CLIVET

Inspiring Solutions. Since 1989

SPINchiller[4]

WSAN-YSC4 80.3 – 240.6

Product Presentation

A Group Company of Midea

SPINchiller[4], Air source – Main Features

SPINchiller[4] is the solution with scroll compressors and R32 refrigerant, ideal for multiple types of installation

Capacity range:
from **215** to **655 kW**

High **Seasonal Efficiency**
SEER up to 4,89

Solution with
R32 refrigerant

Exchanger
Plate or Shell & Tube

SPINchiller[4], Air source – Capacity Range

WSAN-YSC4 serie is available with 2 energy versions: **Excellence and Premium**

Excellence, Capacity range 215 – 655 kW:

SIZES	80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling capacity	215	240	265	290	320	355	390	430	500	555	610	655
EER	2,95	3,14	3,13	3,05	3,02	3,11	3,04	3,00	3,06	2,96	3,08	3,01
SEER	4,45	4,79	4,74	4,81	4,84	4,86	4,78	4,72	4,88	4,84	4,89	4,86
Heating capacity	225	255	280	310	335	375	415	455	530	585	640	685
COP	3,22	3,24	3,27	3,26	3,26	3,29	3,32	3,31	3,32	3,28	3,22	3,24
SCOP – W35	3,73	3,90	3,92	4,10	4,08	4,05	4,00	4,10	-	-	-	-
N° compressors	3	4	4	4	4	4	4	4	5	6	6	6
N° circuits	2	2	2	2	2	2	2	2	2	2	2	2

SPINchiller[4], Air source – Capacity Range

WSAN-YSC4 serie is available with 2 energy versions: **Excellence and Premium**

Premium, Capacity range 235 – 630 kW:

SIZES	90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling capacity	235	255	275	300	335	370	405	480	530	585	630
EER	2,80	2,71	2,70	2,59	2,81	2,72	2,61	2,80	2,65	2,83	2,77
SEER	4,26	4,24	4,35	4,37	4,55	4,57	4,33	4,64	4,62	4,66	4,64
Heating capacity	240	265	285	315	350	385	420	500	555	610	655
COP	3,15	3,10	3,09	3,09	3,12	3,10	3,13	3,19	3,17	3,18	3,18
SCOP – W35	3,47	3,64	3,83	3,87	3,80	3,64	3,82	3,91	-	-	-
N° compressors	3	3	4	4	4	4	4	5	6	6	6
N° circuits	2	2	2	2	2	2	2	2	2	2	2

SPINchiller[4], Air source – Low enviromental impact

R32 = Solution with low environmental impact

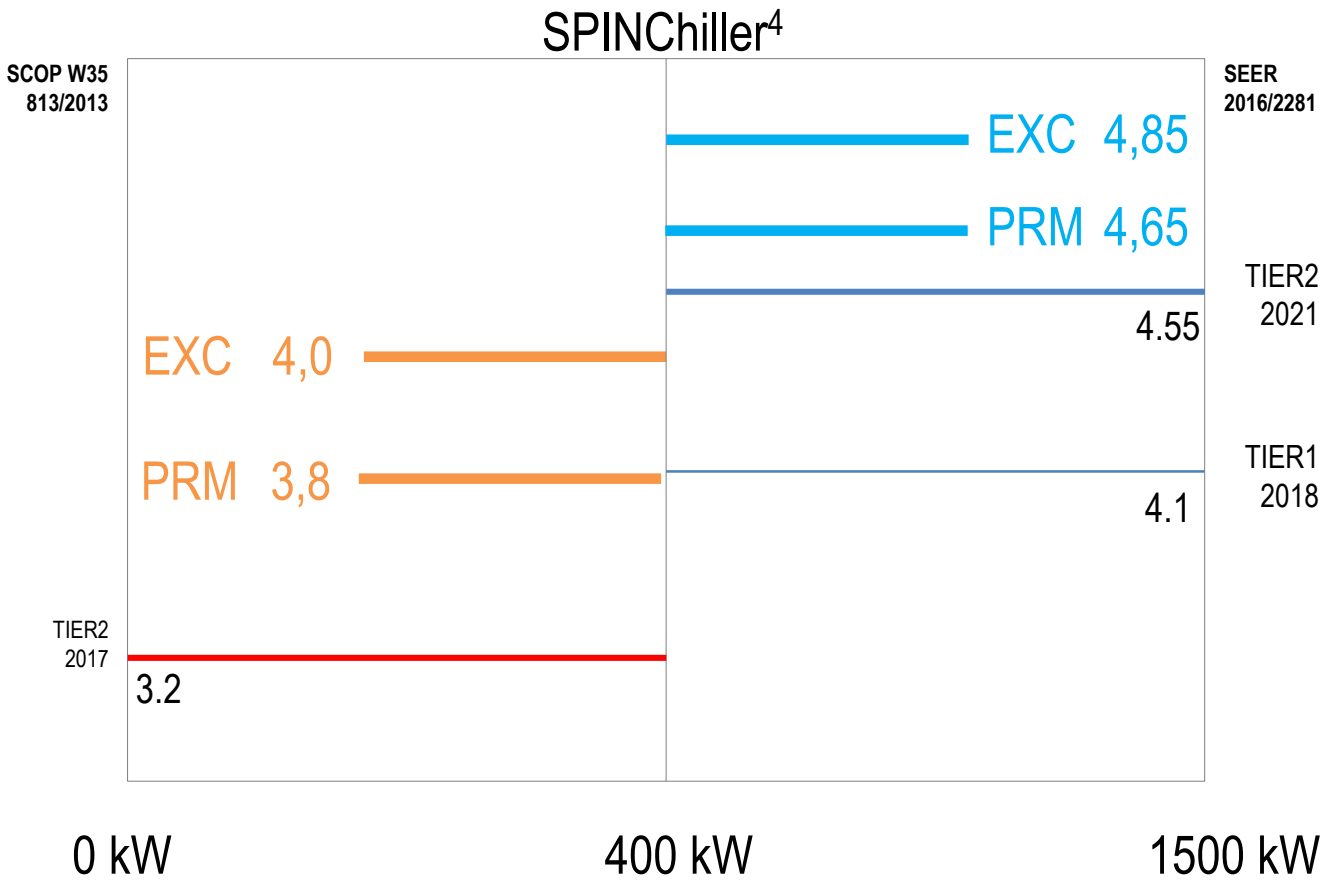
The environmental benefits of R32 compared to R-410A

Refrigerant	R-32	R-410A
Refrigerant type	HFC	HFC
GWP	675	2088
Dispersion in the atmosphere (year)	4,9	16,95
ASHRAE 34, ISO 817 classification	A2L	A1

SPINchiller[4], Air source – Seasonal Efficiency (Comfort application)

WSAN-YSC4 reaches very **high seasonal efficiency** values

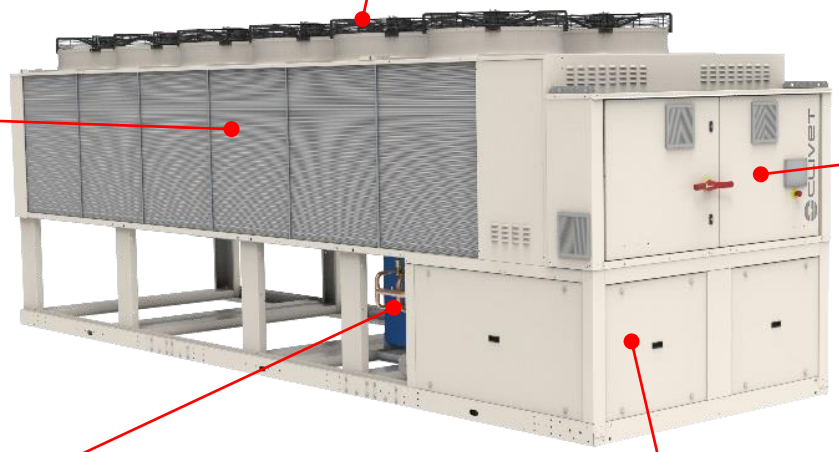
Both versions (**Excellence & Premium**) are already compliant to **2021 requirements (Tier 2)**



SPINchiller[4], Air source – Technologies for high efficiency

Fans with **electronic speed control** (ECOBREEZE)

Copper / Aluminium coils con with hydrophilic treatment (Excellence version)



Automatic control

High efficiency **Plate or Shell and Tube Exchanger** (standard Victaulic connections)

Multi Scroll Compressors – Up to 8 capacity steps regulation

SPINchiller[4], Air source – The Multiscroll technology

SPINChiller[4] is equipped with more scroll compressors on the same refrigerant circuit:

Advantages:

- Perfectly match the cooling load of the plant in any condition
- Follow the load also with a great staging. Up to 8 capacity steps regulation
- Ensure high efficiency values, reducing operating costs, thanks to larger exchanging surface at partial load
- Reliability guaranteed thanks to the two independent refrigerant circuits

SPINchiller[4], Air source – Acoustic configurations

ST = **Standard** acoustic version

SC = **Compressor Soundproofing** version
(same lenght of ST version)

-4/-5 dB(A)

Casing for compressors

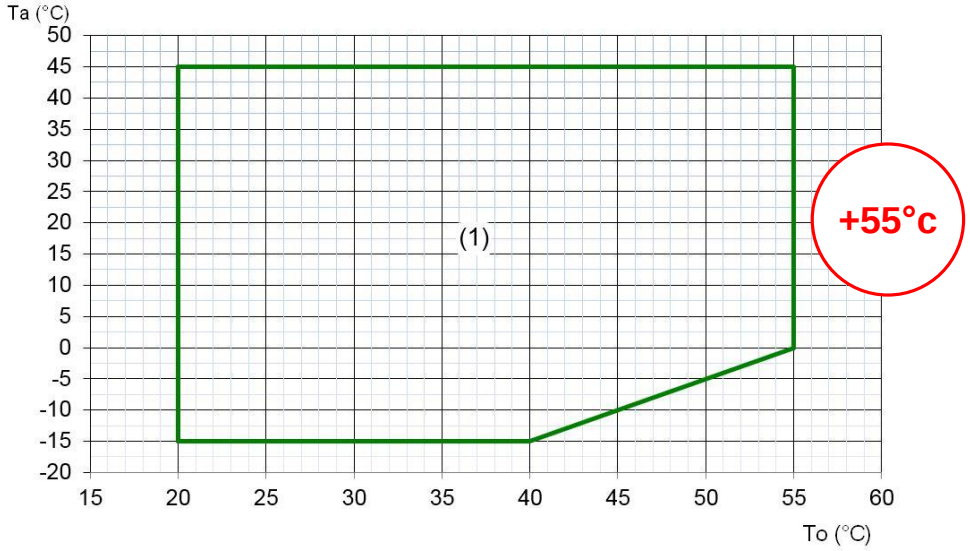
EN = **Supersilenced** version
(same lenght of ST version)

-7/-8 dB(A)

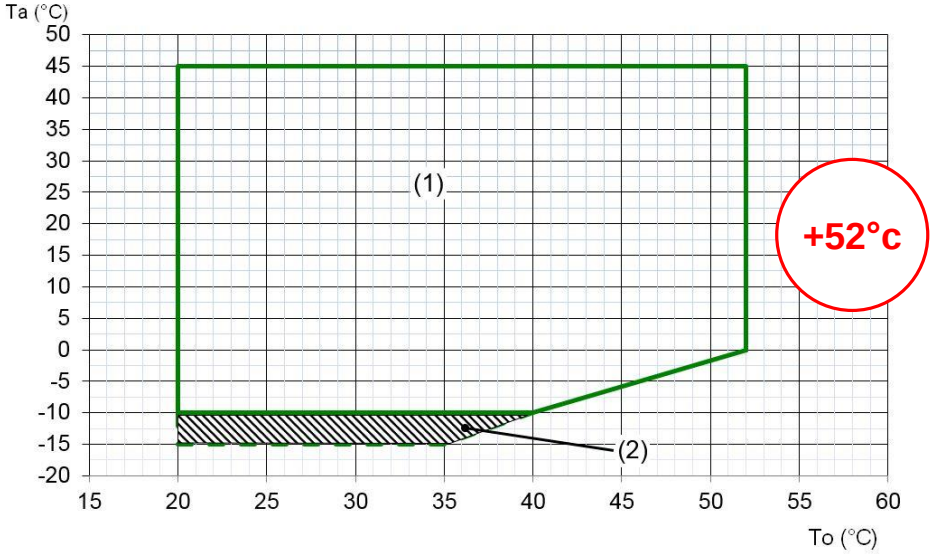
Casing for compressors and air-flow reduction

SPINchiller[4], Air source – Operative range in heating

EXC = **EXCELLENCE** version
Minimum outdoor temperature = -15°C
Maximum water temperature = +55°C

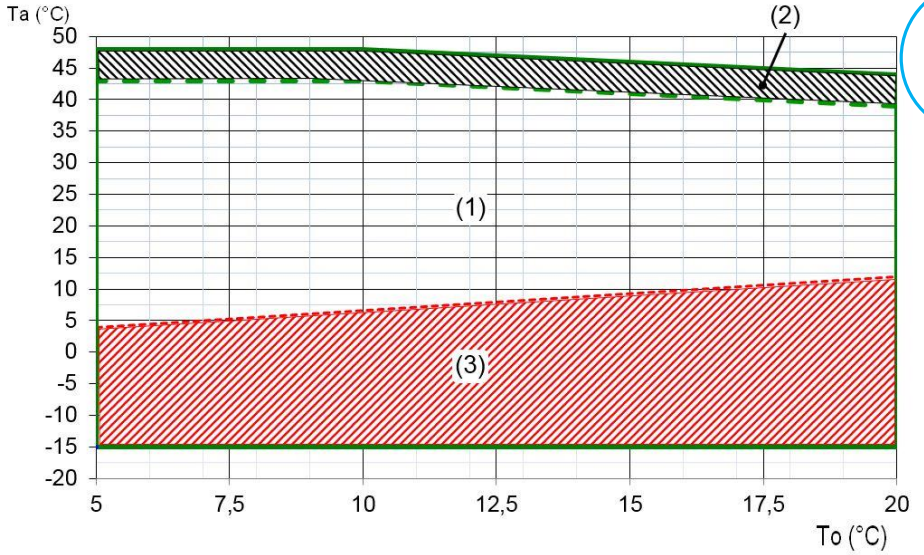


PRM = **PREMIUM** version
Minimum outdoor temperature = -15°C
Maximum water temperature = +52°C

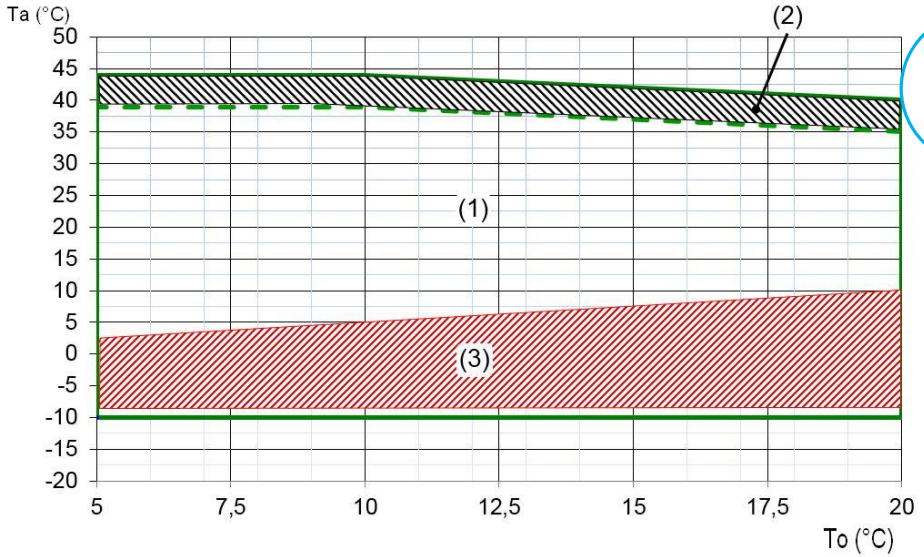


SPINchiller[4], Air source – Operative range in cooling

EXC = **EXCELLENCE** version
Minimum outdoor temperature = -15°C
Maximum outdoor temperature = +48°C



PRM = **PREMIUM** version
Minimum outdoor temperature = -10°C
Maximum outdoor temperature = +44°C



SPINchiller[4], Air source – Perfect for Leed

Thanks to specifications and performances as per AHRI is **perfect for LEED***

Performance - Excellence

Standard acoustic configuration (ST) / Compressor soundproofing (SC)

SIZE			80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling														
Cooling capacity (AHRI 550/590)	5	[kW]	219	245	271	296	327	363	398	439	511	567	623	669
Total power input (AHRI 550/590)	5	[kW]	71,3	74,9	83,1	93,1	104	112	125	140	161	184	194	214
COP_R	5	-	3,07	3,27	3,26	3,18	3,15	3,24	3,18	3,13	3,18	3,08	3,21	3,13
IPLV	5	-	4,45	4,96	4,78	4,85	4,79	4,88	4,78	4,62	4,91	4,77	4,90	4,80

Super-silenced acoustic configuration (EN)

SIZE			80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling														
Cooling capacity (AHRI 550/590)	5	[kW]	214	240	266	291	317	352	388	424	495	551	603	648
Total power input (AHRI 550/590)	5	[kW]	73,5	75,2	84,4	94,8	107	112	128	145	164	191	198	220
COP_R	5	-	2,91	3,19	3,15	3,07	2,96	3,14	3,03	2,93	3,01	2,89	3,05	2,95
IPLV	5	-	4,26	4,96	4,75	4,78	4,65	4,82	4,64	4,34	4,84	4,65	4,81	4,67

* All Excellence models satisfy prerequisites related to “Minimum Energy Performance” and “Fundamental Refrigerant Management”. Also matches “Enhanced Refrigerant Management” parameters.

SPINchiller[4], Air source – Partial load performances

Performances at partial load for each unit are easy to obtain consulting:

Performances

Excellence

Cooling at part load - ST/SC

SIZE	Load	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
80.3	100	223	68,9	3,23	233	62,9	3,70	242	57,4	4,22	253	52,3	4,84
	75	167	49,9	3,34	174	45,5	3,83	182	41,5	4,38	190	37,7	5,04
	50	111	31,9	3,49	116	29,1	4,00	121	26,5	4,57	127	24,1	5,25
	25	55,6	15,1	3,69	58,1	13,7	4,25	60,5	12,3	4,91	63,3	11,0	5,76
	Minimum	45,4	12,0	3,79	47,3	10,8	4,38	49,3	9,70	5,08	51,6	8,60	6,02

Documentation

part load

Capacity required (kW)	0
external exchanger air intake (°C)	35

Part Load						
Cooling capacity (kW)	500	500	500	500	500	500
Compressor power input (kW)	137	132	128	125	124	124
Total power input (kW)	152	148	144	144	143	146
EER	3.28	3.37	3.47	3.47	3.49	3.42
EER compressor	3.65	3.78	3.90	3.99	4.03	4.03
Internal exchanger thermal head (°C)	4.58	4.31	3.96	3.55	3.22	3.00
Water flow-rate (User Side) (l/s)	26.1	27.7	30.2	33.6	37.1	39.8
Internal exchanger pressure drops (kPa)	31.8	35.5	41.3	43.9	52.4	59.2

Selection software

Functionalities and options available

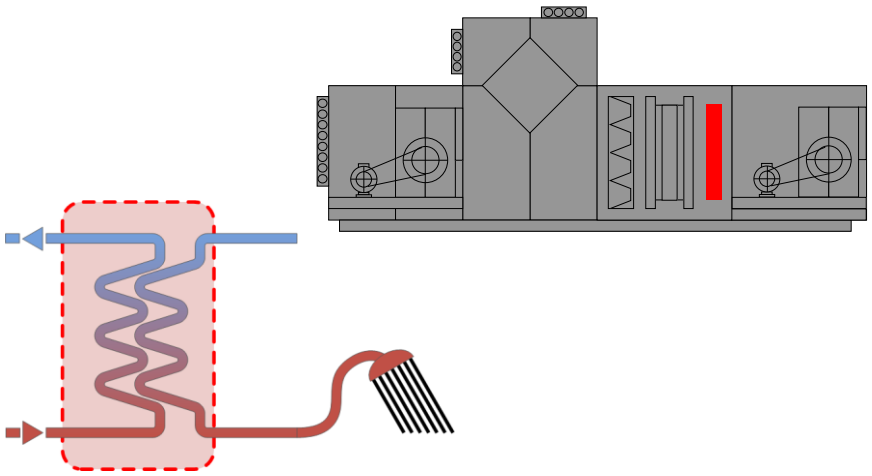
High efficiency of the heat recovery

Recovery of the condensing heat, in cooling mode

- **Partial recovery** = around 20% of the available heat rejection

It allows **free hot water production** for

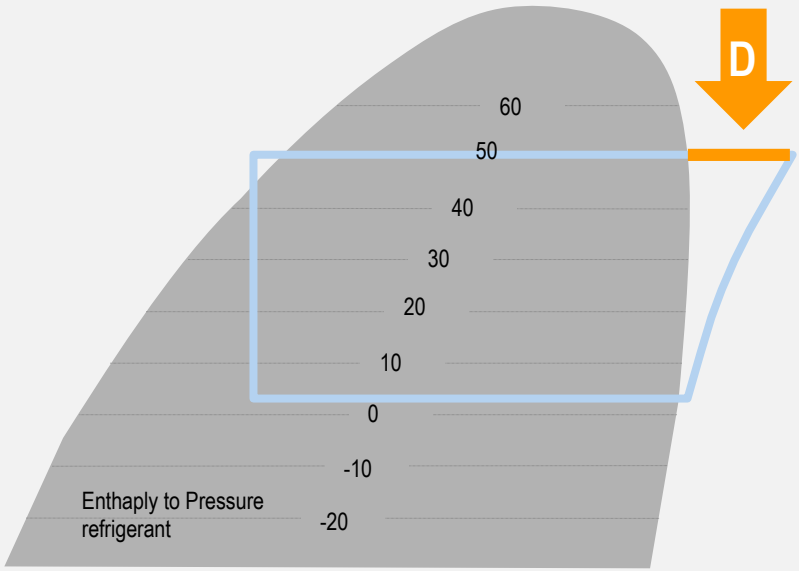
- **Re-heat** hot water coil
- **Domestic** hot water
- Other **processes** or **operation**

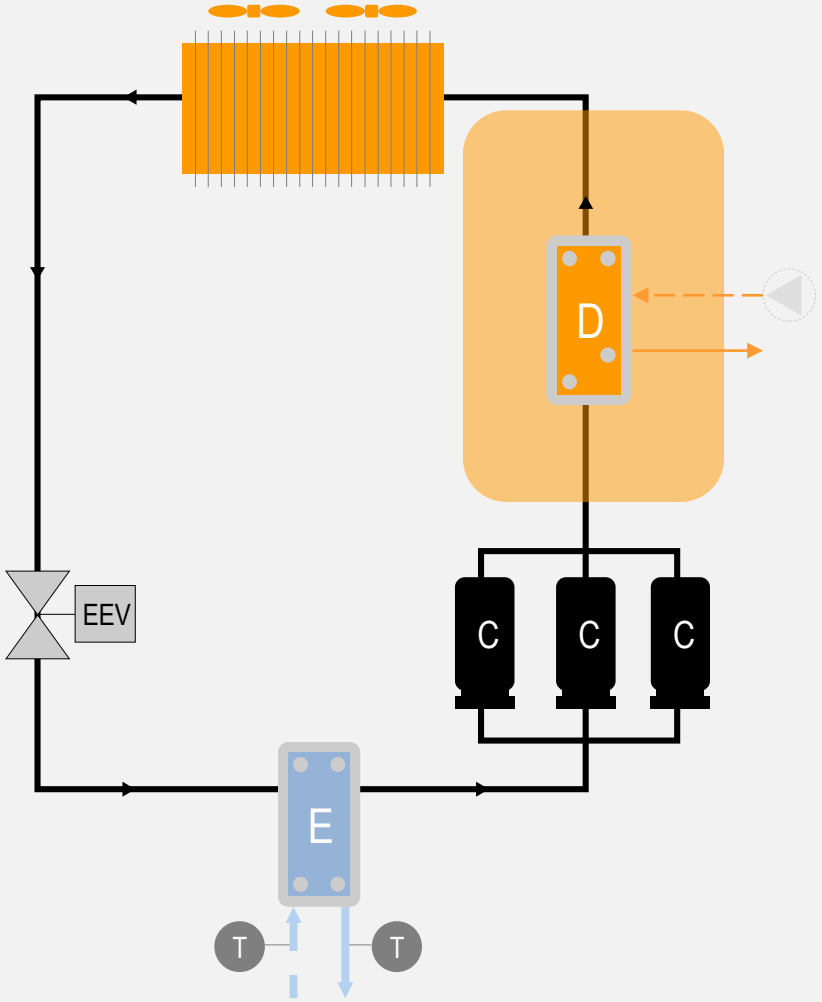


High efficiency of the heat recovery

Partial Heat recovery **(D)**

- Around **20%** of the available heat rejection
- **Control** is activated by the User



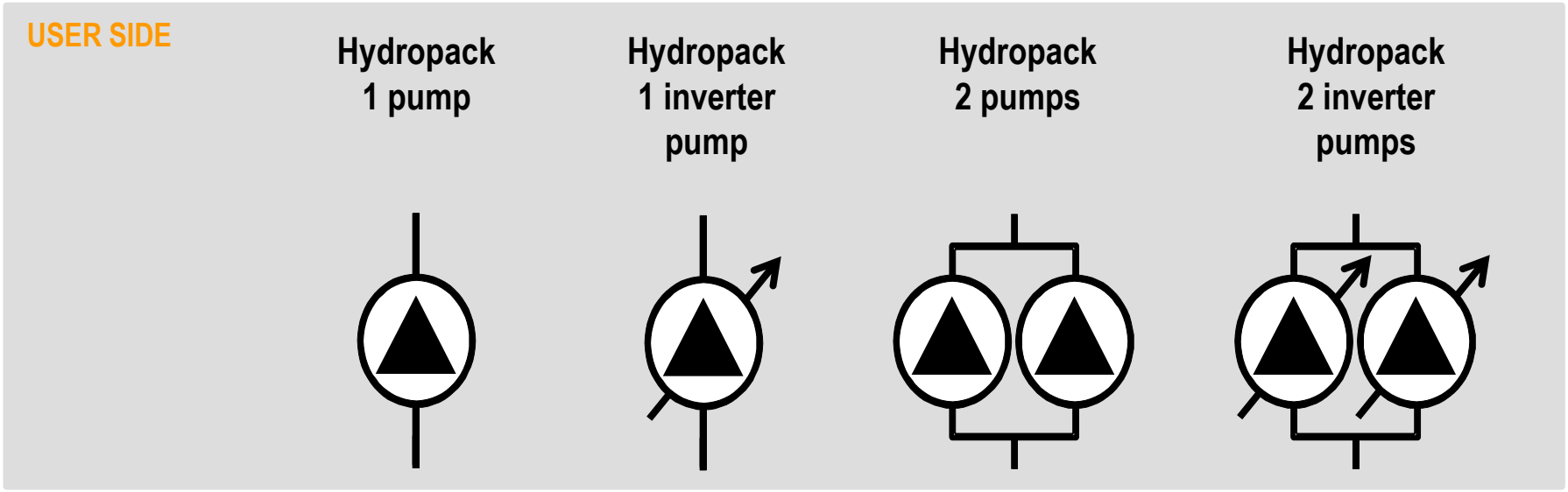


Simplifies and industrializes the plant

Optional integrated **pumping groups** save:

- Time and cost for the **set-up**
- Floor area for pumping equipment and relevant clearance

Options available with **standard and high head**:

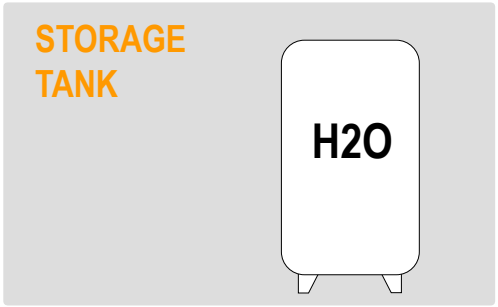


Storage Tank (optional):

- Recommended for applications with insufficient water content for the properly function of the unit

EXCELLENCE	80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Storage Tank capacity [Liters]	420	500	500	500	500	780	780	780	1050	1050	1050	1050

PREMIUM	90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Storage Tank capacity [Liters]	420	420	420	420	500	500	500	780	780	1050	1050

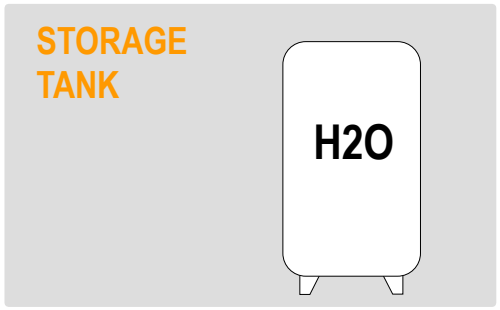


Simplifies and industrializes the plant

Shell & Tube exchanger (optional):

- Less affected by fouling
- Simple maintenance
- All water fittings are Victaulic
- The unit performances remain unchanged

Option not compatible with the following hydronic options:

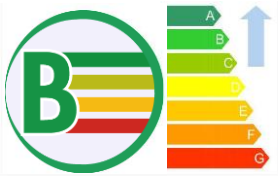


Ecoshare: Automatic management of a group of units

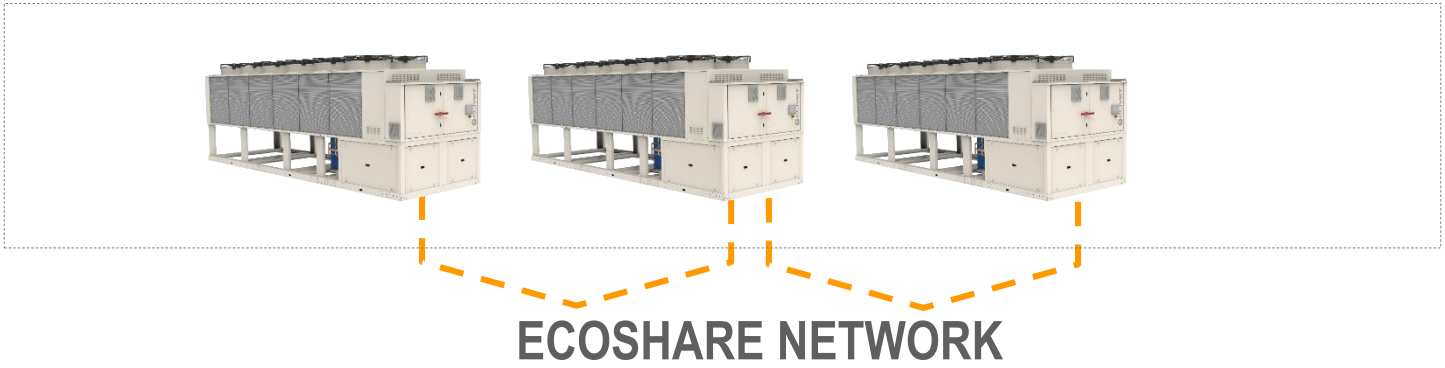
Modular system with **ECOSHARE** up to 7 units in local network

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

- **Increased energy efficiency**



- **Higher resiliance**



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)**.

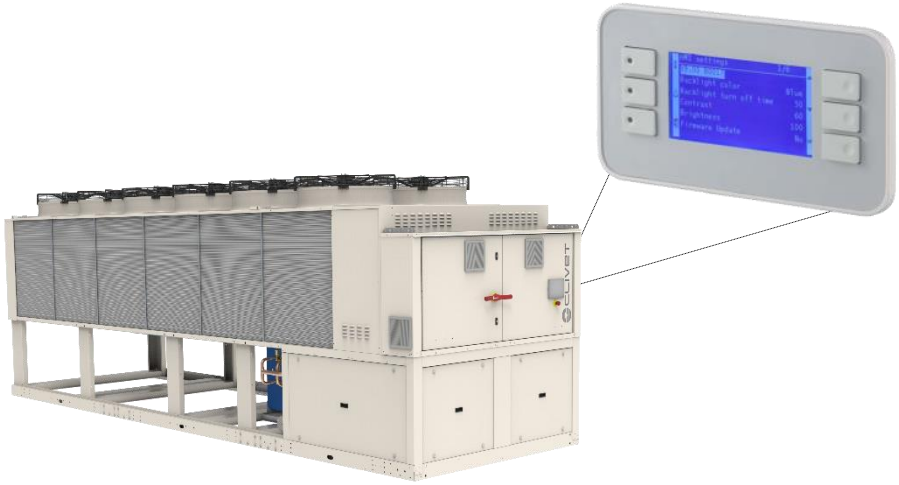
- **Maximum reliability** → Unexpected breakdown does not compromise the whole system
- **Distribution Principles:**
  - **Vertical saturation:** The unit is activated if the previous one is at full load
  - **Horizontal saturation:** Units are activated following the group maximum efficiency

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.**

Simplifies and industrializes the plant

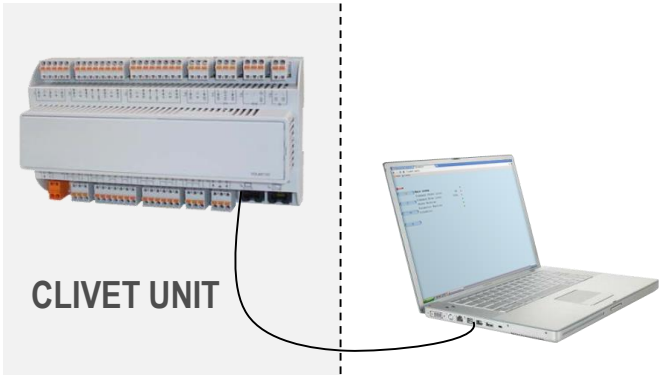
On board display

- Enables to interact easily and immediate with the unit



Connection to the PC through Ethernet port:

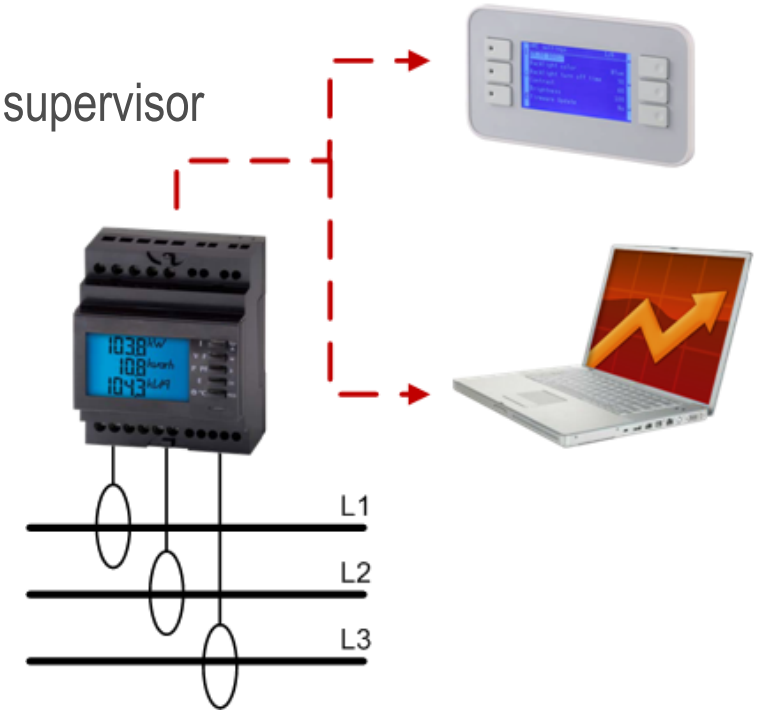
- Simplifies after-sales service thanks to the performing diagnostic, updating and for remote assistance tools



Simplifies and industrializes the plant

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

Simplifies and industrializes the plant

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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