQ2d 1/2"	✓	✓	✓				
SRQ2d 3/4"				✓	✓	✓	✓
SRQ3d 1/2"	✓	✓	✓				
SRQ3d 3/4"				✓	✓	✓	✓



## Connection diagrams

### LEO V-type fan heaters

#### TS REGULATION



##### to 1 TS controller:

- max. 7 units  
LEO FB 10 | 20 | 30 V
- max. 3 units  
LEO FB 25 | 45 | 65 | 95 V

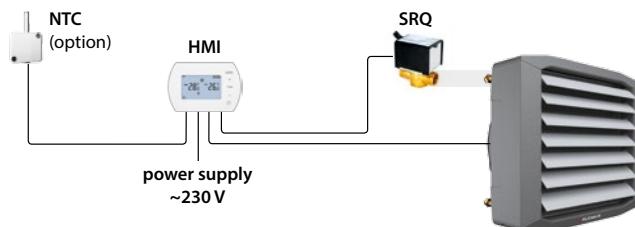
##### ELEMENTS:

- TS – 3-step fan speed controller with thermostat
- SRQ – valve with actuator

It is possible to apply RX splitters to increase the maximum number of controlled units (more information on page 7)

### LEO V-type fan heaters

#### HMI REGULATION



##### to 1 HMI controller:

- max. 2 units  
LEO FB 10 | 20 | 30 V
- max. 1 unit  
LEO FB 25 | 45 | 65 | 95 V

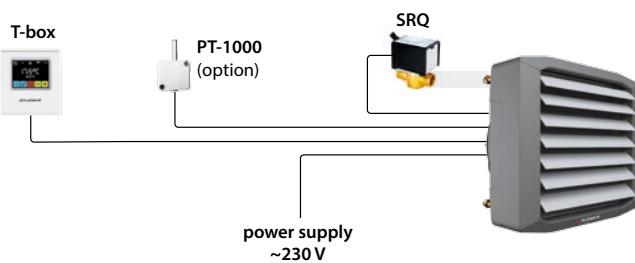
##### ELEMENTS:

- HMI – programmable controller
- NTC – wall-mounted temperature sensor
- SRQ – valve with actuator

It is possible to apply RX splitters to increase the maximum number of controlled units (more information on page 7)

### LEO V-type fan heaters

#### T-box REGULATION



max. 31 units compatible with FLOWAIR SYSTEM to 1 T-box controller

##### ELEMENTS:

- T-box – intelligent controller with touch screen
- PT-1000 – wall-mounted temperature sensor
- SRQ – valve with actuator



## Accessories LEO FB 25 | 45 | 65 | 95

### MIXING CHAMBER

Material: galvanized steel, aluminum, plastic

LEO FB fan heaters with LEO KM mixing chamber form heating and ventilation unit. It is the easiest way to create the efficient mechanical ventilation without additional systems.



KM

LEO FB 25 | 45 | 65 | 95

LEO FB + KM



+



=



## Technical data

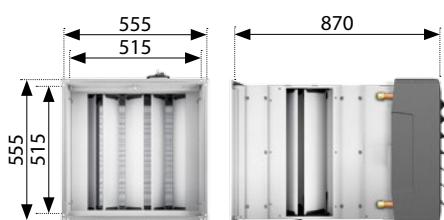
	LEO 25V + KM L	LEO 45V + KM L	LEO 65V + KM L	LEO 95V + KM 95
Max. heater with KM air flow [m <sup>3</sup> /h]	3200	3000	2800	6500
Power supply [V/Hz]		230/50		
Max. current consumption [A]	1,4	1,4	1,4	2x1,4 (2,8)
Max. power consumption [W]	320	320	320	2x320 (640)
IP		54		
Max. acoustic pressure level <sup>(1)</sup> [dB(A)]	54	54	54	57
Max. range of air stream <sup>(2)</sup> [m]	18,0	16,5	15,5	25,0
Max. heating water temperature [°C]		120		
Max. operating temperature [MPa]		1,6		
Weight of unit [kg]	34,4	35,5	37,8	70,2
Weight of unit filled with water [kg]	35,3	37,5	40,5	73,7

<sup>(1)</sup> Acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m<sup>3</sup> of cubature.

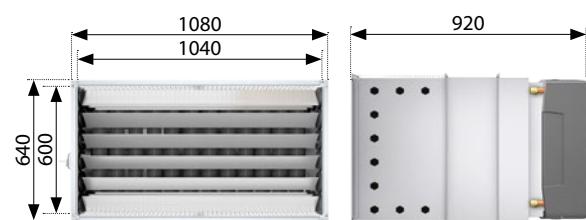
<sup>(2)</sup> Range of horizontal isothermal air stream, at 0,5 m/s velocity limit.

## Dimensions

LEO FB 25 | 45 | 65 + KM L

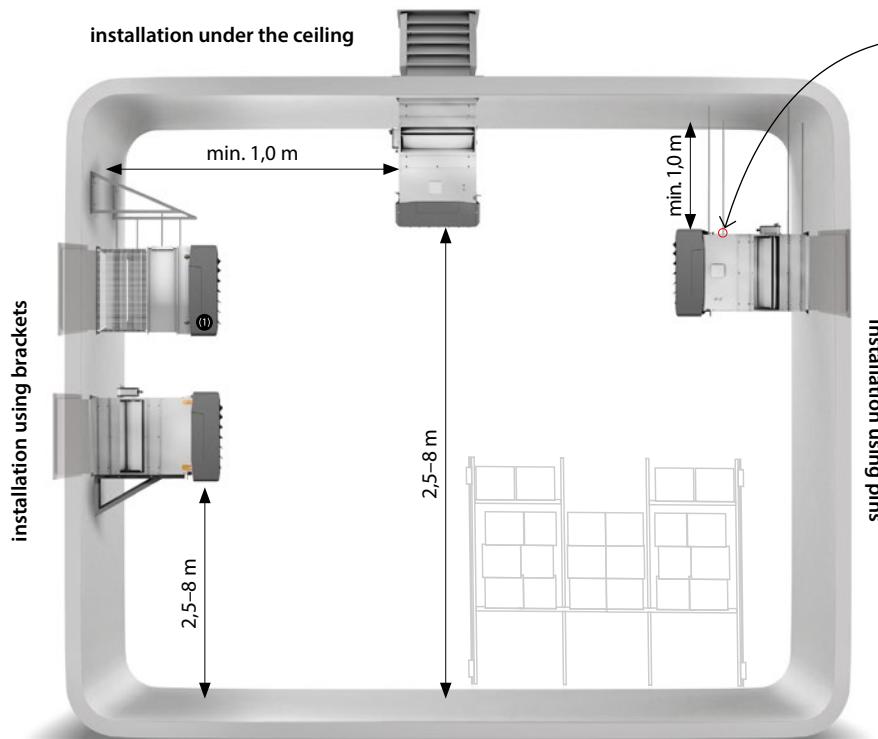


LEO FB 95 + KM 95





## Installation



<sup>(1)</sup> only for LEO FB 95 + KM 95

### Installation holders

There are available holders, which make easier installation under the ceiling and leveling the heater.



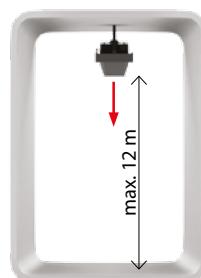
### Installation brackets

Enable easy and aesthetic installation on the walls.

## Accessories LEO FB 25 | 45 | 65

### FB CONFUSOR

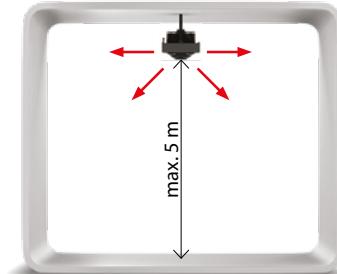
Material: powder-painted steel  
Weight: 3,8 kg



Confusor increases air flow speed. It results in faster air distribution to the lower zones of the room.

### FB 4-SIDE OUTLET GRILLE

Material: powder-painted steel  
Weight: 2,8 kg



Outlet grille improves air distribution. It is perfect solution for low level ceiling rooms, where heaters are installed under the ceiling.



## Heating capacities

Tw1/Tw2 = 90/70°C					Tw1/Tw2 = 80/60°C					Tw1/Tw2 = 70/50°C					Tw1/Tw2 = 60/40°C					Tw1/Tw2 = 45/35°C				
Tp1	PT	Qw	Δpw	Tp2	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	°C	kW	l/h	kPa	°C
LEO FB 10																								
V=2100 m <sup>3</sup> /h																								
0	10,1	446	2,8	14,5	0	8,6	377	2,1	12,0	0	7,0	307	1,5	10,0	0	5,4	234	1,0	7,5	0	4,7	413	2,8	6,5
5	9,5	417	2,4	18,5	5	7,9	347	1,8	16,0	5	6,3	277	1,3	14,0	5	4,7	203	0,8	11,5	5	4,1	352	2,1	10,5
10	8,8	388	2,1	22,5	10	7,2	317	1,6	20,0	10	5,6	246	1,0	18,0	10	3,9	170	0,6	15,5	10	3,3	290	1,5	14,5
15	8,1	358	1,9	26,5	15	6,5	287	1,3	24,0	15	4,9	215	0,8	22,0	15	3,1	135	0,4	19,5	15	2,6	226	1,0	18,5
20	7,4	328	1,6	30,5	20	5,9	257	1,1	28,0	20	4,2	184	0,6	26,0	20	1,9	82	0,2	22,5	20	1,8	156	0,5	22,5
LEO FB 20																								
V=2000 m <sup>3</sup> /h																								
0	21,4	946	17,6	32,0	0	18,4	810	13,7	27,5	0	15,4	675	10,2	23,0	0	12,4	540	7,1	18,5	0	10,4	902	18,6	15,5
5	20,1	887	15,7	34,5	5	17,1	751	12,0	30,0	5	14,0	615	8,6	26,0	5	11,0	479	5,6	21,0	5	9,0	782	14,4	18,5
10	18,7	827	13,8	37,5	10	15,7	691	10,3	33,0	10	12,7	555	7,2	28,5	10	9,6	418	4,5	24,0	10	7,6	660	10,6	21,0
15	17,4	768	12,0	40,5	15	14,3	631	8,7	36,0	15	11,3	494	5,8	31,5	15	8,2	356	3,4	27,0	15	6,2	573	7,4	24,0
20	16,0	708	10,5	43,5	20	13,0	570	7,3	39,0	20	9,9	433	4,6	34,5	20	6,7	293	2,4	30,0	20	4,7	413	4,6	27,0
LEO FB 30																								
V=1900 m <sup>3</sup> /h																								
0	27,3	1202	14,3	42,5	0	23,3	1025	11,0	36,5	0	19,4	848	8,1	30,5	0	15,4	671	5,5	24,0	0	13,1	1136	14,8	20,5
5	25,5	1125	12,7	44,5	5	21,6	947	9,6	38,5	5	17,6	770	6,8	32,5	5	13,6	592	4,4	26,0	5	11,3	980	11,3	22,5
10	23,7	1047	11,1	46,5	10	19,8	869	8,2	40,5	10	15,8	691	5,6	34,5	10	11,8	512	3,4	28,0	10	9,5	822	8,3	24,5
15	22,0	970	9,7	49,0	15	18,0	791	6,9	42,5	15	14,0	613	4,5	36,5	15	9,9	431	2,5	30,5	15	7,6	663	5,6	27,0
20	20,2	892	8,3	51,0	20	16,2	713	5,7	45,0	20	12,2	533	3,5	38,5	20	8,0	349	1,7	32,5	20	5,8	501	3,4	29,0
LEO FB 25																								
V=4400 m <sup>3</sup> /h																								
0	26,7	1179	11,6	18,0	0	22,7	999	8,8	15,5	0	18,7	819	6,3	12,5	0	14,6	637	4,2	10,0	0	12,7	1103	11,7	8,5
5	25,0	1101	10,2	22,0	5	21,0	921	7,6	19,0	5	16,9	741	5,3	16,5	5	12,8	558	3,3	13,5	5	10,9	946	8,8	12,5
10	23,2	1024	8,9	25,0	10	19,2	843	6,5	23,0	10	15,1	662	4,3	20,0	10	11,0	478	2,5	17,5	10	9,1	787	6,4	16,0
15	21,4	946	7,7	29,5	15	17,4	765	5,4	26,5	15	13,3	583	3,4	24,0	15	9,1	396	1,8	21,0	15	7,2	626	4,2	20,0
20	19,7	868	6,6	33,0	20	15,6	686	4,5	30,5	20	11,5	502	2,6	27,5	20	7,2	312	1,2	24,5	20	5,3	461	2,5	23,5
LEO FB 45																								
V=4100 m <sup>3</sup> /h																								
0	45,0	1986	15,2	32,5	0	38,5	1693	11,7	27,5	0	32,0	1402	8,6	23,0	0	25,5	1110	5,9	18,5	0	21,6	1880	15,7	15,5
5	42,1	1958	13,4	35,5	5	35,6	1565	10,2	30,5	5	29,1	1273	7,2	26,0	5	22,5	980	4,7	21,0	5	18,7	1621	12,0	18,5
10	39,2	1730	11,8	38,0	10	32,7	1437	8,7	33,5	10	26,1	1144	6,0	29,0	10	19,5	849	3,6	24,0	10	15,7	1361	8,8	21,0
15	36,3	1603	10,3	41,0	15	29,8	1308	7,3	36,0	15	23,2	1014	4,8	31,5	15	16,5	717	2,7	27,0	15	12,7	1099	6,0	24,0
20	33,4	1475	8,8	43,5	20	26,8	1179	6,1	39,0	20	20,2	883	3,7	34,0	20	13,3	581	1,9	29,5	20	9,6	832	3,6	27,0
LEO FB 65																								
V=3900 m <sup>3</sup> /h																								
0	65,5	2892	21,3	50,0	0	56,5	2481	16,6	43,0	0	47,3	2071	12,3	36,0	0	38,1	1659	8,6	29,0	0	31,6	2748	22,1	24,0
5	61,4	2712	18,9	51,5	5	52,3	2300	14,4	44,5	5	43,2	1889	10,4	37,5	5	33,8	1475	6,9	30,5	5	27,5	2383	17,1	26,0
10	57,3	2529	16,7	53,0	10	48,2	2116	12,4	46,5	10	38,9	1704	8,7	39,5	10	29,5	1288	5,4	32,5	10	23,2	2016	12,6	27,5
15	53,1	2344	14,5	55,0	15	44,0	1931	10,5	48,0	15	34,7	1517	7,0	41,0	15	25,2	1097	4,1	34,0	15	18,9	1645	8,8	29,0
20	48,9	2159	12,5	56,5	20	39,7	1744	8,8	50,0	20	30,3	1328	5,5	43,0	20	20,7	902	2,9	35,5	20	14,6	1267	5,5	31,0
LEO FB 95																								
V=8500 m <sup>3</sup> /h																								
0	100,9	4449	41,0	36,0	0	88,3	3881	32,0	31,0	0	74,0	3236	23,6	26,0	0	59,5	2593	16,3	20,5	0	49,8	4328	42,9	17,5
5	96,2	4244	36,7</																					

Find out more

Call for more information

**+48 58 627 57 20**

charge as per call by call unit



Check our YouTube channel

**watch movies!**



Visit our website

**www.flowair.com**



**FLOWAIR**

ul. Chwaszczyńska 135,  
81- 571 Gdynia

Tel. +48 58 627 57 20  
Fax. +48 58 627 57 21

inquiries should be directed to the  
following address:  
[info@flowair.pl](mailto:info@flowair.pl)

