

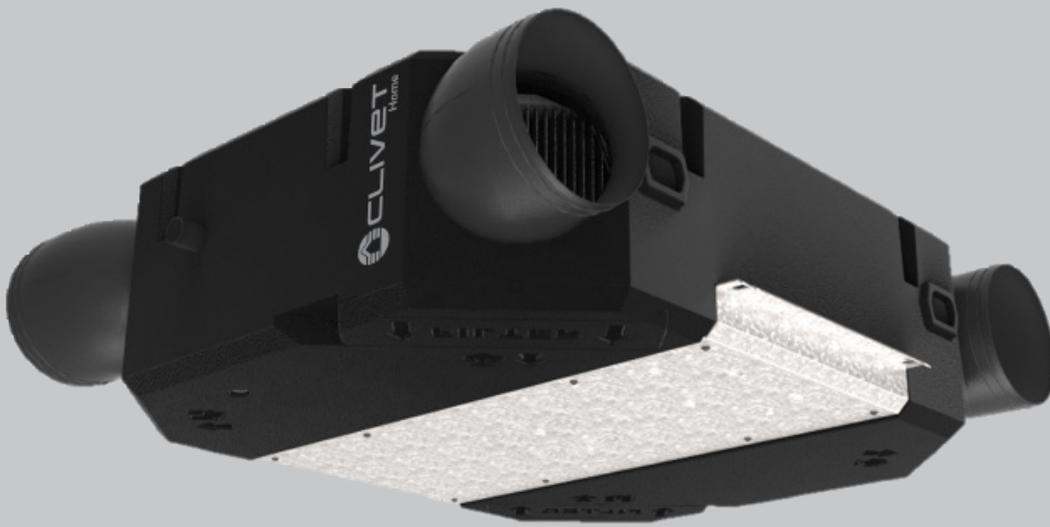


Make up and purification unit with active thermodynamic recovery for indoor installation

ELFOFresh EVO

CPAN-YIN - SIZE 2 RANGE

TECHNICAL BULLETIN



SIZE	SIZE 2
COOLING CAPACITY kW	1,92

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Features and benefits

The role of ventilation

A person spends over 90% of his/her time in closed environments: it is essential to maintain healthy and comfortable conditions. Insulating the building and installing efficient air conditioning systems enables you to create or renovate buildings with low energy consumption, but this makes it necessary to improve air quality:

- ▶ the indoor air must be renewed to prevent pollutants from “stagnating” and mould from forming
- ▶ air introduced from the outside must be filtered and purified so as not to pollute the internal environment even more
- ▶ the energy contained in the exhaust air, which would otherwise be wasted, can be recovered to reduce consumption

Renewing the air allows you to always keep the home environment clean and comfortable: ELFOFresh EVO is the perfect solution to do this in an economical and eco-friendly way:

ELFOFresh EVO is the innovative air renewal and purification system, with active thermodynamic recovery and R32 refrigerant ideal for new buildings, renovations, homes and offices measuring between 90 m² and 250 m².

The unit is optimised to facilitate installation and insertion into false ceilings (it is only 290mm high)



ELFOFresh EVO: the best solution for well-being and energy efficiency

ELFOFresh EVO uses Heat Pump active energy recovery, which guarantees a performance that is superior to the traditional technologies on the market. Its operation is easy: it renews, purifies and conditions the air in the house.



R = It extracts indoor air and recovers the energy

AE = It draws the outdoor air and purifies it

M = It heats/cool the outdoor air and introduces it into the room while keeping humidity under control

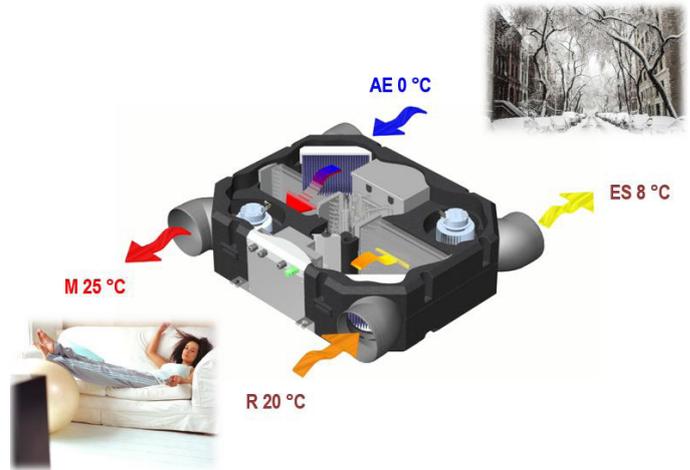
ES = It expels the exhausted stale air

Three typical examples of operation:

Winter

ELFOFresh EVO recovers the heat of the extracted air and uses it to heat the air entering the room.

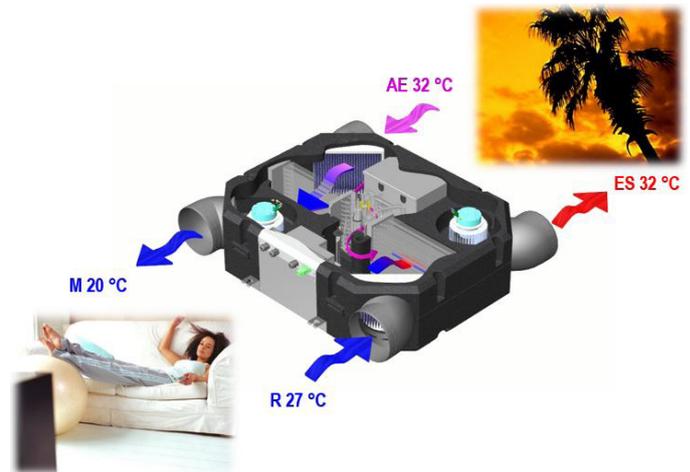
- For most of winter time the unit supplies part of the thermal load of the building.



Summer

ELFOFresh EVO cools the air entering the room and transfers heat to the exhaust air.

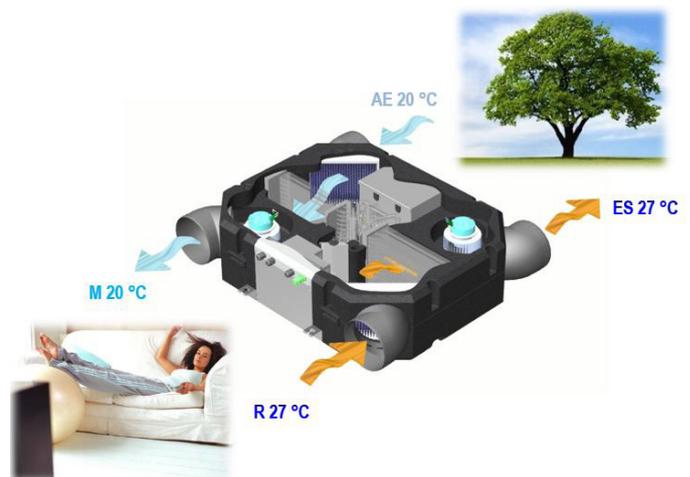
- Also during summer time, it reduces the use of the primary air conditioning system.
- In cooling mode, the unit controls the humidity input into the building.



Mid-seasons

ELFOFresh EVO introduces outdoor air without heating it or cooling it (Free-Cooling).

- ELFOFresh EVO replaces the air conditioning systems.



Features and benefits

The characteristics of the air renewal

Purification

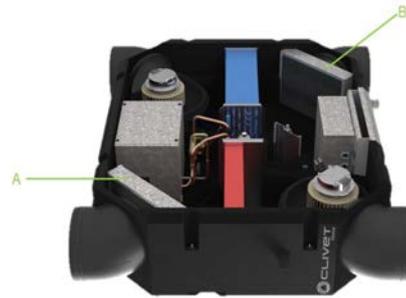
Pollutants are filtered from the air to ensure a healthy and clean environment.

A - Fresh air filter

It purifies the outdoor air before intake.

B - Exhaust air filter

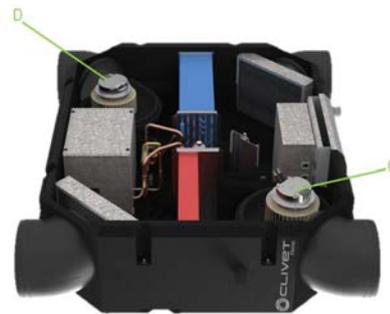
It purifies the air extracted from the environment to keep the machine clean and prevent clogging problems



Ventilation

EC fans are automatically regulated according to the pressure drops of the distribution system, thus ensuring a constant air flow.

- It simplifies the design of the air distribution system, thereby allowing greater tolerances to be taken into account when calculating the pressure drops of the distribution system
- It facilitates installation and makes the unit versatile, if the system configurations differ to the design ones
- It guarantees reliability and continuity of operation: (if the pressure drops increase, the filters become dirty) the machine continues to operate perfectly
- Thank to two different settings of the noise reduction function, it is possible to achieve top acoustic comfort during night-time



C / D - Supply / exhaust fan

Active recovery

Heat recovery based on refrigerant circuit guarantees a performance that is superior to traditional passive recovery systems

R32 refrigerant

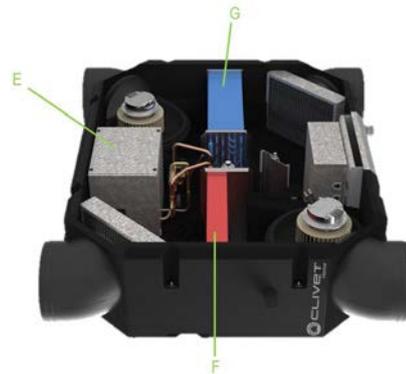
- Low GWP (Global Warming Potential) and lower CO2 emissions
- Better performance in extreme conditions
- Requires less refrigerant charge in the system
- High heat exchange coefficient

E - Inverter compressor

The compressor is optimised for low power operation, with a high level of performance all year round. The compartment is insulated for maximum silence

F / G - Renewal / exhaust exchanger

Exchangers ensure reduced pressure drops compared with traditional passive recovery units: energy consumption is extremely low



Structure

Designed to make the unit safe, lightweight and silent similar to and more than a passive recovery unit

H - Frame (sheet metal + polypropylene + antivibration mounts)

The insulation coating makes operations extremely silent and prevents air flows from coming into direct contact

I - Adjustable spigots

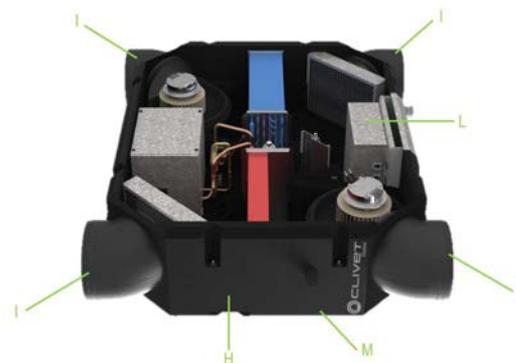
The flanges can be rotated to give the unit numerous installation solutions

L - Electrical panel

Easily accessible from underneath or from the side, to simplify accessibility

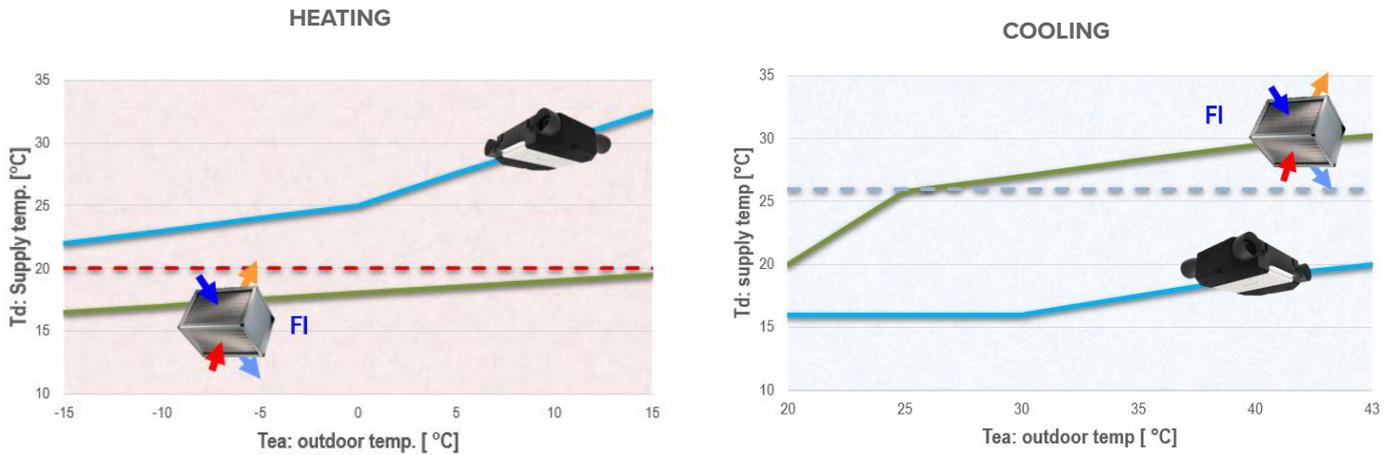
M - Condensate drain pump with water sensor level

To properly dispose of the condensate



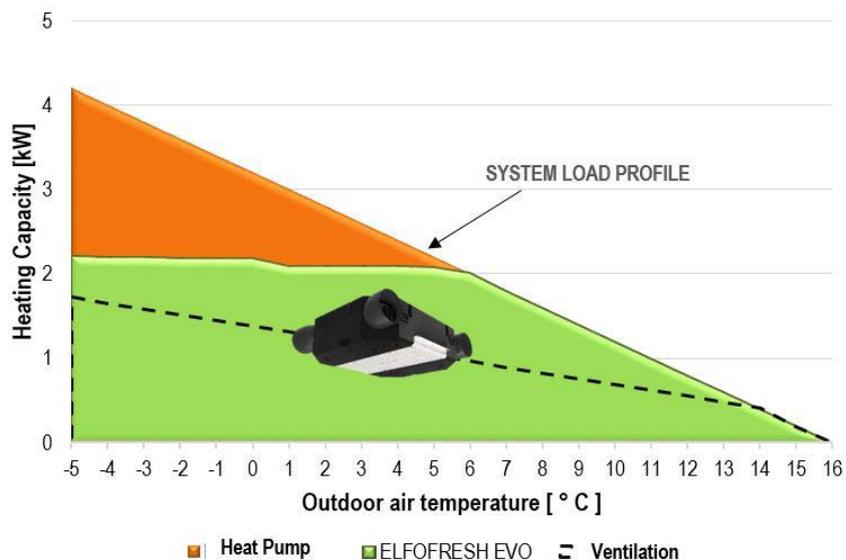
Thermodynamic recovery

Year-round energy contribution: ELFOFresh EVO always has a positive impact on the room, supplying air at higher than room temperature conditions during heating periods and lower during cooling. This is evidence to the fact that the thermodynamic heat recovery technology is able to fully cover the thermal load connected to the fresh air intake, as well as part of the building thermal load connected to transmissions. This result cannot be reached by a traditional passive heat recovery system.



Td = Supply air temperature
 Tae = Ambient temperature
 --- = Inside temperature
 FI = Passive heat recovery system

ELFOFresh EVO not only recovers the energy contained in the exhaust air flow, but, thanks to the heat pump technology, it meets up to 85% of the building's thermal demand, which reaches 100% in mid-season



Features and benefits

Thermodynamic recovery

Being able to supply a significant amount of energy to the building means that over 85% of the demand is met by ELFOFresh EVO. As is shown in the figure in an example of winter operation Fig.1 and in summer operation Fig.2

HEATING

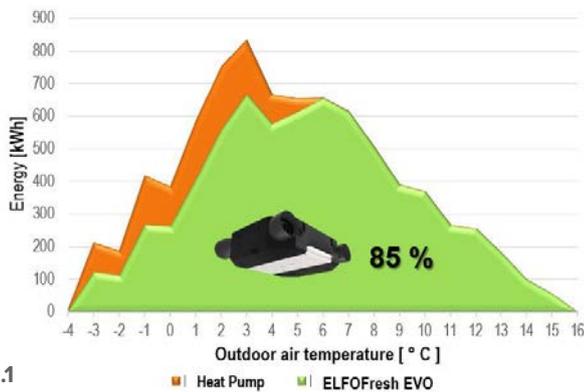


Fig.1

Passive cross-flow recovery units with 90% efficiency in heating and 75% in cooling

The passive recovery unit is able to supply, by recovering it from exhaust air, only a small percentage of the energy required by the building.

Il fabbisogno residuo deve quindi essere fornito da un impianto di condizionamento.

You can see how the energy contribution of the recovery unit is more limited than the thermodynamic recovery unit, in heating Fig.3 as much as in cooling Fig.4

HEATING

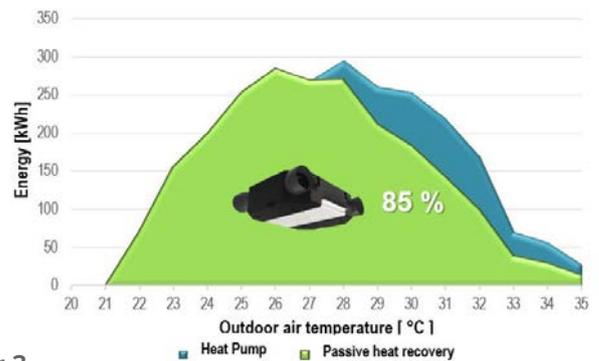


Fig.3

COOLING

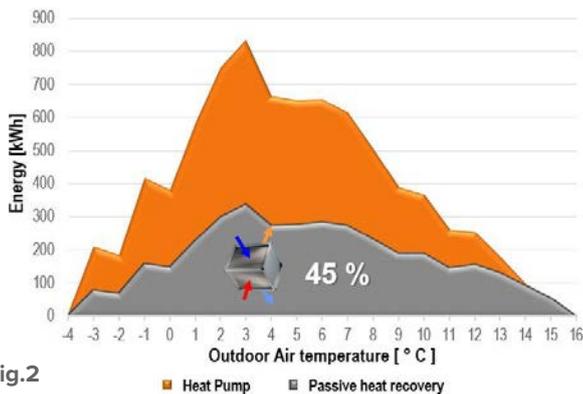


Fig.2

COOLING

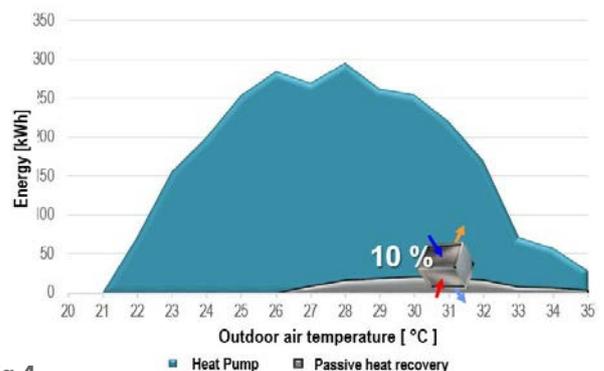


Fig.4

NOTE:

The example is referred to a single house in Milan (Italy), E climate zone, with the following characteristics:

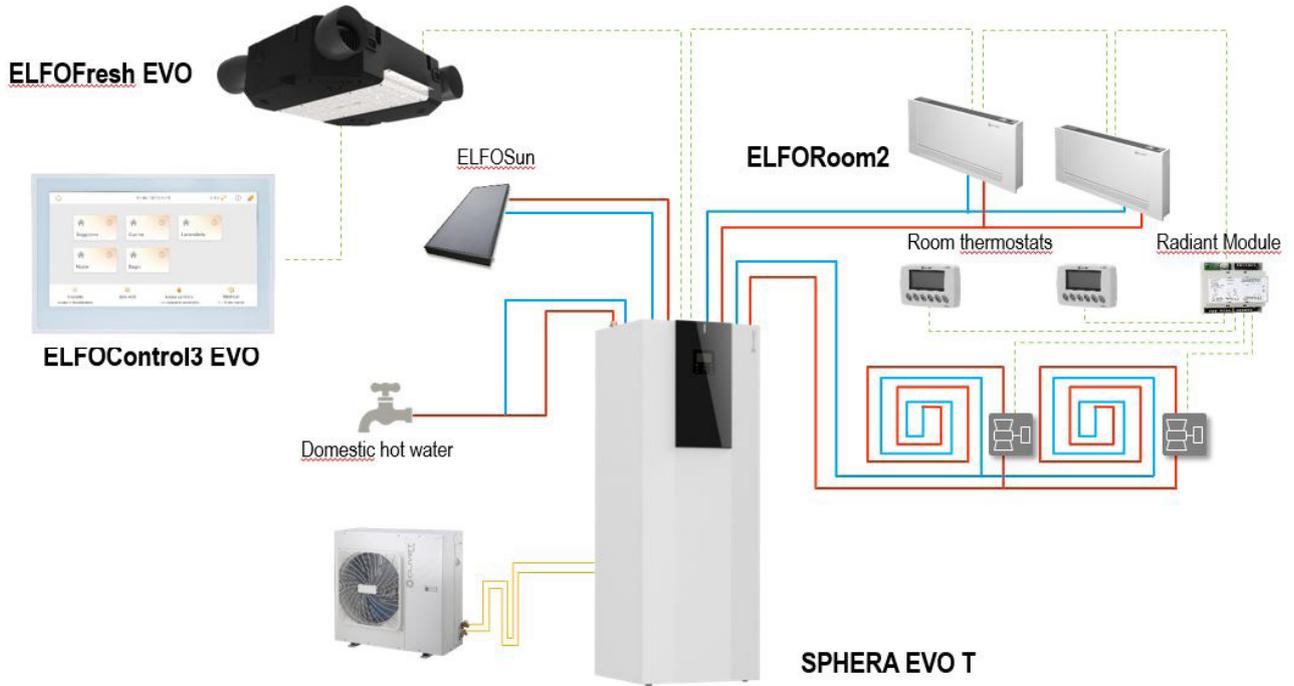
Surface: 150 m²; gross heated volume: 579 m³; exchanging surface: 340 m²; S/V ratio: 0,70 m⁻¹.

Coating: transmittance: (Uwall: 0,21; Ucover 0,20; Ubasement 0,21; Uframe: 1,2 W/m²K).

ELFOfresh EVO compatible with ELFOControl³

Advanced control system to manage the operation of the entire system.

- ▶ High seasonal efficiency thanks to the possible algorithm optimization by the control of all the system components
- ▶ Optimization of units efficiency and operation
- ▶ Comfort improvement (temperature, humidity, air quality, domestic hot water)
- ▶ Simply to use and complete system management
- ▶ Operation safety thanks to the energy source choice most suitable for each ambient condition.



Standard unit technical specifications

Compressor

Inverter controlled rotary-type hermetic compressor equipped with a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on anti-vibration mounts and it is equipped with oil charge.

The compressor is housed in a dedicated compartment, made of 20/10mm zinc-magnesium sheet metal clad with sound-absorbing and soundproofing material in polyester fibre, to minimise noise output.

Structure

Supporting structure made of zinc-magnesium sheet metal (density 60g/l) that ensures excellent mechanical features and high long-term resistance against corrosion.

Secondary structure in expanded polypropylene which gives the unit excellent thermal insulation, fire protection, air tightness (A1 class UNI EN 13141-7 in treatment area) and lightness during installation and maintenance.

The unit is fitted with rubber antivibration mounts for installation

Internal exchanger

Finned exchanger, made from copper pipes arranged in staggered rows and mechanically expanded for better adherence to the collar of the fins. The fins are made from aluminium with a special corrugated surface, set a suitable distance apart to ensure maximum heat exchange efficiency.

External exchanger

Finned exchanger, made from copper pipes arranged in staggered rows and mechanically expanded for better adherence to the collar of the fins. The fins are made from aluminium with a special corrugated surface, set a suitable distance apart to ensure maximum heat exchange efficiency.

Fan

Brushless centrifugal supply and exhaust fan with high energy efficiency with single suction directly coupled to an electric motor with EC electronic control with screw built into the expanded polypropylene structure.

Thanks to electronic regulation of the motor, the unit is able to maintain a constant air flow rate in order to reach a maximum static pressure value, according to the flow rate setting out of 5 levels selectable from the remote control.

Refrigeration circuit

Refrigeration circuit with:

- refrigerant charge
- High pressure safety pressure switch
- Low pressure safety pressure switch
- 4-way reverse cycle valve
- electronic expansion valve

The unit includes R32 refrigerant charge (300g).

Filter

Folded filter in outdoor air return and in room return.

Filter in synthetic fiber, bent at constant pitch with heat-shaping.

Ecologic frame.

ISO EN16890 and PM10 50% efficiency.

The filter can be completely incinerated.

Drain pan

Condensate collection tray in thermoformed ABS directly housed in the expanded polypropylene mould.

The tray has a condensate drain pump, safety float and emergency drain.

Electrical panel

Electrical panel located inside the unit and can be easily accessed from the bottom or sides via the removable panels.

The control section is made up of a card with microprocessor control that allows the unit control according to the different air input conditions.

The control section includes:

- Probe of the outdoor air temperature.
- ply air temperature probe
- supply air humidity probe
- temperature probe for air drawn from the room
- BMS management

Remote keypad for the user

Local room control allows you to:

- control only one ELFOFresh Evo unit
- set the desired temperature
- set the desired air flow rate
- turn it on/off
- change from Summer/Winter
- set ventilation only mode
- set the Automode operating mode
- set the dehumidify function (Low / Standard / ECO)
- set the silent function (Silent / Super silent)
- remote on-off
- manage diagnostics with a specific code for the type of error.

Size: 120X120X20 mm

The thermostat is connected to the unit by a shielded cable, 5x0.75mm² cable+shield (cables for energy, signals and controls transmission, shielded), at a maximum distance of 50m.

The cable must be installed chased or in a protected conduit, so that it is impossible for the end user to access it.

Outdoor air external bypass damper

Damper that draws air from the fresh air intake and brings it up to the exhaust coil. The damper, by means of an on-off actuator, is opened in summer operating, with the compressor in operation and with exhaust fan at max. speed, so as to increase the air flow to the condensing coil: In this way, cooling efficiency is increased without creating negative pressure in the room.

Accessories

EI - In-view installation

Accessories separately supplied

ELFOAir Air Distribution

Test

Unit built to ISO 9001 quality standards and subjected to functional testing at the end of the production line

Built-in options

ACCESSORY

DESCRIPTION

EI In-view installation

Mandatory configuration in the event that the unit is installed in rooms where accidental contact with people or things can occur. The unit is supplied with an additional cover in painted sheet. The accesses for ordinary maintenance remain unchanged.

performance

Size – CPAN-YIN

Supply airflow	l/s	35	42	58	75	89
Supply airflow	m ³ /h	125	150	210	270	320
A7						
▶ Heating capacity	kW	1,42	1,55	1,86	2,05	2,49
Total power input	kW	0,46	0,42	0,45	0,42	0,54
COP (EN 14511:2018)	-	3,09	3,69	4,13	4,93	4,61
A-5						
▶ Heating capacity	kW	1,97	2,10	2,21	2,37	2,45
Total power input	kW	0,40	0,52	0,47	0,37	0,32
COP (EN 14511:2018)	-	4,93	4,04	4,70	6,50	7,66
A30						
▶ Cooling capacity	kW	0,92	1,38	1,47	1,72	2,07
Total power input	kW	0,36	0,52	0,48	0,54	0,81
COP (EN 14511:2018)	-	2,56	2,65	3,06	3,21	2,56
A35						
▶ Cooling capacity	kW	1,57	1,64	1,73	1,92	2,23
Total power input	kW	0,36	0,52	0,53	0,55	0,81
EER (EN 14511:2018)	-	4,34	3,15	3,26	3,50	2,77
Rated static pressure supply fan	Pa	50	50	50	50	50
Max. static pressure supply fan	Pa	120	120	120	120	120
Standard power supply	V	220-240/~/50	220-240/~/50	220-240/~/50	220-240/~/50	220-240/~/50
Min. entering air temperature (D.B.)	(2) °C	-15	-15	-15	-15	-15
Sound pressure level	(1) dB(A)	34	35	37	41	45

All the data provided meets standard EN 14511:2018 and refers to an available head of 50 Pa.

A7 Ambient temperature 7°C D.B./ 6°C W.B., Extracted air temperature 20°C D.B./ 13.7°C W.B.

A-5 Ambient temperature -5°C D.B./ -5.4°C W.B., Extracted air temperature 20°C D.B./ 13.7°C W.B.

A30 Ambient temperature 30°C D.B./ 22°C W.B., Extracted air temperature 27°C D.B./ 19°C W.B.

A35 Ambient temperature 35°C D.B./ 24°C W.B., Extracted air temperature 27°C D.B./ 19°C W.B.

1. Available static pressure with clean air filter
2. The sound levels refer to units in nominal test conditions, and refers to an available head of 50 Pa.

Average sound pressure level, according to UNIEN ISO 3744, is measured at 1m distance from the unit surface, when installed in false ceiling and connected to ducts.

construction

SIZE 2

Compressor			
Type of compressors	(1)	-	ROT
Refrigerant			R32
No. of compressors	Nr		1
Gradini capacità (ST)	%		20-100
Oil charge	[l]		0,017
Refrigerant charge	[kg]		0,3
Refrigerant circuits	[Nr]		1
Treatment Area Fans (Supply)			
Type of fans	(2)		CFG
No. of fans			1
Fan diameter	[mm]		140
Type of motor	(3)		EC
Airflow	[mc/h]		125-320
Treatment Area Fans (Ripresa)			
Type of fans	(2)		CFG
No. of fans			1
Fan diameter	[mm]		140
Type of motor	(3)		EC
Airflow	[mc/h]		125-400
Connections			
Condensate drain	(4)	[mm]	32
Electrical data			
F.L.A. Compressor 1	(5)	[A]	4,1
F.L.A. Single supply fan	(5)	[A]	0,62
F.L.A. Single exhaust air fan		[A]	0,62
F.L.A. Total		[A]	5,45
F.L.I. Compressor 1		[kW]	0,91
F.L.I. Single supply fan		[kW]	0,08
F.L.I. Single exhaust air fan		[kW]	0,08
F.L.I. Total		[kW]	1,08

1. ROT = rotary compressor
2. CFG = centrifuge fan
3. EC = EC Electronic switching motor
4. Connessione scarico condensa, diametro esterno
5. Data refer to standard units. Power supply 220-240V~/50Hz Voltage variation: max +/-6%

General technical data

sound levels - Cooling

[m³/h]	SOUND POWER LEVEL (DB) Octave band (Hz)								Sound power level	Sound pressure level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
125	27	25	37	40	34	30	29	30	34	47
150	28	26	38	40	35	31	30	31	35	48
210	31	32	38	41	42	36	30	26	37	50
270	32	34	41	42	45	41	37	27	41	54
320	36	38	45	46	49	45	41	31	45	58

Sound levels are referred to unit at nominal condition when installed in false ceiling and connected to ducts. External static pressure 50 Pa.

Cooling: Ambient temperature 35°C D.B./ 24°C W.B., Extracted air temperature 27°C D.B./ 19°C W.B.

Average sound pressure level, according to UNIEN ISO 3744, is measured at 1m distance from the unit surface, when installed in false ceiling and connected to ducts. Power measurements are according to UNI EN ISO 9614-2, with unit connected to ducts and installed in the vicinity of a reflecting surface, allowing 2 dB (A) tolerance. Noise values referred to:

- standard operation with air flow rate from 320mc/h to 125mc/h
- SILET mode with air flow rate from 210mc/h to 125mc/h
- SUPER SILET mode with air flow rate 125mc/h

SILENT and SUPER SILENT modes (setting from remote control) operate a reduction of compressor and fan speed, reducing their noise emission. Please note that noise levels may differ significantly if the unit is installed in different conditions (ex: with surrounding obstacles, walls or similar).

sound levels - Heating

[m³/h]	SOUND POWER LEVEL (DB) Octave band (Hz)								Sound power level	Sound pressure level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
125	24	23	33	40	34	27	24	31	33	46
150	25	24	34	40	35	28	25	32	34	47
210	30	32	37	40	38	33	27	26	36	49
270	30	32	39	40	43	39	34	33	39	52
320	34	36	43	43	47	43	38	37	43	56

Sound levels are referred to unit at nominal condition when installed in false ceiling and connected to ducts. External static pressure 50 Pa.

Heating: Ambient temperature 7°C D.B./ 6°C W.B., Extracted air temperature 20°C D.B./ 13.7°C W.B.

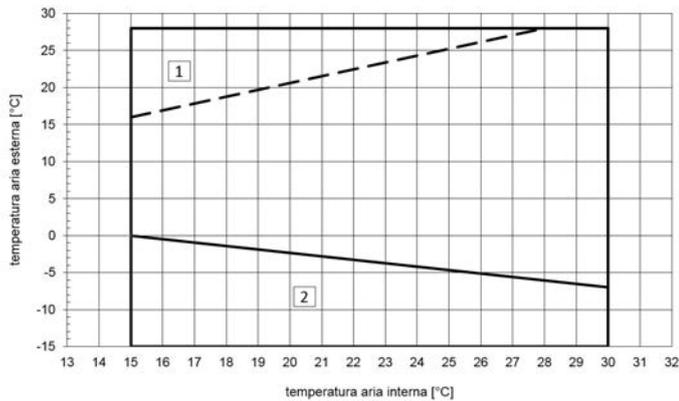
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SILENT and SUPER SILENT modes (setting from remote control) operate a reduction of compressor and fan speed, reducing their noise emission. Please note that noise levels may differ significantly if the unit is installed in different conditions (ex: with surrounding obstacles, walls or similar).

Operating range

Heating



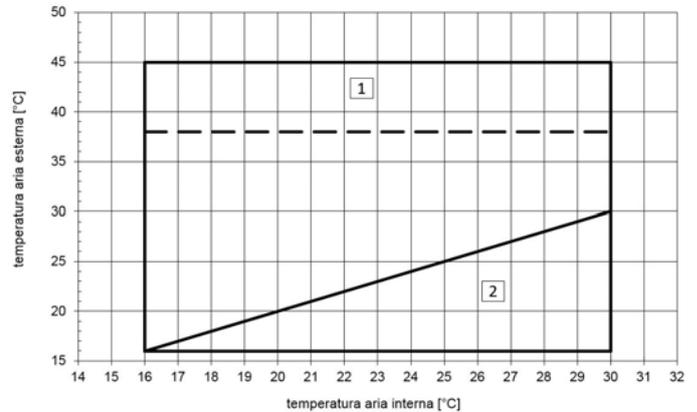
The limits are meant as a guide. Please note that they have been calculated by considering:

- nominal airflow
- exchangers and clean filters
- straightforward unit installation and correct use and maintenance of the unit itself.
- operating range with outdoor relative humidity > 50%

1. Possible FREE-HEATING range
2. Operating range with possible supply air flow modulation; defrosting may occur

The unit can modulate the air flow rate in order to keep operating in the operating range

Cooling



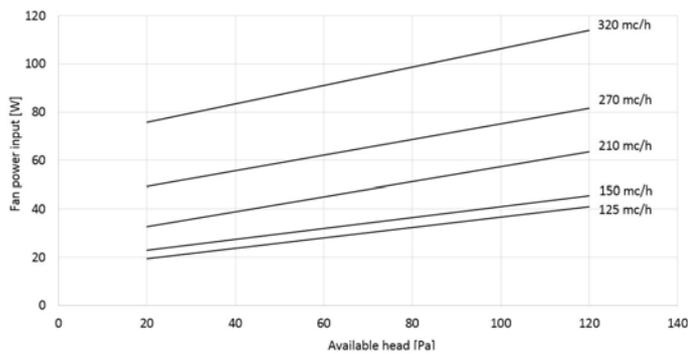
The limits are meant as a guide. Please note that they have been calculated by considering:

- nominal airflow
- exchangers and clean filters
- straightforward unit installation and correct use and maintenance of the unit itself.

1. Operating range with outdoor relative humidity <40%
2. Possible FREE-COOLING range

The unit can modulate the air flow rate in order to keep operating in the operating range

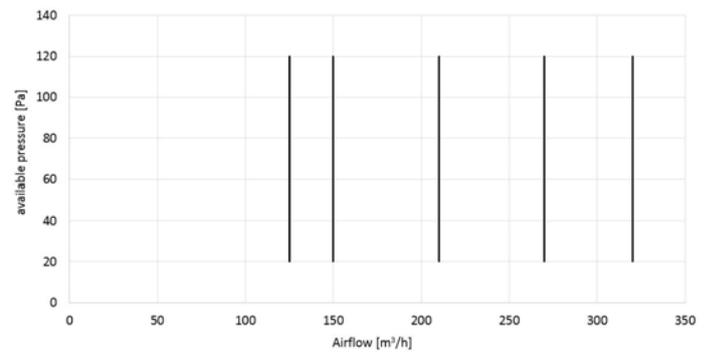
Electrical input of the fan



Power input related to the single fan in heating mode at the following conditions:

- Ambient temperature 7°C D.B./ 6°C W.B.
- Extracted air temperature 20°C D.B./ 13.7°C W.B
- Data with unit correct, installation and usage

Fan available pressure



Performance data take into account all pressure losses internal to the unit (heat exchanger, std filter etc.)

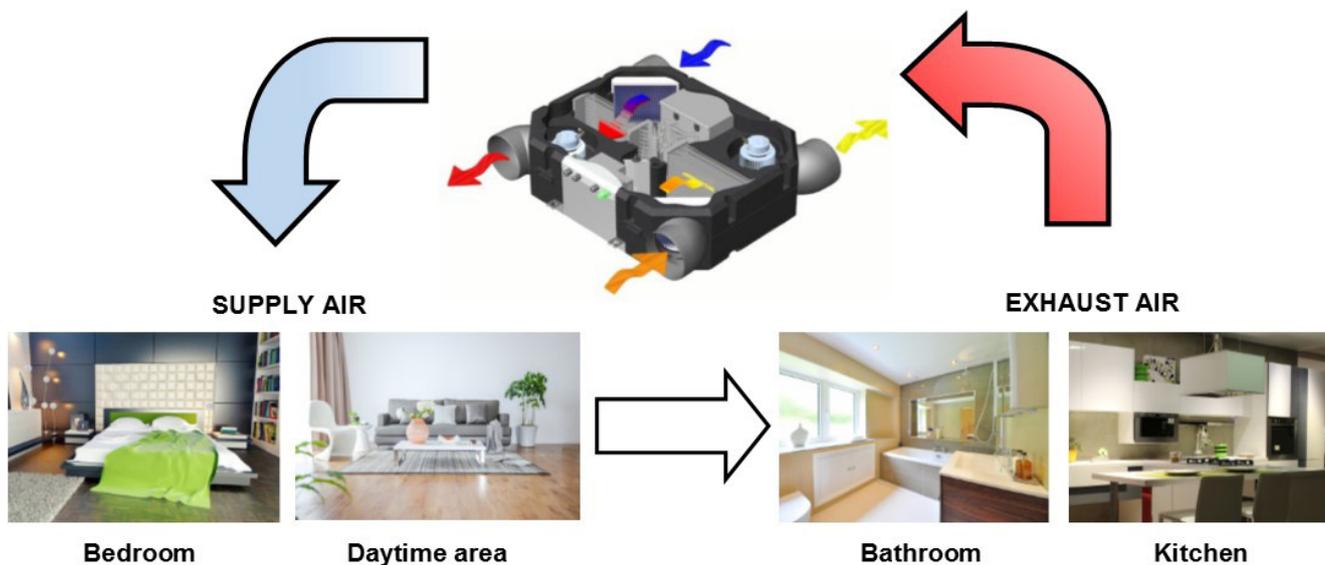
Performances criteria

ELFOFresh EVO size selection

ELFOFresh EVO is available in one size only but it can work with the following settable flow rates 125, 150, 210, 270 and 320 m³/h. The flow rate at which the unit must work is set based on the volumes of air renewal.

In the framework of “residential” ventilation, the calculation of the necessary air flow rate according to the type of house can be performed through the air renewal method, i.e. the number of times that it is necessary to integrally change the air in the room over a specific period (generally, it is considered as no. of changes/hour or volumes/hour).

As for houses, it is a good habit to perform air renewals of 0.5 volumes/hour, max. 1 volume/hour.



Example

To illustrate the design criteria of ELFOFresh EVO the following shows a typical application example that focuses on a house of 180 m² consisting of 9 rooms. The table lists the size of the rooms and the air flow rates of the individual rooms calculated on the basis of the size of the selected ELFOFresh EVO.

If during the planning stage one considers choosing a renewal rate of 0.5 Volumes per hour, the renewal capacity will be the product of the home volume multiplied by the rate of renewal.

	Room	Surface	Height	Volume	Flow-rate
		m ²	m	m ³	m ³ /h
Air supply (noble room)	Livingroom	32	2.7	86.4	55
	1 room	14	2.7	37.8	65
	2 room	15	2.7	40.5	30
	3 room	11	2.7	29.7	30
	4 room	12	2.7	32.4	30
Extraction (technical room)	Kitchen	12	2.7	32.4	65
	1 bathroom	6	2.7	16.2	50
	2 bathroom	5	2.7	12.0	45
	3 bathroom	4	2.7	10.8	50
Other	Hallway and Closet	14	2.4	33.6	0

In our example, it will be $332\text{m}^3 \times 0,5 = 166 \text{ m}^3/\text{h}$.

The ELFOFresh EVO air flow rate to be selected can be 210 m³/h with a renewal rate of 0.62 Vol/h.

It should be highlighted that the calculated renewal rate refers to the total volume of the house. In fact, since the supply takes place in the noble rooms and the removal from the technical rooms, the actual renewal in the individual rooms is greater than the total renewal rate.

For example, if we choose to use the ELFOfresh EVO at the nominal flow rate of 210 m³/h, the renewal rate in the noble rooms (total noble room volume = 227 m³) is $210/227 = 0,92 \text{ Vol/h}$ while the rate of renewal in the technical rooms (total technical room volume = 71 m³) è di $210/71 = 2,95 \text{ Vol/h}$.

Defining airflow rate for each individual room

The last column of the table shows the air flow rates necessary for each individual room to ensure proper exchange of air. The room designated as corridor has no supply or extraction grille because it is an area used by the occupants to move between the various rooms and where the renewal air is blown into the noble rooms for the corridor in order to be sucked into the technical rooms.

The renewal air airflow for each noble room can be calculated using the rate for noble rooms, i.e. 0.65 Vol/h multiplied by the volume of the individual room. *Example: living room = 135 m³ air flow = 135 x 0,65 = 88 m³/h rounded to 90 m³/h*

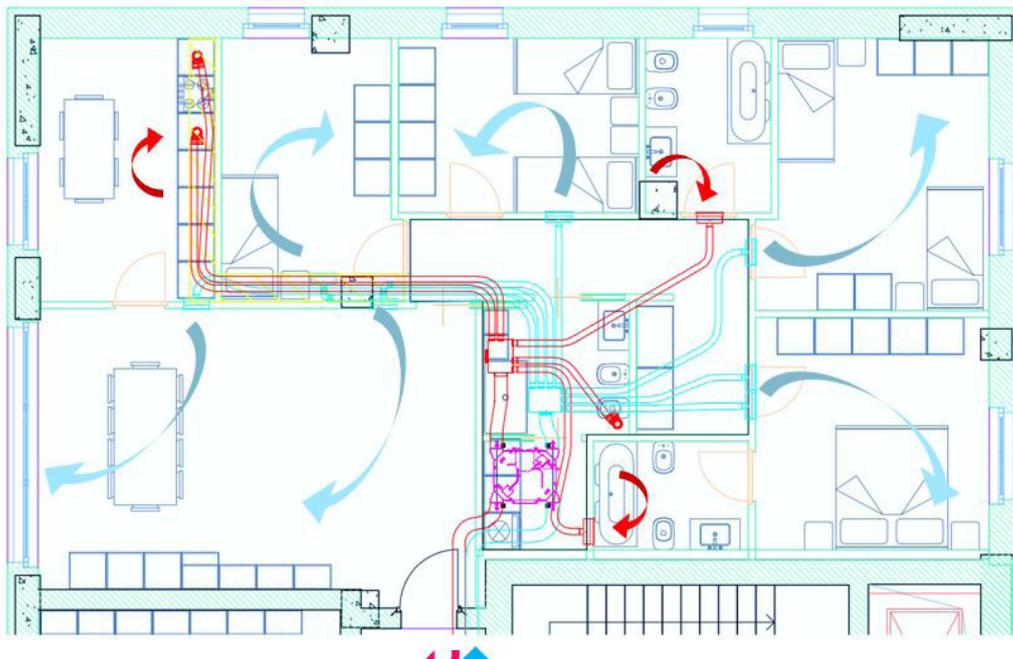
Similarly the return airflow rates for each single room is equal to the rate of renewal in the technical rooms multiplied by the volume of the room. *Example: bathroom = 40,5 m³ air flow = 40,5 x 1,39 = 56,9 m³/h rounded to 50 m³/h*

Once the air flow rates have been defined for each room you need to define the type of grille to be used according to the installation (ceiling, wall, floor) and the best distribution of air in the room.

As you can see in the example, a decision was made to use AIRJET diffusers which due to their characteristics, provide adequate air launch which allows the entire volume of the room to be affected and jointly a modest and confined aeraulic distribution in the false ceiling in the corridor.

In the living room, due to the conformation of the room and maximum airflow rate of the AIRJET diffuser, a decision was made to split the input flow into two points.

Note: where the designer would follow the UNI EN 10339 technical regulations, he must consider the overcrowding respecting the requested parameters of 11 l/s (40m³/h) of air renewal per person and at least 4 volumes per hour of air renewal in the bathroom.



Overall comfort with ELFOAir

ELFOFresh EVO integrates with ELFOAir, the air distribution system that can be configured via web, easy to install for maximum efficiency and total silence.

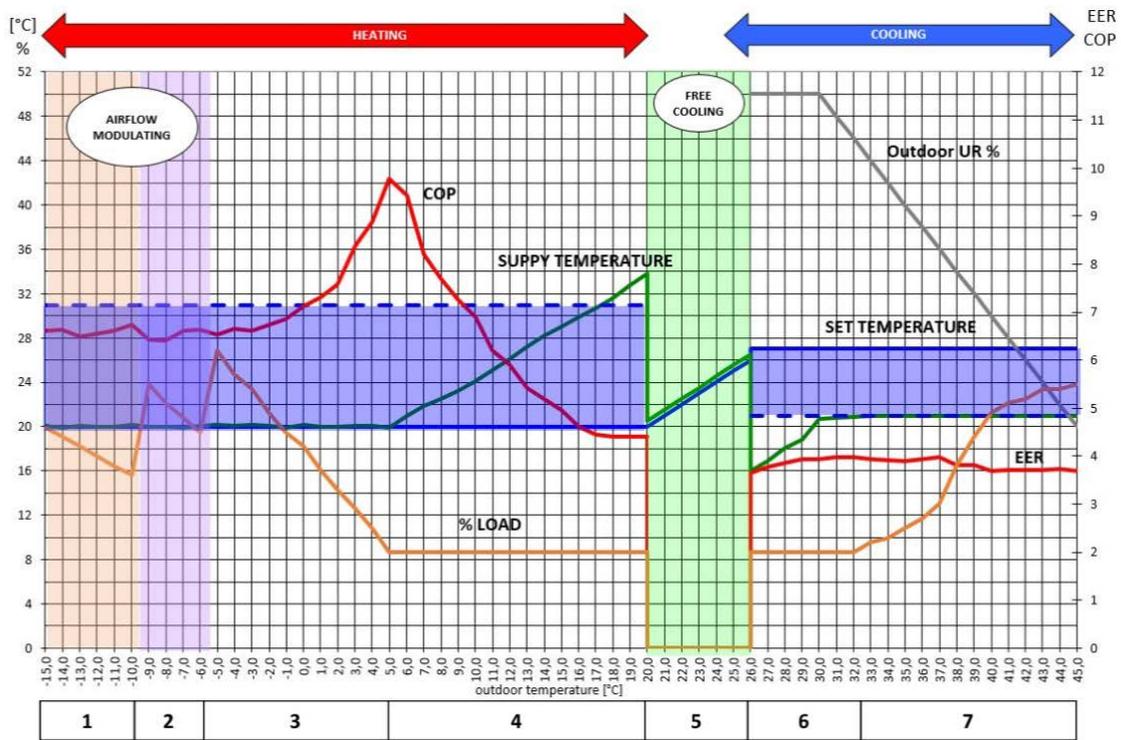
ELFOAir is suitable for new homes and for renovations thanks to the walkable and isolated flexible ducts, which reduce installation spaces and leave maximum freedom of design. The reduced number of elements and the Plug&Play connections simplify and speed up installation, thereby guaranteeing perfect tightness and reliability. The silver ion treated plastic film that lines the ducts has excellent antibacterial and antistatic properties for maximum hygiene of the fresh air. The smooth interior ensures low pressure drops, thus reducing consumption for ventilation. The special AIRJET diffusers fitted on it guarantee an even distribution of the air and integrate perfectly into any architectural context.

The modular ELFOAir system with plug&play connection of the various elements makes the system extremely easy and quick to install.

A complete system destined to take on an increasingly decisive role in modern homes with reduced thermal loads.

Performances criteria

Reading of graphics about ELFOFresh EVO operation and performances criteria



Graphic referred to:

- Nominal air flow rate 2170mc/h
- heating return air 20°C D.B. / 13.7°C W.B.
- Cooling return air 27°C D.B. / 19°C W.B.
- at typical residential application set-points: 20°C heating; 27°C cooling

In the graphic the following variables are present:

SET TEMPERATURE = Room set-point temperature set on remote control.

SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO

COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018

Outdoor UR % = outdoor air relative humidity [%]

% LOAD = Compressor load 20-100% [%]

The curve describing supply air temperature can be useful to understand the unit functioning.

1) Outdoor air temperature from -15°C to -10°C

In this range, while operating in heating, supply air temperature is set to a comfortable value (for example 20°C) thanks to supply air flow rate and compressor modulation.

2) Outdoor air temperature from -10°C a -5°C

In this range, while operating in heating, supply air temperature is set to a comfortable value (for example 20°C) thanks to supply air flow rate and compressor modulation.

3) Outdoor air temperature from -5°C to 5°C

In this range, while operating in heating, supply air temperature is set to a comfortable value (for example 20°C) thanks to compressor modulation at the set air flow rate.

4) Outdoor air temperature from 5°C to 20°C

In this range, while operating in heating, compressor operates at minimum regime, so that the supply air temperature increases proportionally to outdoor air temperature.

5) Outdoor air temperature from 20°C to 26°C

In this operating range, the compressor is turned off and the unit works with FREE-COOLING, so with ventilation only.

In this operating range, we have the maximum reachable efficiency, increasing with the temp. difference between indoor and outdoor, as the only power input is to the fans

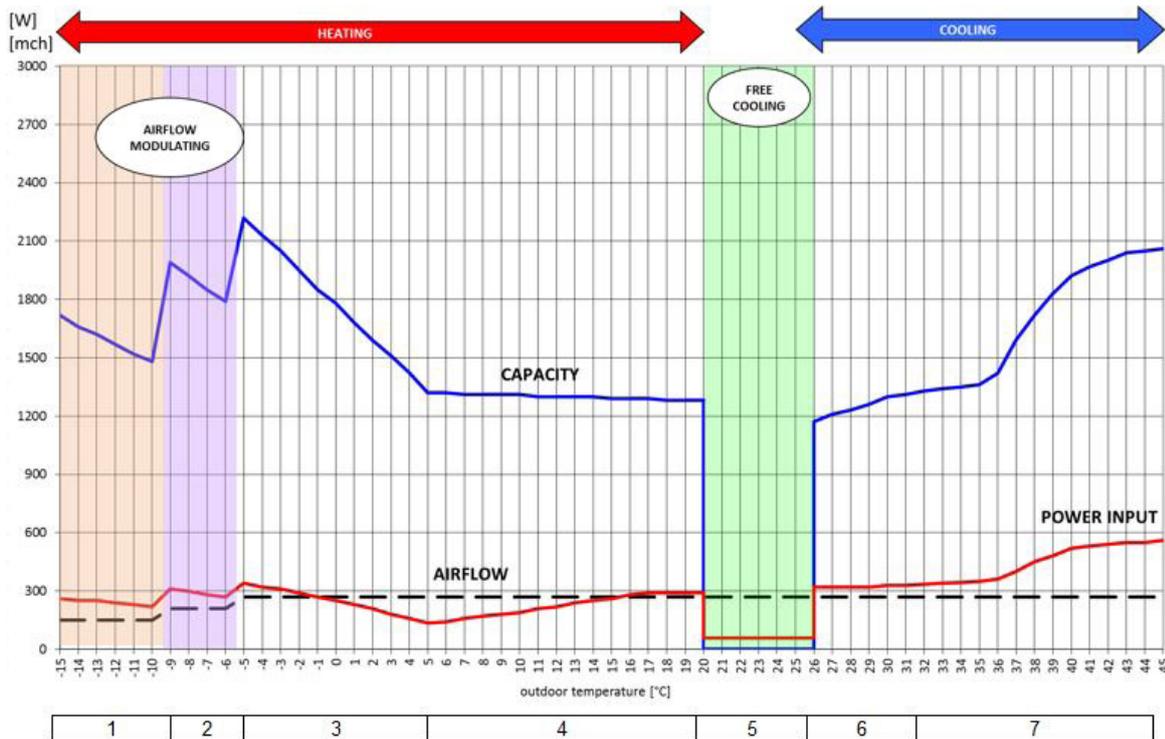
6) Outdoor air temperature from 26°C to 32°C

The compressor starts switching to cooling mode, working at minimum regime, allowing supply air temperature in the range 16-21°C.

7) Outdoor air temperature from 32°C to 45°C

In this range, while operating in cooling, supply air temperature is set to a comfortable value (example 27°C).

Generally speaking, ELFOFresh EVO will modulate the compressor when a lower humidity level on the supply flow is necessary, according to the setting.



Graphic referred to:

Nominal air flow rate 2170mc/h

heating return air 20°C D.B. / 13.7°C W.B.

Cooling return air 27°C D.B. / 19°C W.B.

at typical residential application set-points: 20°C heating; 27°C cooling

In the graph are represented the following variables:

CAPACITY = heating / cooling capacity according to EN14511: 2018

POWER INPUT = Power input according to EN14511:2018

AIRFLOW = Room air flow rate supply [mc/h]

As in the graphic in the previous page, we can identify 7 operating ranges:

1) Outdoor air temperature from -15°C to -10°C

In this range, while operating in heating, the performance depends on the supply air flow rate and the compressor, in order to allow a comfortable supply air temperature (for example 20°C)

2) Outdoor air temperature from -10°C to -5°C

In this range, while operating in heating, the performance depends on the supply air flow rate and the compressor, in order to allow a comfortable supply air temperature (for example 20°C)

3) Outdoor air temperature from -5°C to 5°C

In this range, while operating in heating, the performance depends on the compressor modulation, in order to achieve the pre-set constant air flow rate value at a comfortable supply air temperature (for example 20°C).

This is highlighted by the increasing value COP.

4) Outdoor air temperature from 5°C to 20°C

In this range, while operating in heating, the compressor operates at minimum regime, so that the capacity is almost constant and independent from the outdoor air temperature.

5) Outdoor air temperature from 20°C to 26°C

In this operating range, the compressor is turned off and the unit works with FREE-COOLING, so with ventilation only.

In this operating range, we have the maximum reachable efficiency, increasing with the temp. difference between indoor and outdoor, as the only power input is to the fans

6) Outdoor air temperature from 26°C to 32°C

The compressor starts switching to cooling mode, working at minimum regime, allowing supply air temperature in the range 16-21°C. Consequently, the capacity is almost constant.

7) Outdoor air temperature from 32°C to 45°C

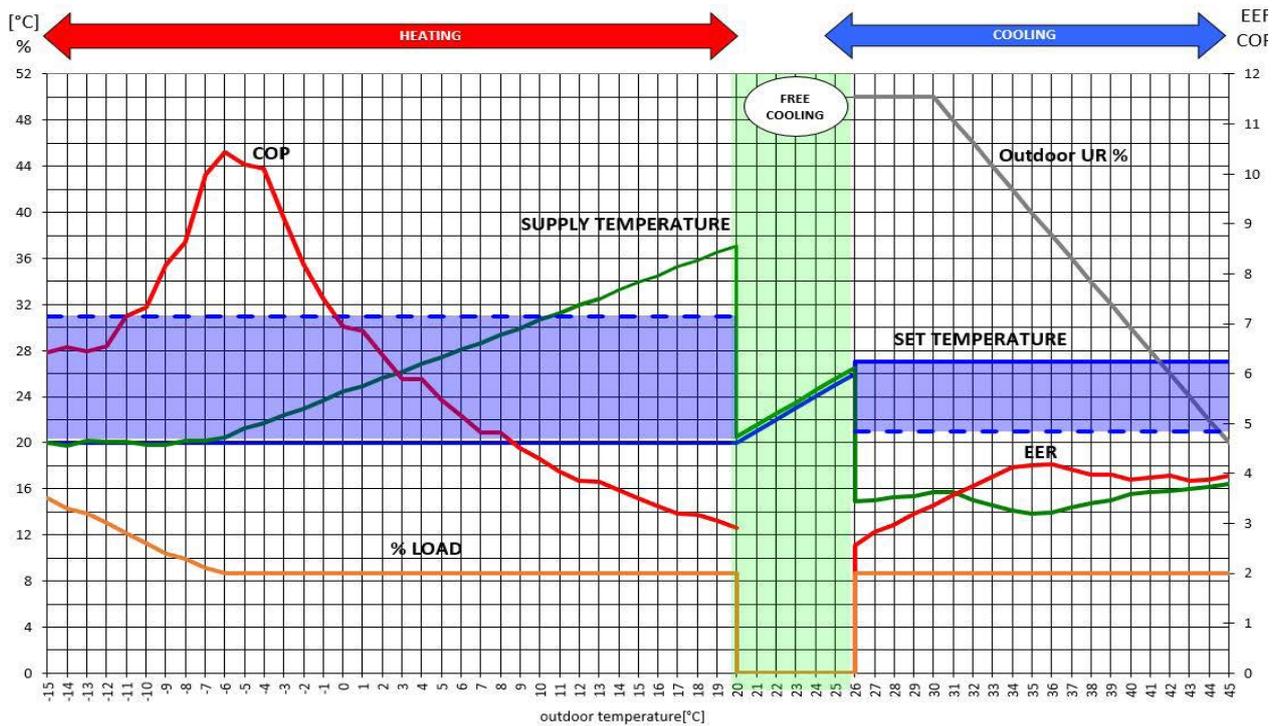
In this range, while operating in cooling, in order to keep the supply air temperature to a comfortable value (example 27°C), the capacity increases proportionally to the outdoor air temperature.

If necessary, in this range, the unit can operate with air flow rate modulation in order to stay in the operating field.

Thanks to the supply of controlled, clean air in the building and, at the same time, the extraction from high humidity rooms (bathroom, kitchen) the unit avoids the increase of humidity level in the building.

Operating criteria

Airflow 125 m³/h



In the graphic the following variables are present:

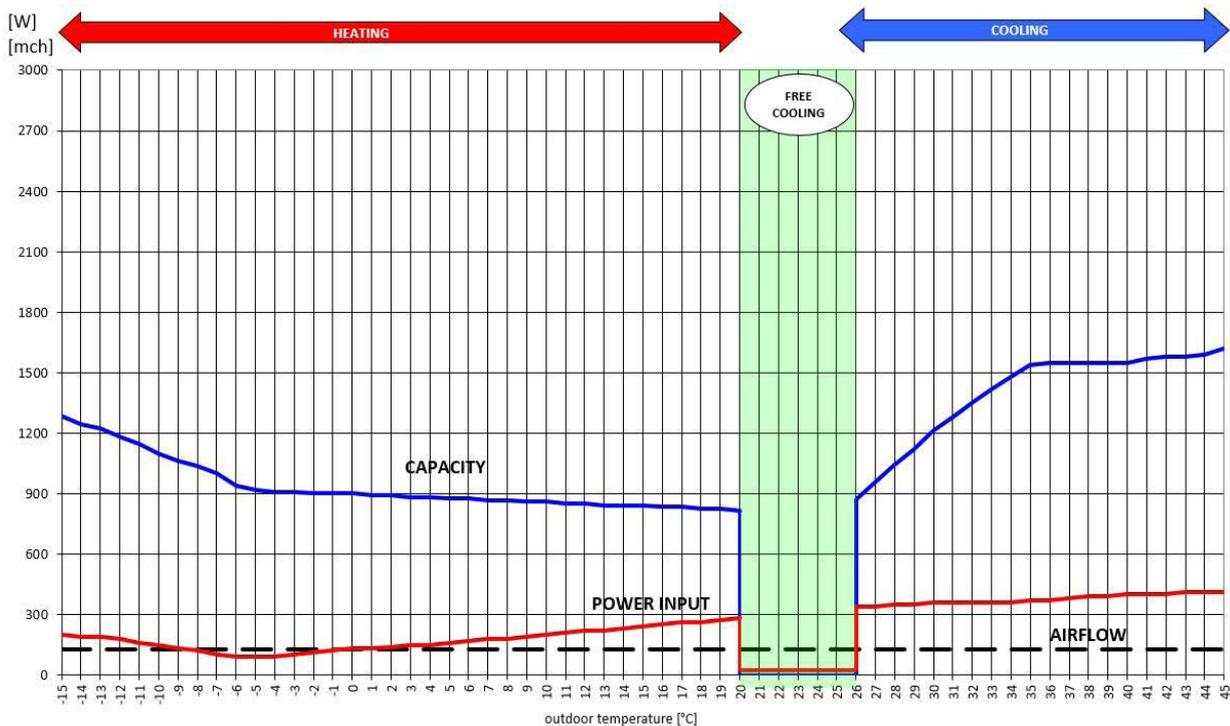
SET TEMPERATURE = Room set-point temperature set on remote control.

SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO

COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018

Outdoor UR % = outdoor air relative humidity [%]

% LOAD = Compressor load 20-100% [%]



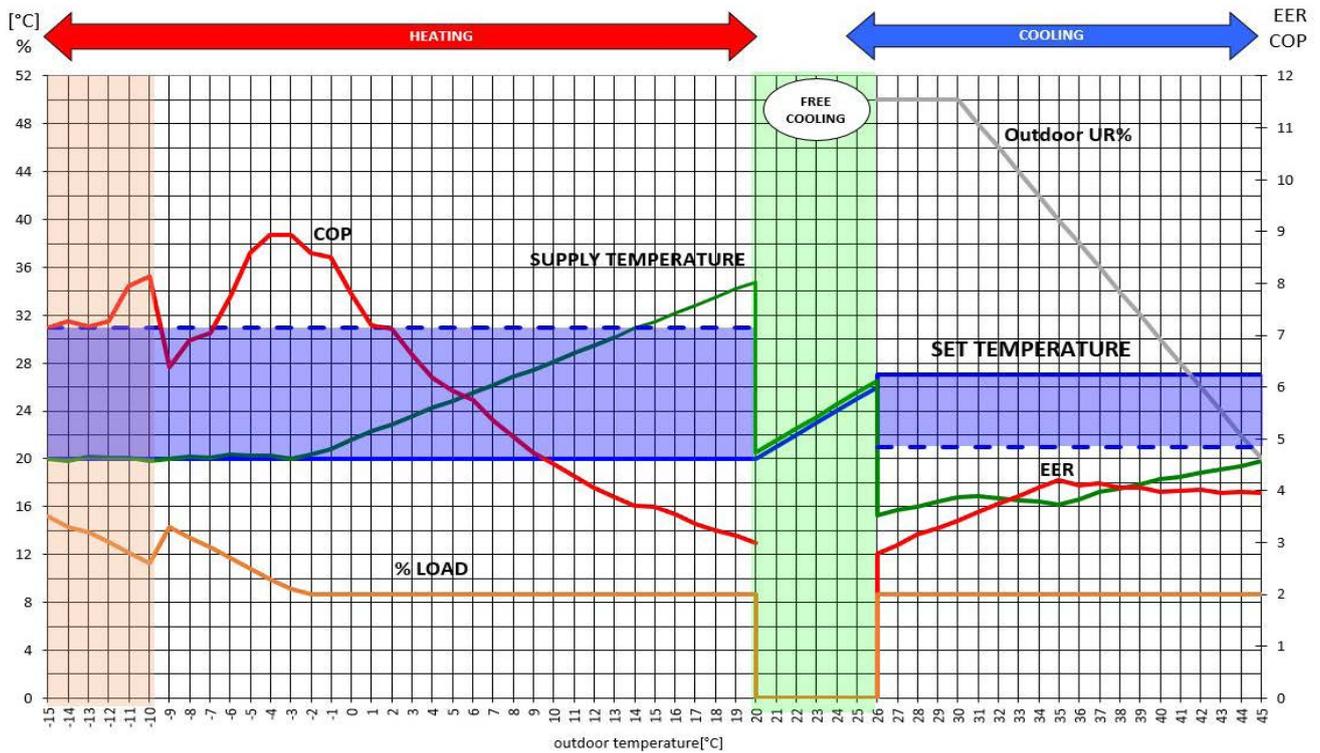
In the graph are represented the following variables:

CAPACITY = heating / cooling capacity according to EN14511: 2018

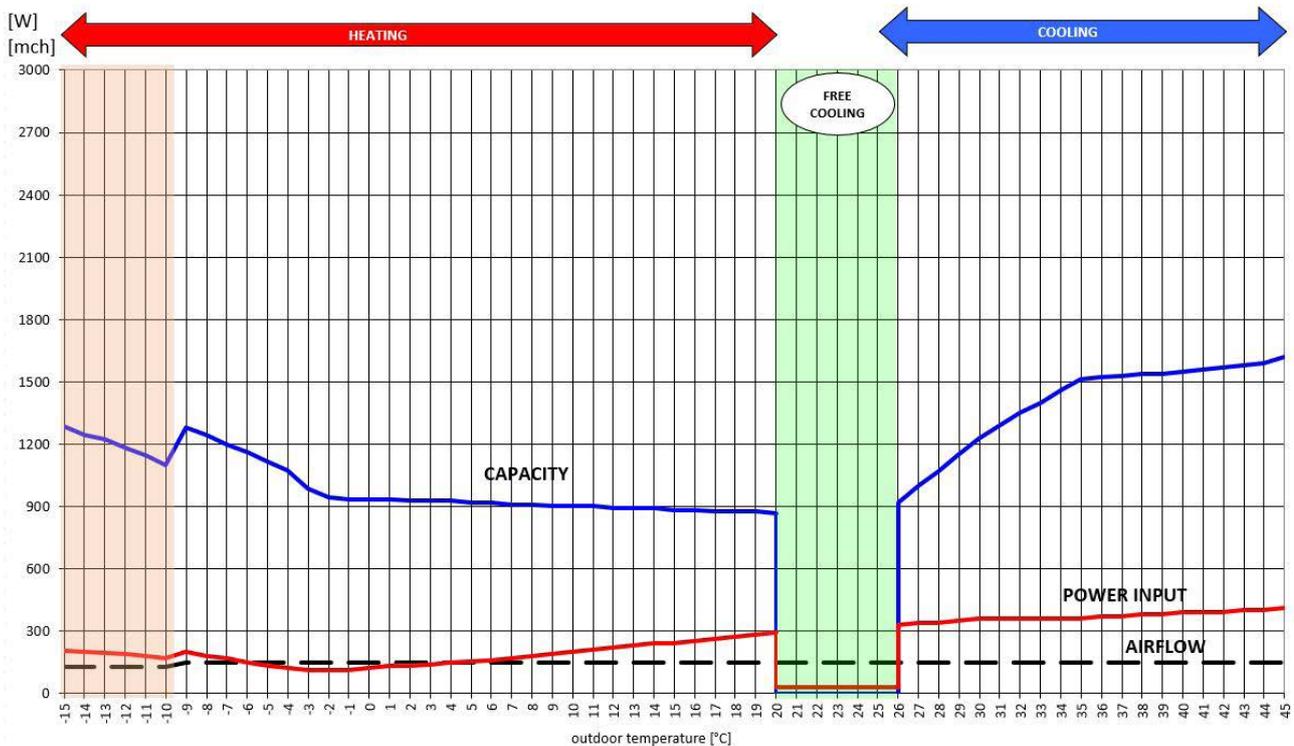
POWER INPUT = Power input according to EN14511:2018

AIRFLOW = Room air flow rate supply [mc/h]

Airflow 150 m³/h



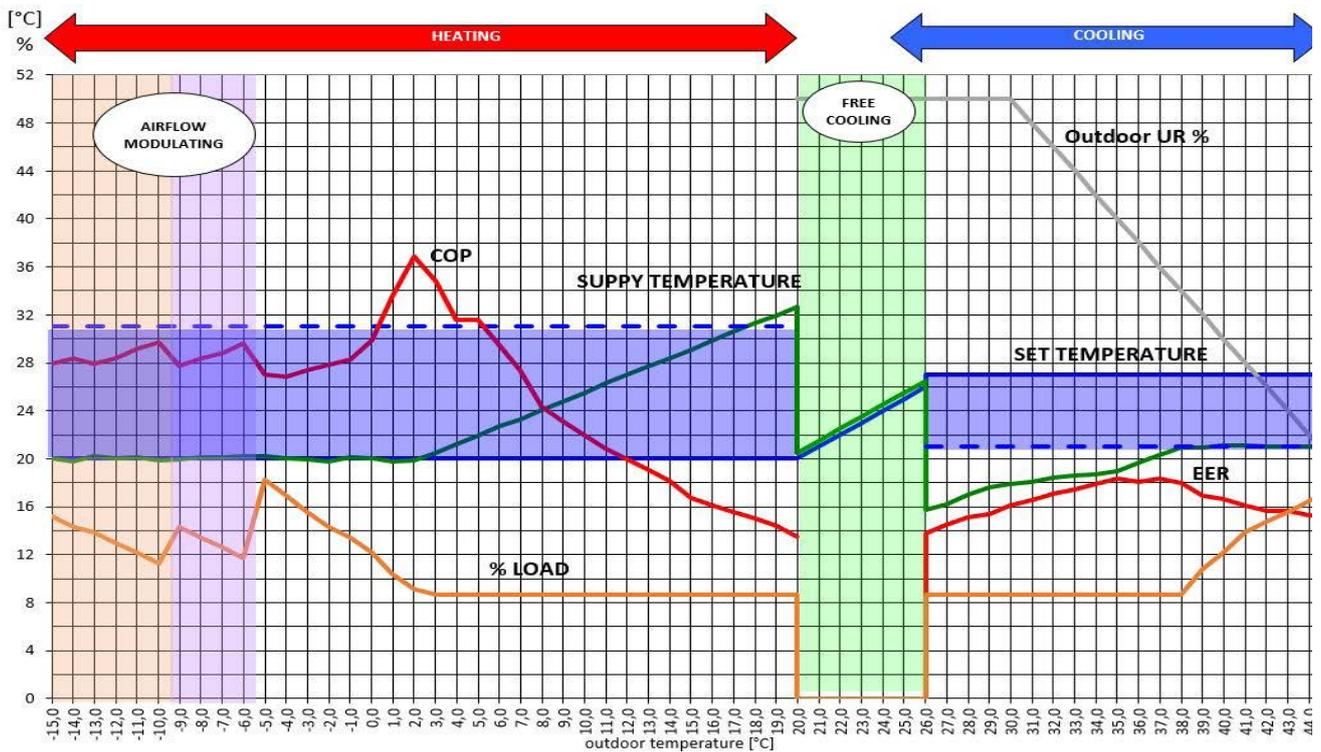
In the graphic the following variables are present:
SET TEMPERATURE = Room set-point temperature set on remote control.
SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO
COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018
Outdoor UR % = outdoor air relative humidity [%]
% LOAD = Compressor load 20-100% [%]



In the graph are represented the following variables:
CAPACITY = heating / cooling capacity according to EN14511: 2018
POWER INPUT = Power input according to EN14511:2018
AIRFLOW = Room air flow rate supply [mch/h]

Operating criteria

Airflow 210m³/h



In the graphic the following variables are present:

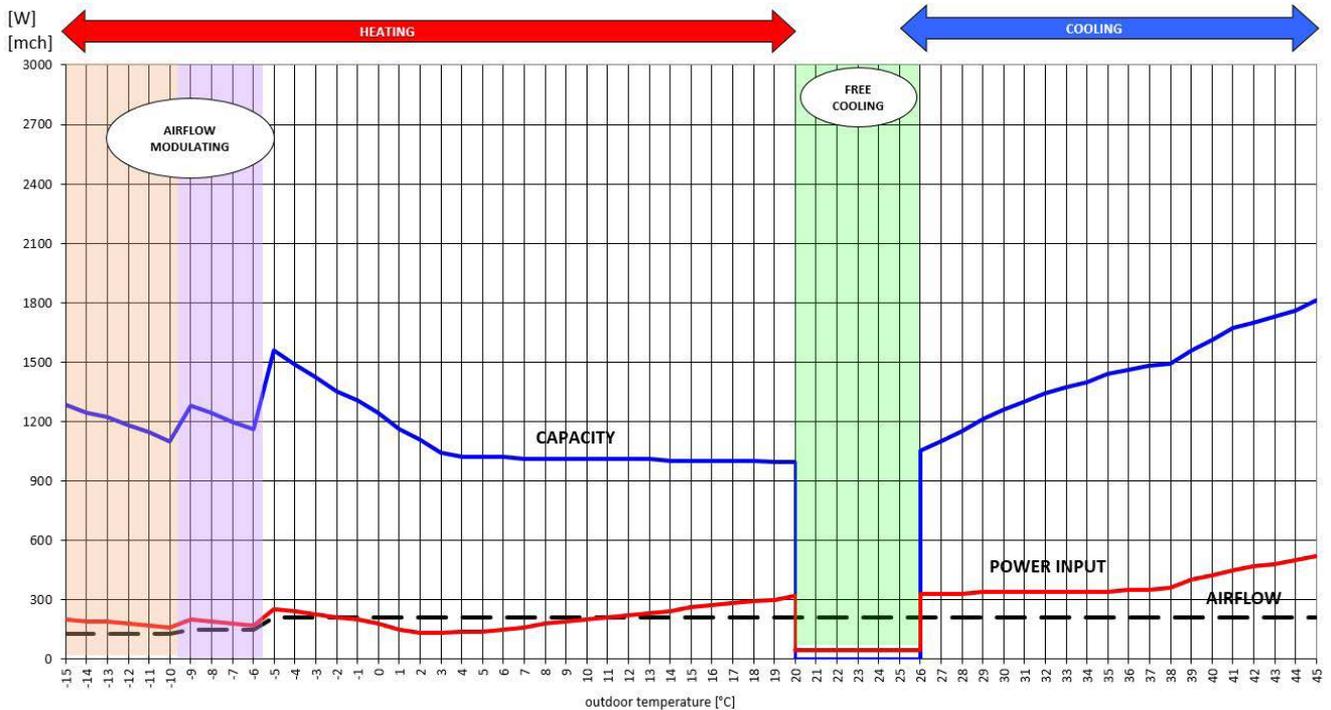
SET TEMPERATURE = Room set-point temperature set on remote control.

SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO

COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018

Outdoor UR % = outdoor air relative humidity [%]

% LOAD = Compressor load 20-100% [%]



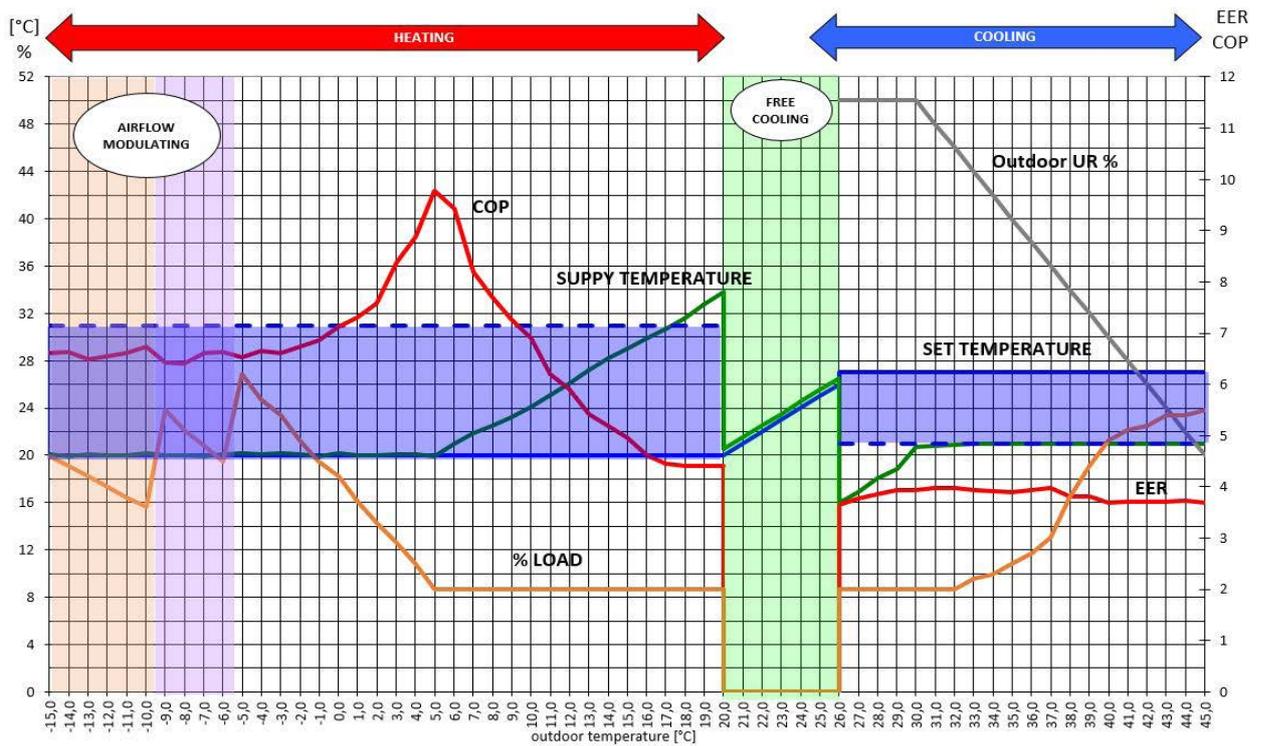
In the graph are represented the following variables:

CAPACITY = heating / cooling capacity according to EN14511: 2018

POWER INPUT = Power input according to EN14511:2018

AIRFLOW = Room air flow rate supply [mch/h]

Airflow 270 m³/h



In the graphic the following variables are present:

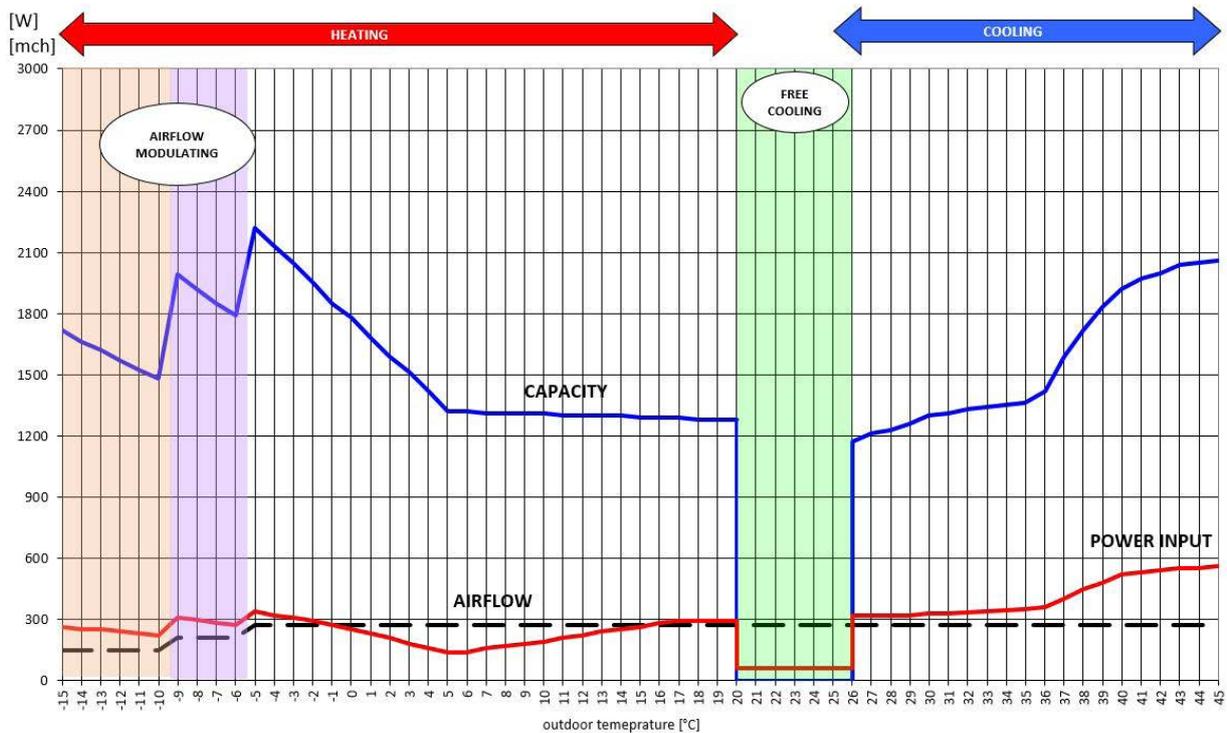
SET TEMPERATURE = Room set-point temperature set on remote control.

SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO

COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018

Outdoor UR % = outdoor air relative humidity [%]

% LOAD = Compressor load 20-100% [%]



In the graph are represented the following variables:

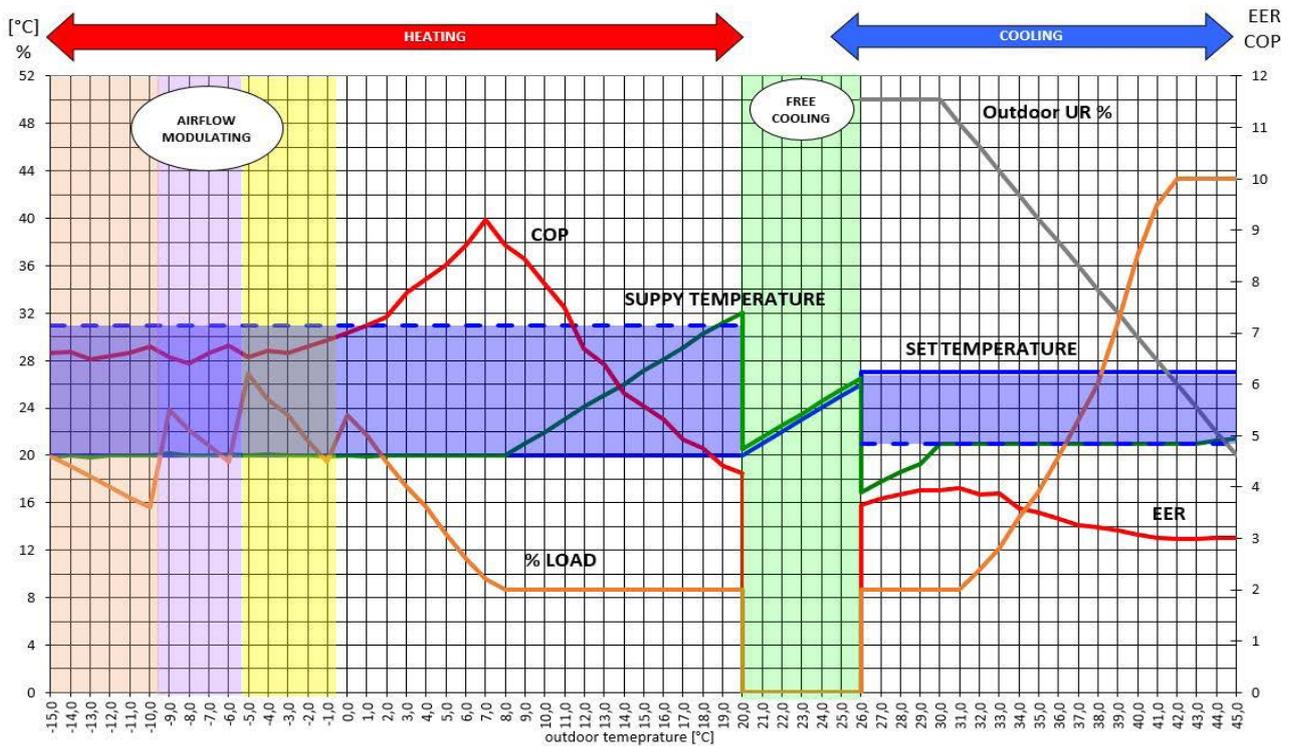
CAPACITY = heating / cooling capacity according to EN14511: 2018

POWER INPUT = Power input according to EN14511:2018

AIRFLOW = Room air flow rate supply [mc/h]

Operating criteria

Airflow 320 m³/h



In the graphic the following variables are present:

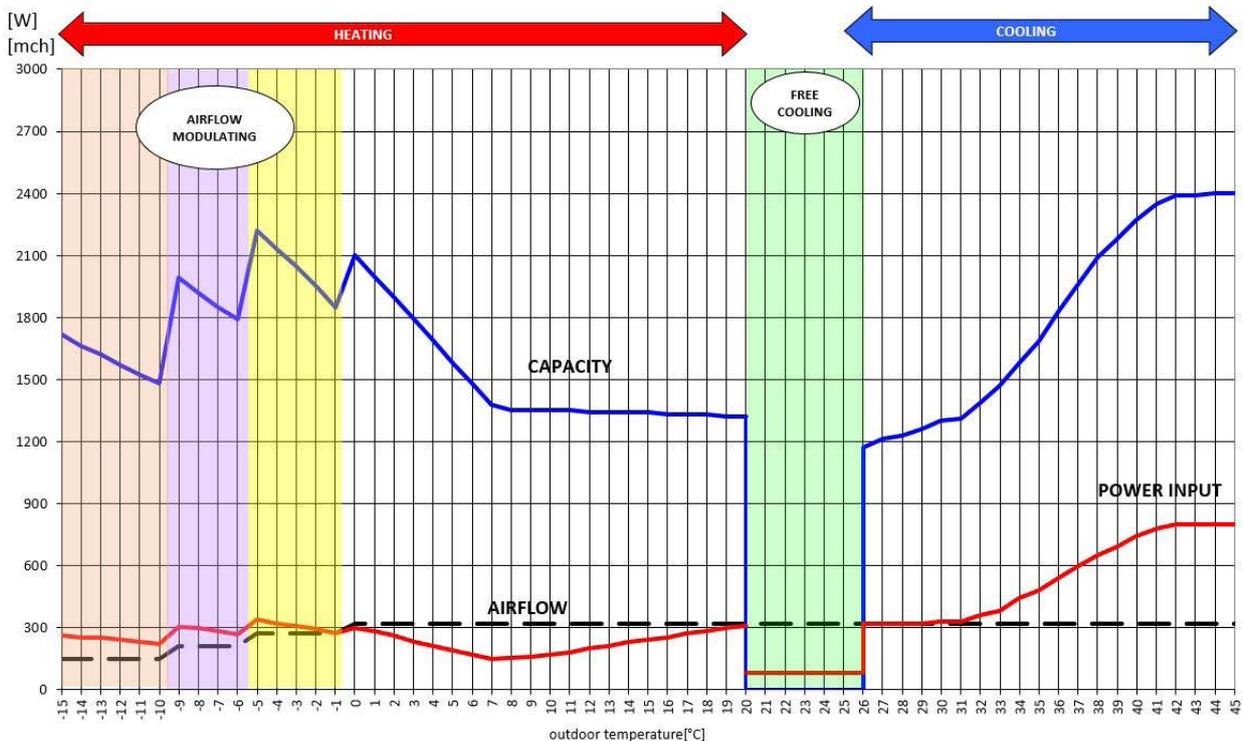
SET TEMPERATURE = Room set-point temperature set on remote control.

SUPPLY TEMPERATURE = Supply air temperature from ELFOFresh EVO

COP/EER = Heating (COP) and cooling (EER) performance coefficients according to EN14511:2018

Outdoor UR % = outdoor air relative humidity [%]

% LOAD = Compressor load 20-100% [%]



In the graph are represented the following variables:

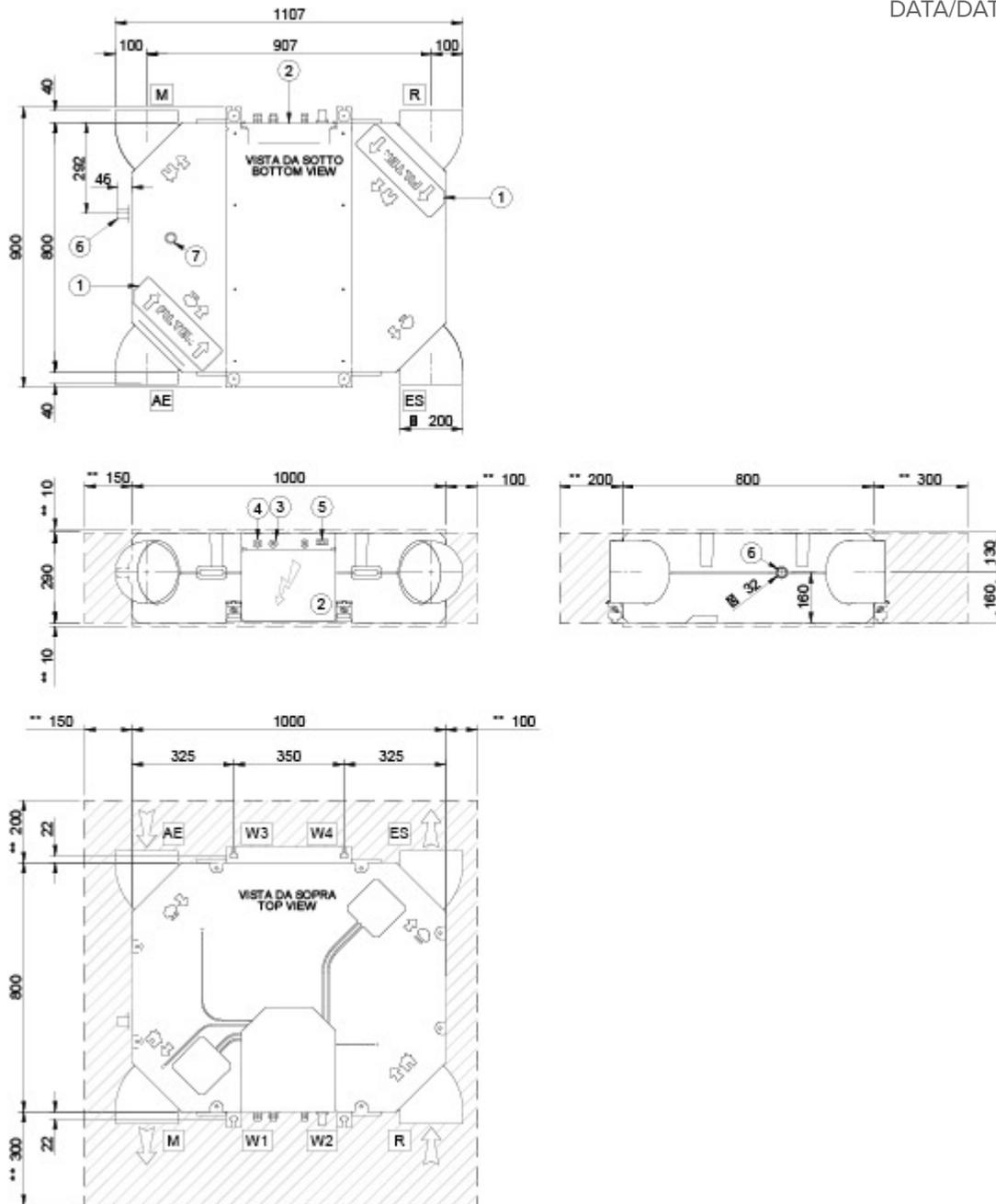
CAPACITY = heating / cooling capacity according to EN14511: 2018

POWER INPUT = Power input according to EN14511:2018

AIRFLOW = Room air flow rate supply [mc/h]

Size - SIZE 2

DAA5Q0001_00 REV00
DATA/DATE 28/08/2019



1. Removable panel for bottom access to the air filter
2. Electrical panel
3. Power input
4. Keyboard connection
5. Auxiliary connection
6. Condensate drain connection
7. Emergency drain

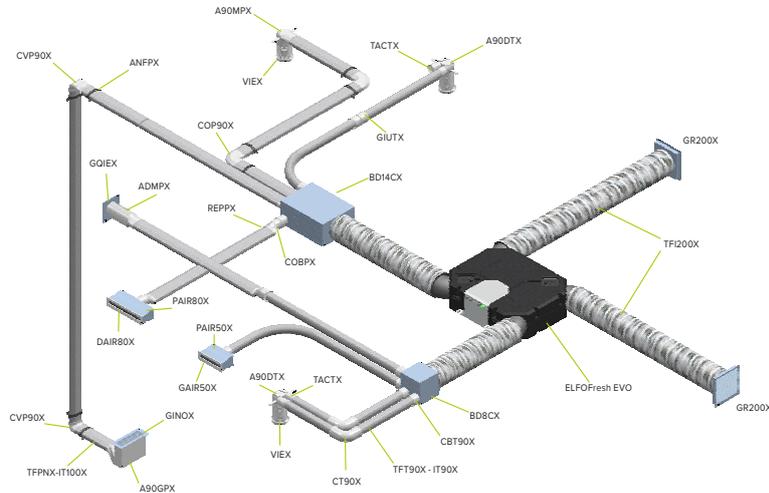
- W1-W2-W3-W4 - Hanging brackets
 AE - Outdoor air
 ES - Exhaust air
 M - Supply air
 R - Return air

Size		SIZE 2
A - Operating length	[mm]	1107
B - Operating depth	[mm]	900
C - Operating height	[mm]	290
Shipping length	[mm]	1200
Shipping depth	[mm]	1000
Shipping height	[mm]	320
Operating weight	[kg]	44
Shipping weight	[kg]	73

Clivet's modular solution

Issues related to the selection, size and installation of the air distribution and the elements fitted on a traditional system are eliminated thanks to ELFOAir, the modular solution to distribute air through manifolds. A clever mix of functionality and reliability, ELFOAir is the exclusive system that is perfectly combined with ELFOFresh EVO to provide fresh air in domestic settings.

- ▶ Suited to all needs
- ▶ Simple to install
- ▶ Minimum Size
- ▶ Antistatic and Antibacterial



Underfloor, false-ceiling and wall installation

In new buildings and redevelopment works on existing buildings ELFOAir is the best solution to fully enjoy the benefits of the ELFOFresh EVO ventilation system thanks to its stepped flexible ducts. These are ideal for underfloor applications, as well as for installations in attics and false ceilings. Specially designed grids and outlets can also be fitted and can be perfectly integrated in any kind of architectural context.

Simple to install

ELFOAir is the plug&play distribution system that reduces installation times by 50%. The simple and user-friendly connection between its elements guarantees a perfect seal and reliability of the distribution system.

Antistatic and Antibacterial

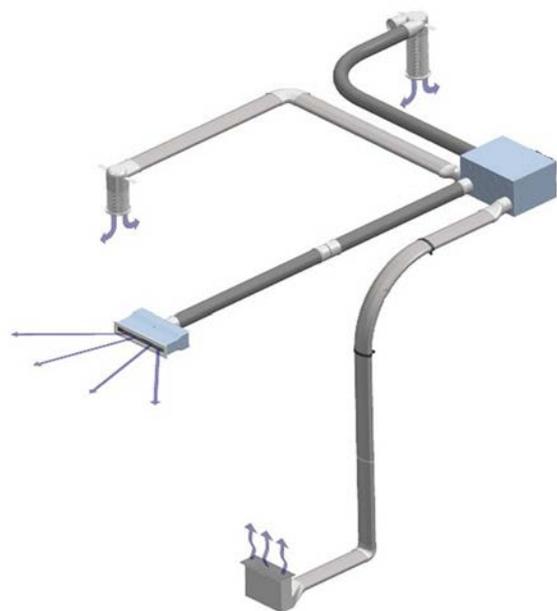
The piping is antibacterial and antistatic ensuring hygiene, sterility and health safety.

Air renewal in the room

The correct distribution of air in domestic environments.

ELFOAir is the modular air distribution system with manifolds that consists of an air distribution box, flat flexible ducts, horizontal and vertical moulded curves, seal and joint rings, diffusers and accessories made with plastic material and is ideal to guarantee the correct distribution of air in different environments.

- ▶ The manifold distribution ensures the self-balancing of the system and therefore guarantees maximum flexibility in positioning the supply/return grids and outlets and the correct air speed inside the ducts.
- ▶ The distribution to manifolds allows better system balancing and therefore guarantees maximum flexibility in positioning the inlets and supply/return grilles and the correct air speed inside the ducts.
- ▶ The flexible duct is easy to install and can be connected to all the other components of the system without the need for special equipment. The insulation of the channelling removes the risk of condensation forming on the external surfaces of the ducts themselves.
- ▶ The ELFOAir Air system includes a comprehensive series of accessories that are essential to ensure the installation and the perfect operation of the aeraulic distribution of ELFOFresh EVO.



ELFOAir Configurator

Thanks to ELFOAir Configurator, the selection and dimensioning software, the ELFOAir solution is designed in little time and with no errors.

A simple and powerful tool, available from www.clivet.com, that provides an essential support for all professionals to install the ELFOFresh EVO air renewal system.

ELFOFresh EVO ducts

ELFOFresh EVO's connection to the distribution system of the internal and external air is conducted by using flexible insulated circular ducts that guarantee the thermal and acoustic insulation of the channels.

The antibacterial treatment of the inner surfaces ensures the quality of the fresh air. The reduced pitch of the spiral ensures a greater mechanical strength compared to traditional solutions and does not alter the duct's cross-section, even if there is a large radius of curvature.



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vendita e assistenza

ELFOFresh EVO - Size 2 - BT20A030GB-00



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