

CLIVET
Inspiring Solutions. Since 1989



LARGE EVO PL

WiSAN-YEE1 PL 20.2 – 85.4

Product presentation

Simultaneous load in new buildings

Modern buildings have simultaneous **heating** / **cooling** demand

This requirement is common for:

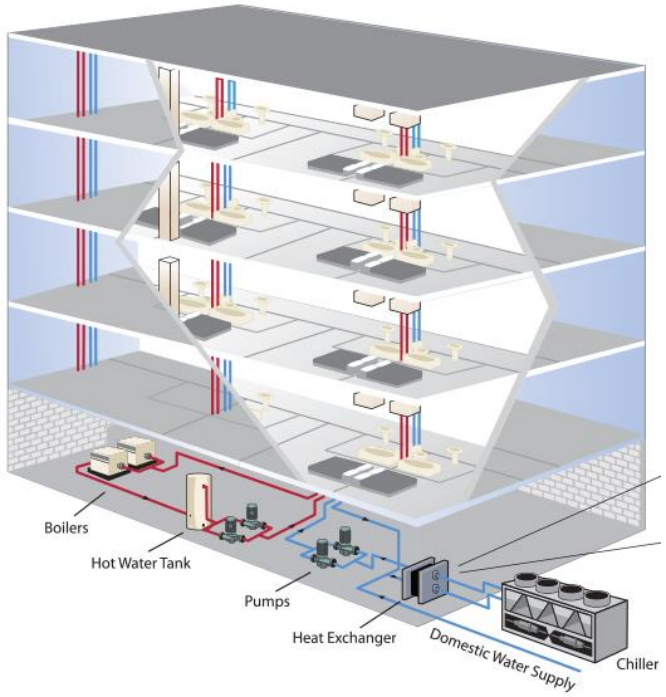
- **Offices** with different facades / equipment
- **Hospitals / Hospitality** for different usage / attendance
- **Industry** for either process and/or comfort
- **Commercial** for different usage / attendance



Traditional solution

Traditional designs use two independent hydraulic circuits:

- 1 chiller for **cooling**
- 1 boiler for **heating**

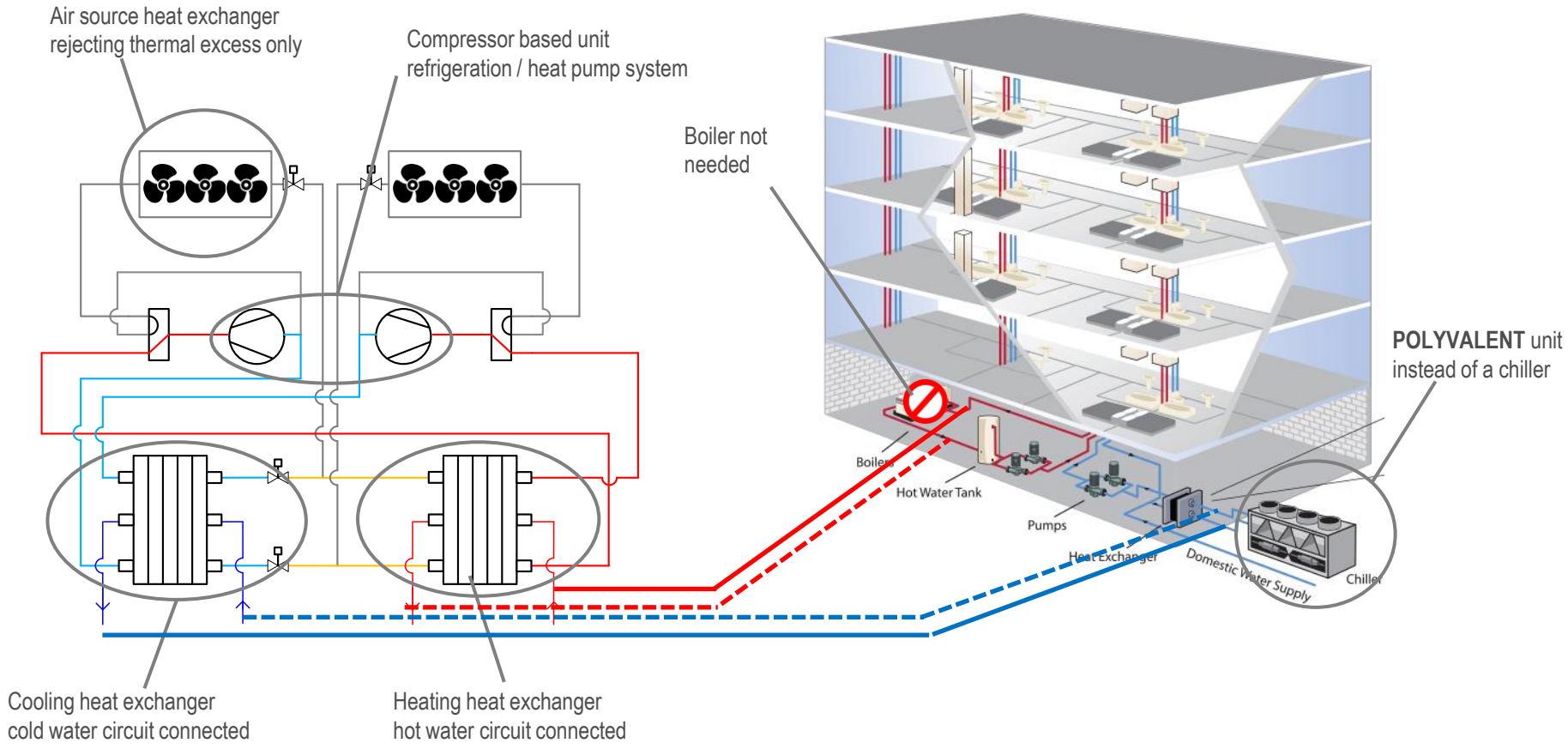


Separate production is not efficient:

- Chillers and boilers work independently for different demands
- Chiller production rejects heat
- This heat could be used for heating
- Less requirement for boilers

The Polyvalent solution

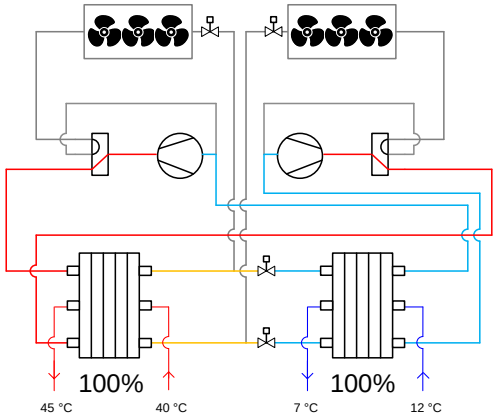
With **a single POLYVALENT** unit that produces cooling and heating simultaneously, independently and efficiently, it is possible to replace both generators (boiler and chiller).

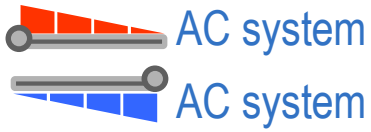


The Polyvalent solution

It is a heat pump based technology unit able to recover the thermal load increasing the already efficient heat pump effect.

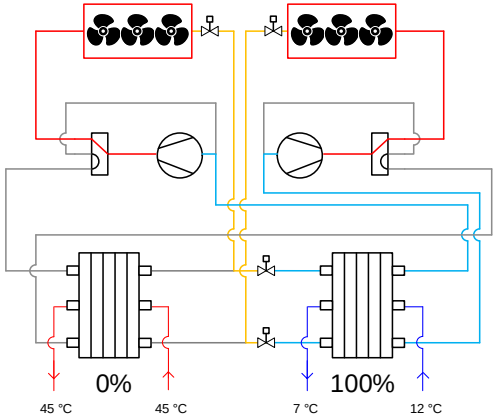
Mid season – Simultaneous load





Total recovery mode
No energy is rejected

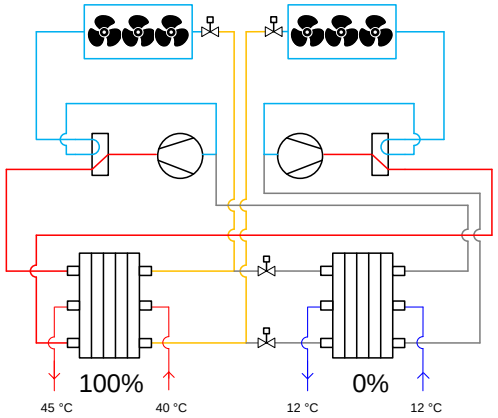
Summer – Cooling prevailing





Cooling only mode
The excess energy is rejected through the source heat exchanger

Winter – Heating prevaling

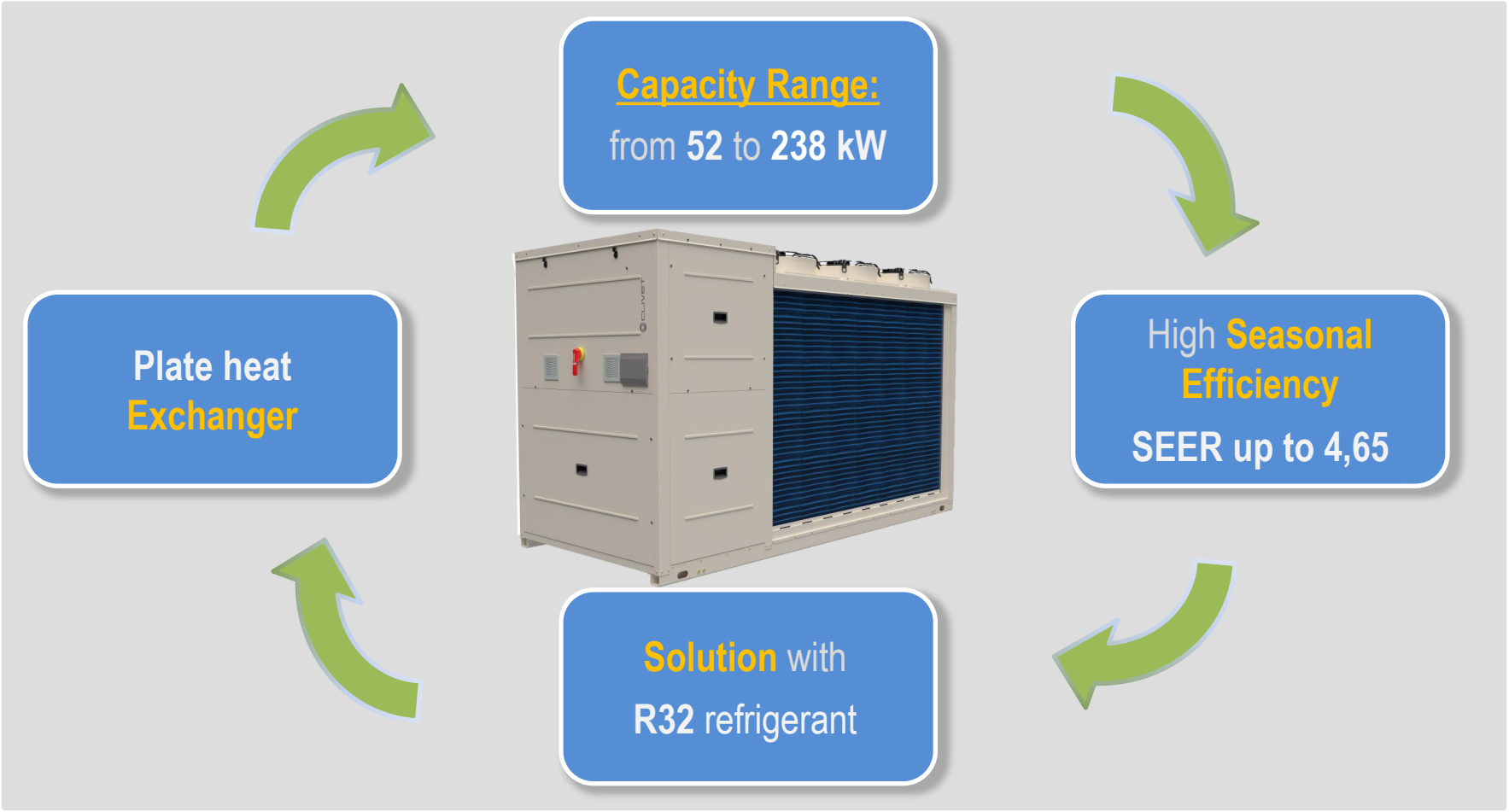




Heating only mode
The excess energy is rejected through the source heat exchanger

LARGE EVO Polyvalent, Air source – Main Features

LARGE EVO PL is the solution with scroll compressors and R32 refrigerant, ideal for multiple types of installation



LARGE EVO Polyvalent, Air source – Capacity Range

The **WiSAN-YEE1 PL** serie is available in:

STANDARD VERSION (SC) / Capacity Range: 52 – 238 kW

SIZE	20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling capacity	51,7	61,7	71,1	81,5	91,4	111	124	136	149	162	181	200	219	238
EER	3,07	2,77	3,13	2,94	2,74	3,03	2,88	2,85	2,70	3,05	2,85	3,03	2,88	2,70
SEER	4,26	4,23	4,48	4,45	4,44	4,62	4,60	4,38	4,35	4,65	4,64	4,62	4,61	4,59
Heating capacity	64,5	72,8	80,5	92,3	104	120	137	154	173	192	211	231	253	280
COP	3,12	3,00	3,36	3,24	3,15	3,25	3,22	3,22	3,10	3,27	3,18	3,34	3,23	3,10
SCOP – W35	4,16	4,15	4,17	4,12	4,10	4,16	4,14	4,08	4,06	4,13	4,12	4,08	4,06	4,04
N° compressors	2	2	2	2	2	2	2	4	4	4	4	4	4	4
N° circuits	2	2	2	2	2	2	2	2	2	2	2	2	2	2

LARGE EVO Polyvalent, Air source – Capacity Range

The **WiSAN-YEE1 PL** serie is available in:

SILENCED VERSION (LN) / Capacity Range: 48 – 221 kW

GRANDEZZE	20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling capacity	48,1	57,4	66,1	75,8	85,0	103	115	127	138	151	168	186	203	221
EER	3,08	2,78	3,14	2,95	2,75	3,03	2,88	2,85	2,70	3,06	2,85	3,03	2,88	2,71
SEER	4,19	4,17	4,43	4,41	4,39	4,53	4,50	4,30	4,29	4,64	4,59	4,62	4,57	4,55
Heating capacity	60,0	67,7	74,8	85,8	97,1	112	127	144	161	178	197	215	236	261
COP	3,13	3,01	3,36	3,24	3,15	3,26	3,23	3,22	3,10	3,28	3,18	3,34	3,23	3,11
SCOP – W35	4,08	4,09	4,12	4,08	4,05	4,08	4,06	4,00	4,00	4,12	4,07	4,08	4,02	4,01
N° compressors	2	2	2	2	2	2	2	4	4	4	4	4	4	4
N° circuits	2	2	2	2	2	2	2	2	2	2	2	2	2	2

LARGE EVO Polyvalent, Air source – Capacity Range

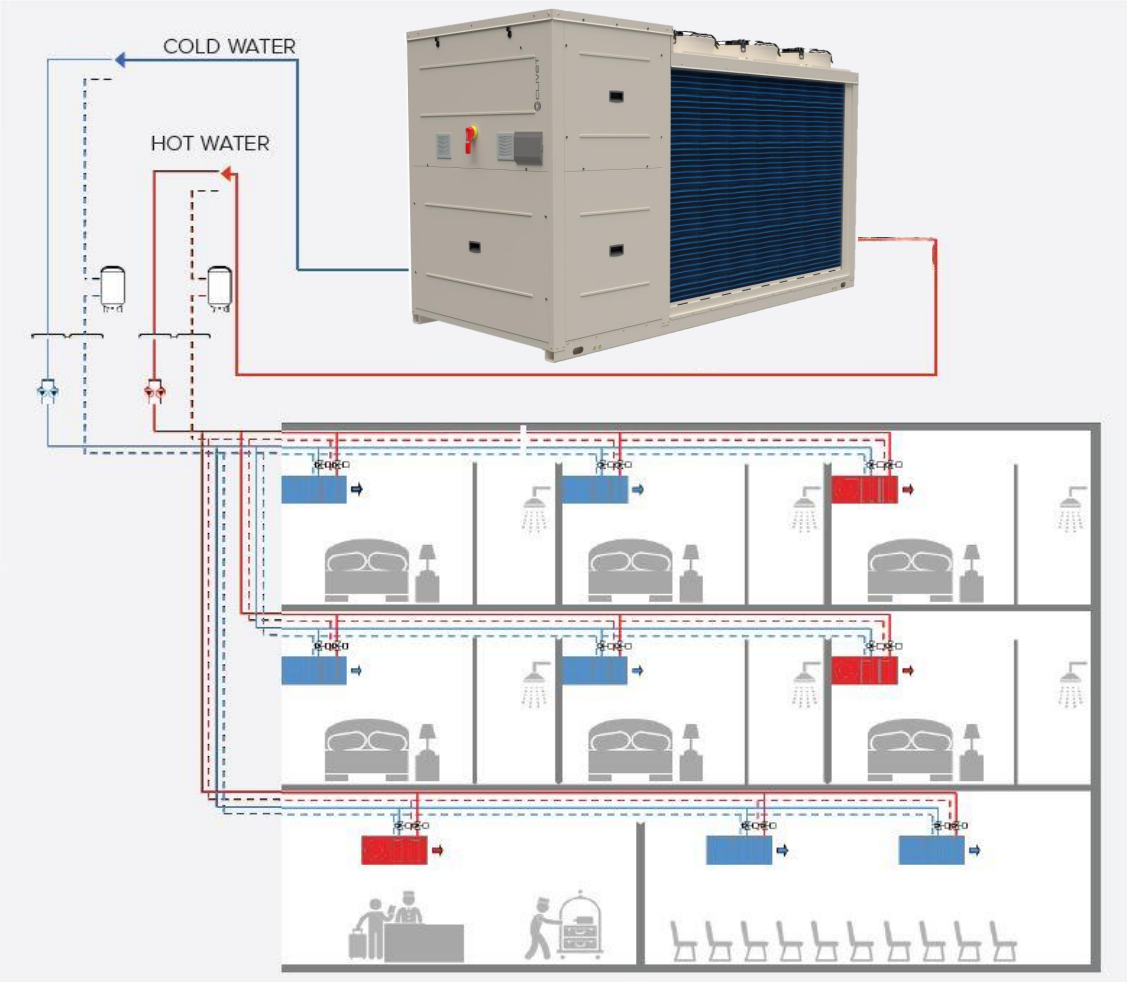
The **WiSAN-YEE1 PL** serie is available in:

SUPER-SILENCED VERSION (EN) / Capacity Range: 44 – 204 kW

GRANDEZZE	20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling capacity	44,5	53,1	61,2	70,1	78,7	95,2	106	117	128	140	156	172	188	204
EER	3,08	2,78	3,14	2,95	2,75	3,04	2,89	2,86	2,70	3,06	2,86	3,03	2,88	2,71
SEER	4,14	4,13	4,40	4,38	4,35	4,52	4,50	4,29	4,26	4,62	4,58	4,60	4,54	4,54
Heating capacity	55,5	62,6	69,2	79,4	89,7	103	117	133	149	165	182	199	218	241
COP	3,13	3,01	3,37	3,25	3,16	3,26	3,24	3,23	3,11	3,28	3,19	3,35	3,24	3,11
SCOP – W35	4,05	4,05	4,09	4,05	4,02	4,07	4,05	3,99	3,98	4,11	4,06	4,07	4,00	4,00
N° compressors	2	2	2	2	2	2	2	4	4	4	4	4	4	4
N° circuits	2	2	2	2	2	2	2	2	2	2	2	2	2	2

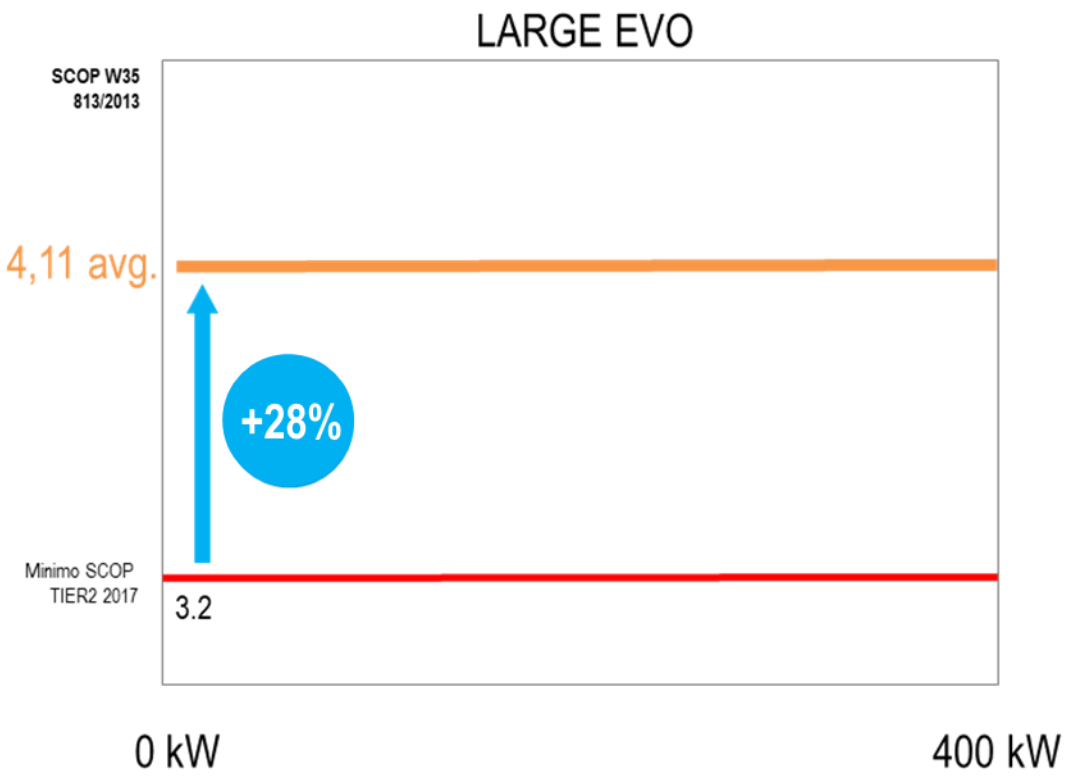
Configuration for 4-pipe system (4T)

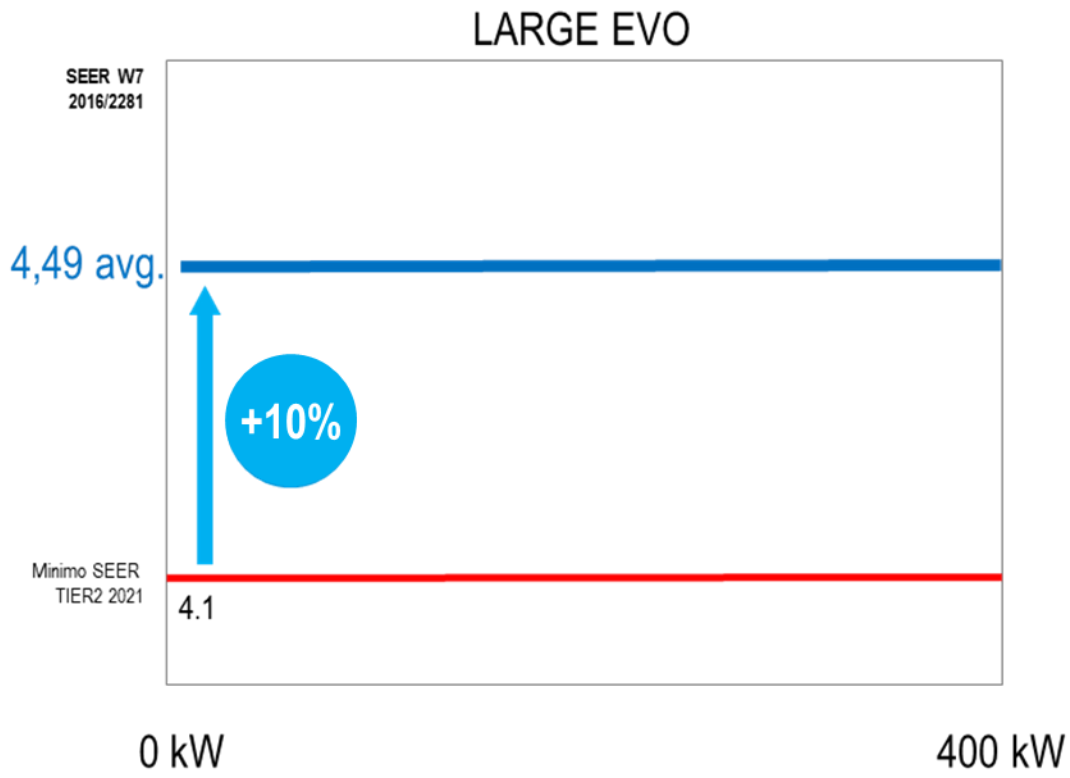
Simultaneous demand for hot water and chilled water by Heating/Cooling system



LARGE EVO Polyvalent, Air source – Seasonal Efficiency (Comfort)

WiSAN-YEE1 PL reaches very **high seasonal efficiency** values



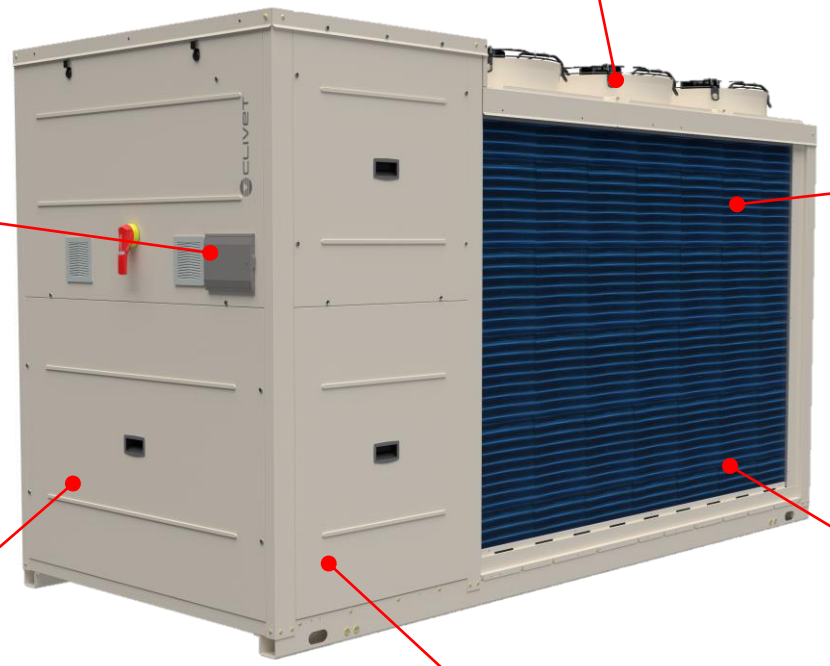


LARGE EVO Polyvalent, Air source – Technologies for high efficiency

New EC fans with electronic speed control,
for higher efficiencies and configurable sound levels

Electrical control box
with **SIEMENS**, control logic, in common with all the other polyvalent solutions





New coils treatments available (Opt.)
for greater resistance in critical installations

Copper/Aluminium coils
equipped with hydrophilic treatment as standard

Full-inverter Rotary/Scroll compressors
For Outstanding Part load operation

Double refrigerant circuit
for maximum redundancy

LARGE EVO Polyvalent, Air source – Acoustic Configurations

SC = **Compressor Soundproofing** version (standard)





LN = **Silenced** version (same lenght of SC version)



-4 dB(A)

EN = **Super-silenced** version (same lenght of SC version)



-8 dB(A)

Inverter compressor: Minimum turndown

LARGE EVO Polyvalent is equipped with **4 inverter compressors** that allow to**:**

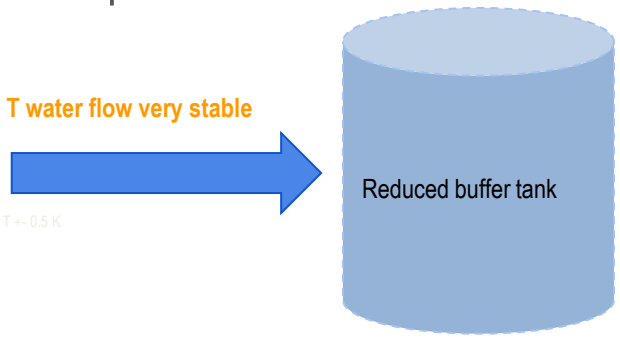
- **Perfectly match the load** of the plant in any condition
- Follow the load even with **very high partialization**
- Ensure high efficiency values, **reducing operating costs**
- **Reduce the sound level** at partial loads
- Ensure a **null in-rush current**

Inverter compressor: Minimum turndown

The unit, thanks to the inverter compressors, has a turndown capability of 20% of its nominal capacity, allowing very precise capacity control and a smooth transition from very low to high capacity

T out 35°C Load 100%	T out 30°C Load 75%	T out 25°C Load 50%	T out 20°C Load 25%
			
EER 2.9	**EER 3.8**	**EER 4.9**	**EER 5.7**
Really unlikely	Very likely	Very likely	Likely

Thanks to this turndown capability the water content of the system could be reduced at a minimum quantity, avoiding the use of large buffer tanks to ensure reliable and accurate operation





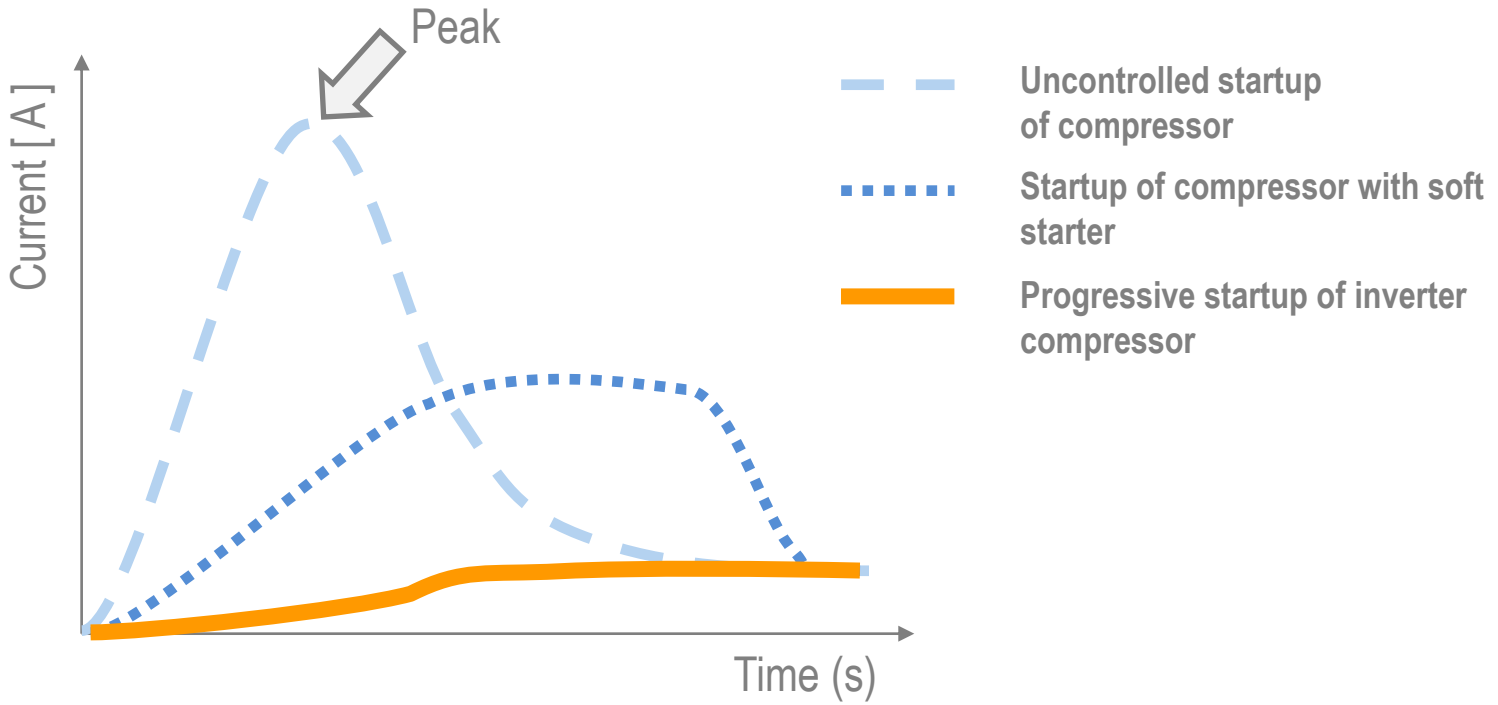
Reduced ON-OFF cycles

Improved reliability and life length

Inverter compressor: In-rush current

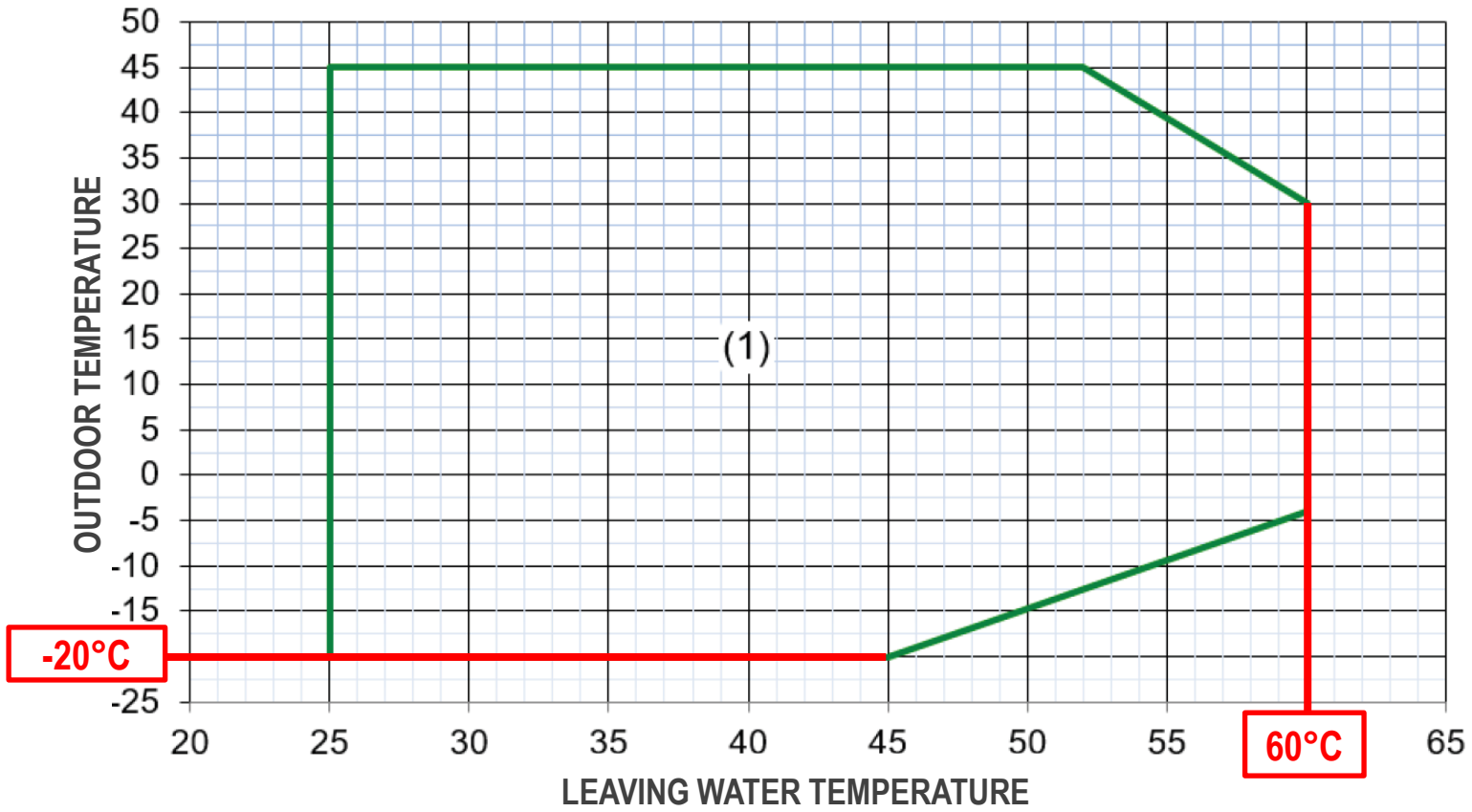
Thanks to inverter technology the startup phase, usually the most critical, is gradual from minimum to maximum speed:

- Ensures a null in-rush current
- Avoid the overhead of the host supply
- Avoid mechanical stress on the compressor



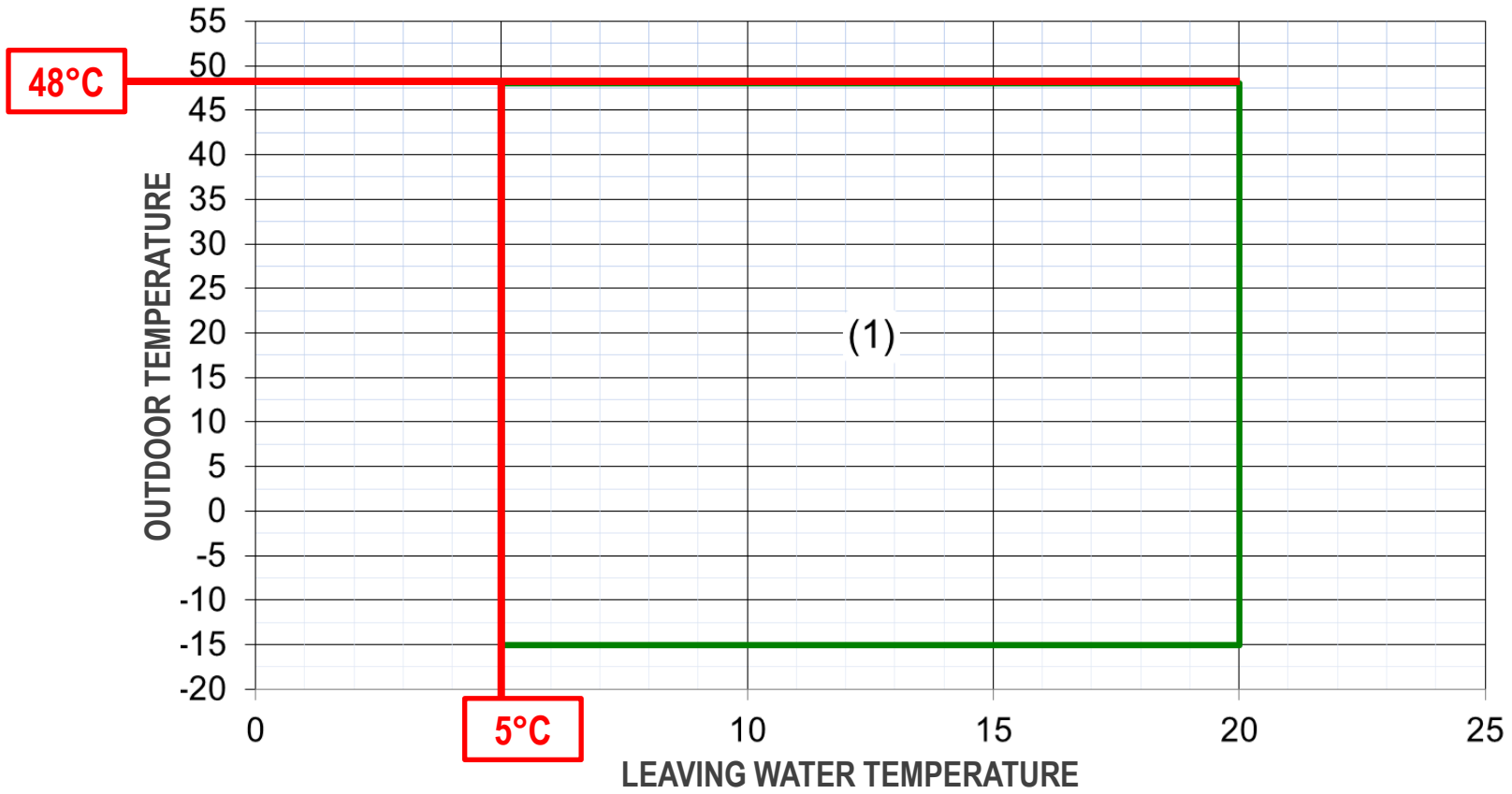
LARGE EVO Polyvalent, Air source – Operating Range in Heating

Minimum outdoor temperature = -20°C
Maximum water temperature = +60°C



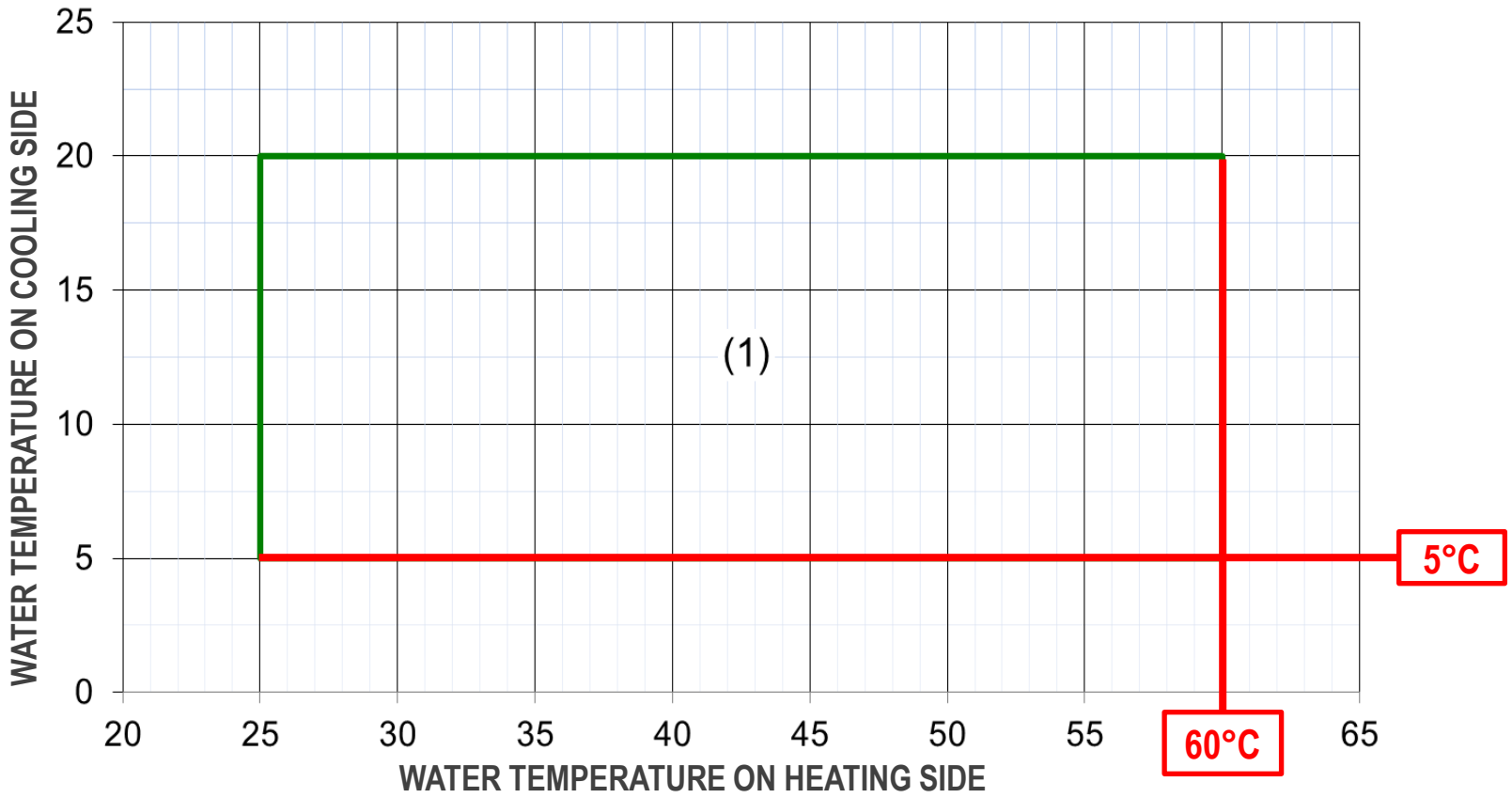
LARGE EVO Polyvalent, Air source – Operating Range in **Cooling**

Minimum water temperature = +5°C
Maximum outdoor temperature = +48°C



LARGE EVO Polyvalent, Air source – Operating Range with **Simultaneous loads**

Minimum water temperature cold side = 5°C
Maximum water temperature hot side = +60°C



LARGE EVO Polyvalent, Air source – Leed compliant

The **WiSAN-YEE1 PL** serie is compliant with Leed:

LEED														
SIZE	20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
STANDARD VERSION (SC)	✓	✗	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✓	✗
SILENCED VERSION (LN)	✓	✗	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✓	✗
SUPER-SILENCED VERSION (EN)	✓	✗	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✓	✗

LARGE EVO Polyvalent, Air source – Hydronic Assemblies

The hydronic set on board allows savings such as:

- Time and costs for the **set-up**
- Surface of the pumping system and the relevant space for the equipment and for safety

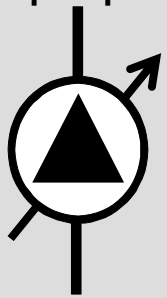
Options are available for both heating and cooling side:

Single pump

Hydropack 1 on/off pump

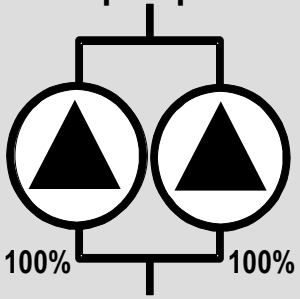


Hydropack 1 inverter pump

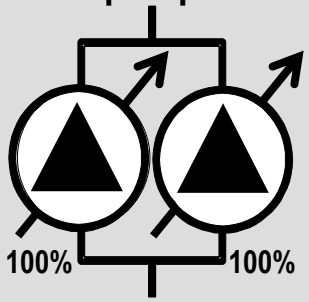


Double Pump

Hydropack 1+1 on/off pump



Hydropack 1+1 inverter pump



It is necessary to select the same type of hydronic solution for both hydraulic sides

LARGE EVO Polyvalent, Air source – Simultaneous Operation

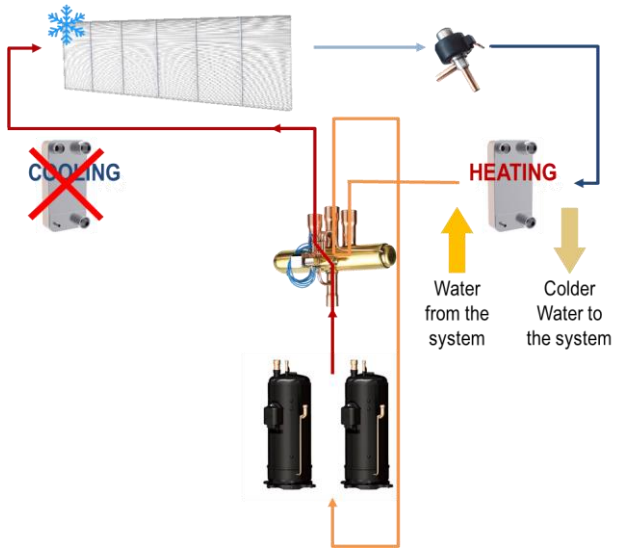
SIMULTANEOUS	REQUEST		OPERATION	
	COLD	HOT	CIRCUIT 1	CIRCUIT 2
Request – Case 1	100%	100%	Simultaneous operation	Simultaneous operation
Request – Case 2	100%	50%	Cooling operation	Simultaneou operation
Request – Case 3	100%	20%	Cooling operation	1) Simultaneous operation 2) Cooling operation
Request – Case 4	50%	100%	Simultaneous operation	Heating operation
Request – Case 5	20%	100%	1) Simultaneous operation 2) Heating operation	Heating operation

LARGE EVO Polyvalent, Air source – Clivet smart defrost (Patented technology)

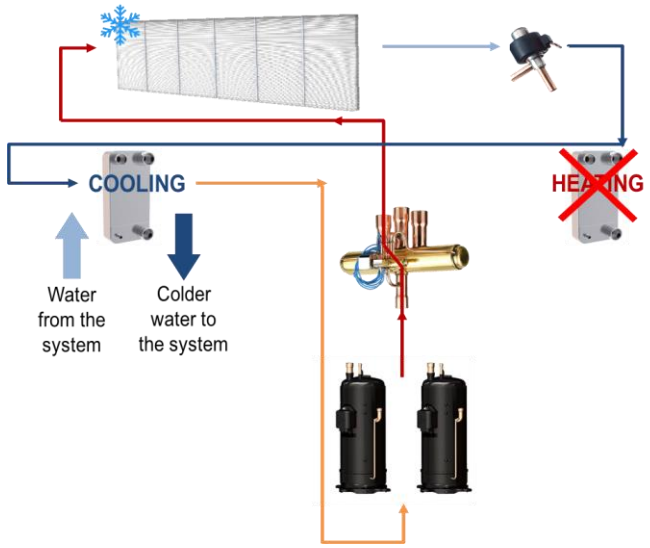
The Clivet Polyvalent unit evaluates which defrost is more suitable at the specific moment:

- **Traditional defrost**
  reversing the cycle and delivering hot refrigerant vapor to the air heat exchanger, evaporating delivering cold water to the heating circuit (mainly performed when there is no cooling demand)
- **Smart Defrost**
  reversing the cycle and delivering hot refrigerant vapor to the air heat exchanger, evaporating in this case on the cooling side exchanger avoiding cold water to be delivered to the heating circuit (mainly performed when minimum amount of cooling demand it is already present on cold user side)

TRADITIONAL DEFROST



CLIVET SMART DEFROST

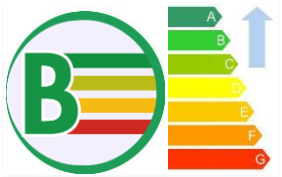


LARGE EVO Polyvalent, Air source – ECOSHARE (Automatic management of a group of units)

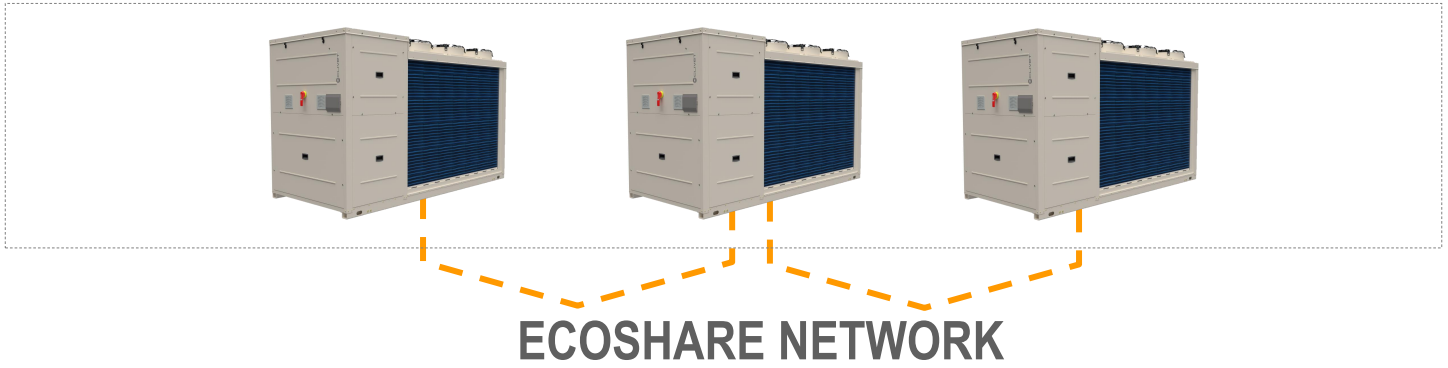
Modular system with **ECOSHARE** up to 7 units in local network

In comparison with a single unit of equivalent overall capacity it offers **many advantages** such as:

- **Increased energy efficiency**



- **Higher resiliance**



LARGE EVO Polyvalent, Air source – ECOSHARE (Automatic management of a group of units)

ECOSHARE functionality: automatic managment of a group of units that operats on the same circuit, by means of the creation of a **CLIVET local network.**

The group control is assigned to a unit identified as **MASTER**.

The local network can be extended **up to 7 units (1 Master and 6 Slaves)**.

Maximum reliability → Unexpected breakdown does not compromise the whole system

Distribution Principles:

- **Vertical saturation:** The unit is activated if the previous one is at full load
- **Horizontal saturation:** Units are activated following the group maximum efficiency

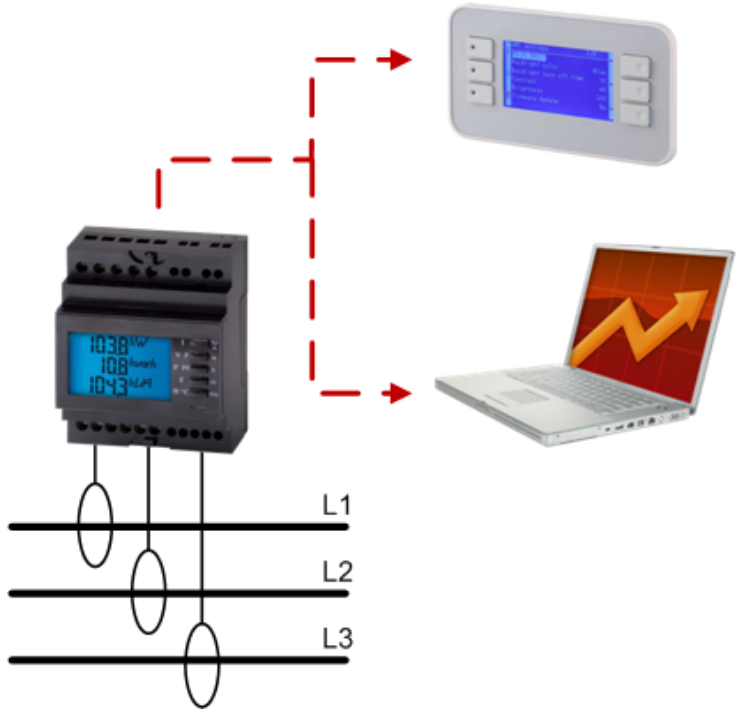
Pumping group: for both distribution technologies is possible to have either the pumping group **always activated** or activated **only when at least one compressor of the unit** (chiller, heat pump, multifunction, ecc.) **is in operation.**

Energy measuring

- It **displays** the main unit's electrical parameters
- It **displays** them on the unit display
- It **trasmits** them via the serial connection to the supervisor

The monitored **electrical parameters** are:

- Voltage/ Current/ Frequency
- Cosfe/ Harmonic components
- Power input/ Energy



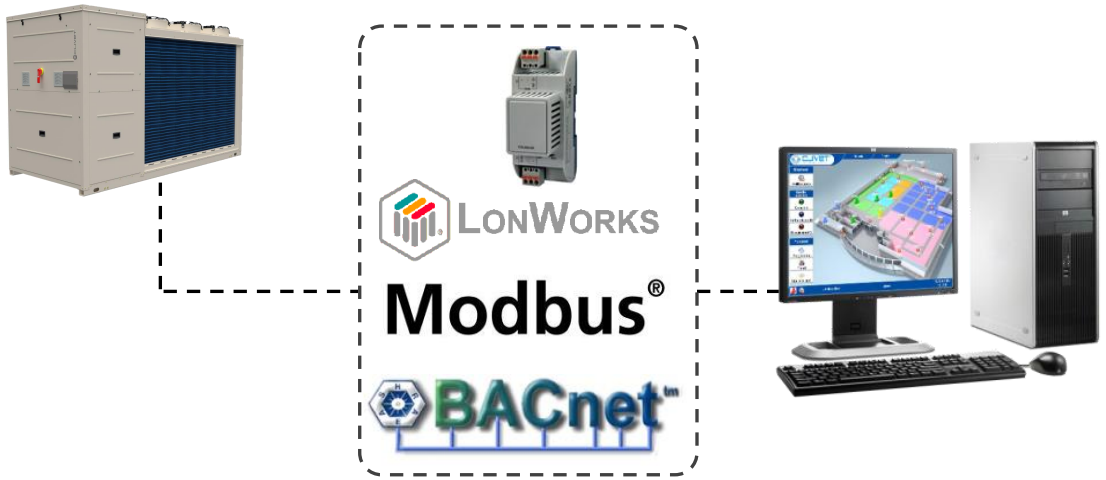
(1) Nel protocollo Lon-Works sono disponibili: Potenza assorbita (kW) ed Energia (kWh)

LARGE EVO Polyvalent, Air source – Remote Management

The unit can be **remotely managed** by:

- optional **remote control**
  - replicates the on board user interface
- the **potential free contacts** as standard
- the **supervision system**
  - through different communication protocols





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