



SPINChiller³

MSE-XSC3 90.4 - 160.4

Product presentation

MSE-XSC3 - New condenserless liquid chiller

MSE-XSC3 series is available from **265 kW to 445 kW**

High efficiency units with 2 refrigeration circuits and 4 on/off compressors

SIZES	90.4	100.4	110.4	120.4	140.4	160.4
Cooling capacity	265	289	313	349	406	445
EER	3,53	3,52	3,47	3,44	3,55	3,48
N° compressors	4	4	4	4	4	4
N° circuits	2	2	2	2	2	2



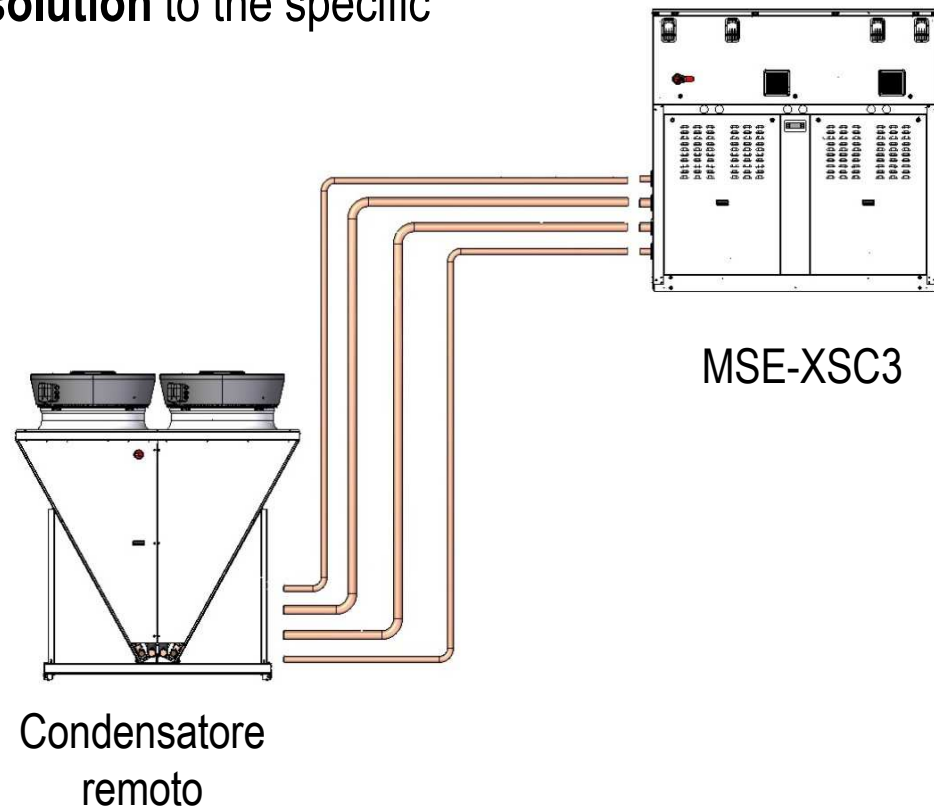
Performances calculated under the following conditions: Internal exchanger water temperature = 12/7°C, Condensing temperature = 50°C

Main features of **MSE-XSC3** - Flexibility

MSE-XSC3 adapts to the most demanding architectural constraints:

- Guarantees the **performances** up to 50 meters equivalent length
- Allows to choose the **most suitable solution** to the specific requirements of any project

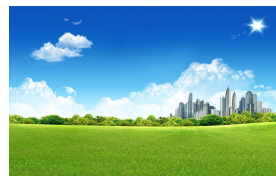
- Energy efficiency
- Silent operation
- Compactness
- Initial investment
- External climate



Main features of MSE-XSC3 - Protection

Higher protection and duration than a traditional product

- All delicate components (compressors, valves and hydronic assemblies) are **INSIDE, protected and sheltered from weather conditions**
- **Extremely easy maintenance**, ideal also for geographic areas with extreme climates



WATER



ICE



SOLAR RADIATION



SAND



Main features of **MSE-XSC3** - Installation

Flexible positioning:

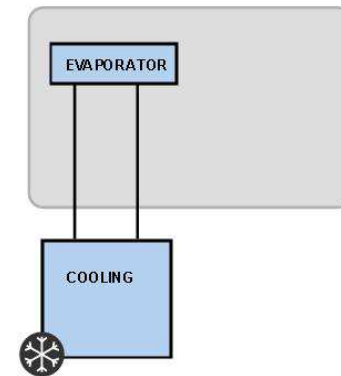
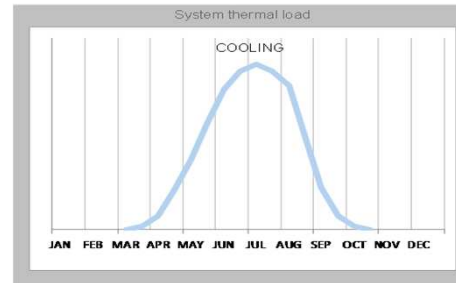
- The unit needs only an area of **2,5 m²**
- The unit is designed to be **positioned also externally**
- Operation down to **-10°C of external air**



MSE-XSC3 - System solutions

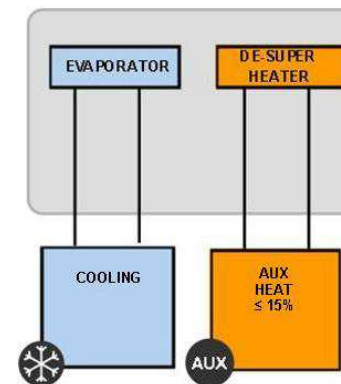
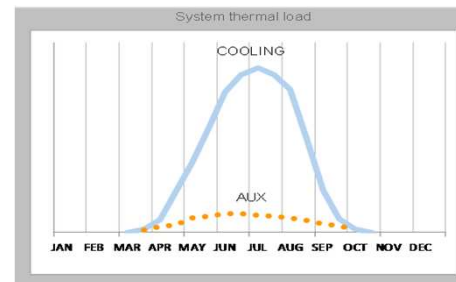
1. Standard unit

- Production of chilled water



2. Unit with partial recovery

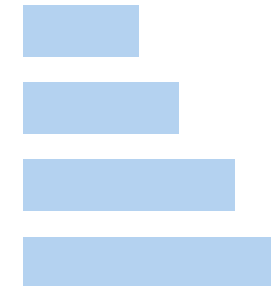
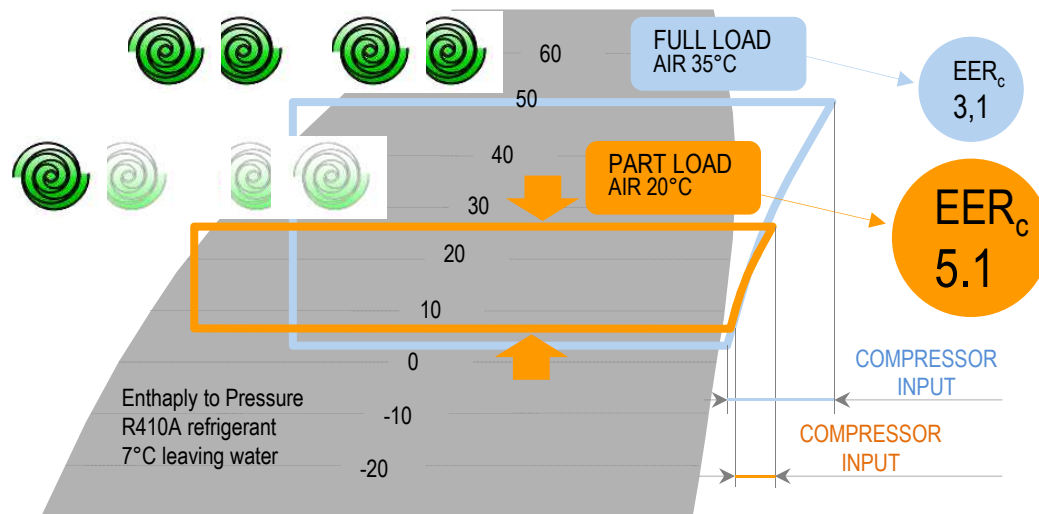
- Production of chilled water
- Free production of hot water from partial recovery



MSE-XSC3 - Multiscroll technology

Under part load conditions it allows:

- Sequential start and stop of the compressors
- Larger heat exchange surface
- Better thermodynamic conditions increased efficiency

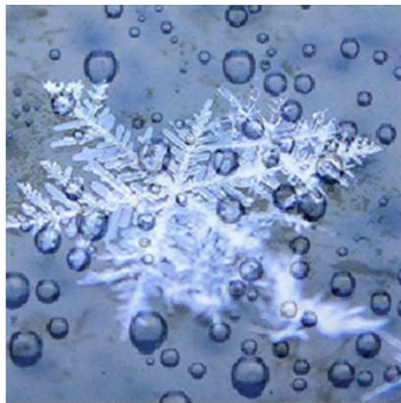


EER_c = Efficienza energetica riferita ai compressori

MSE-XSC3 - Chilling low temperature liquids

Brine configuration = Low temperature of chilled water

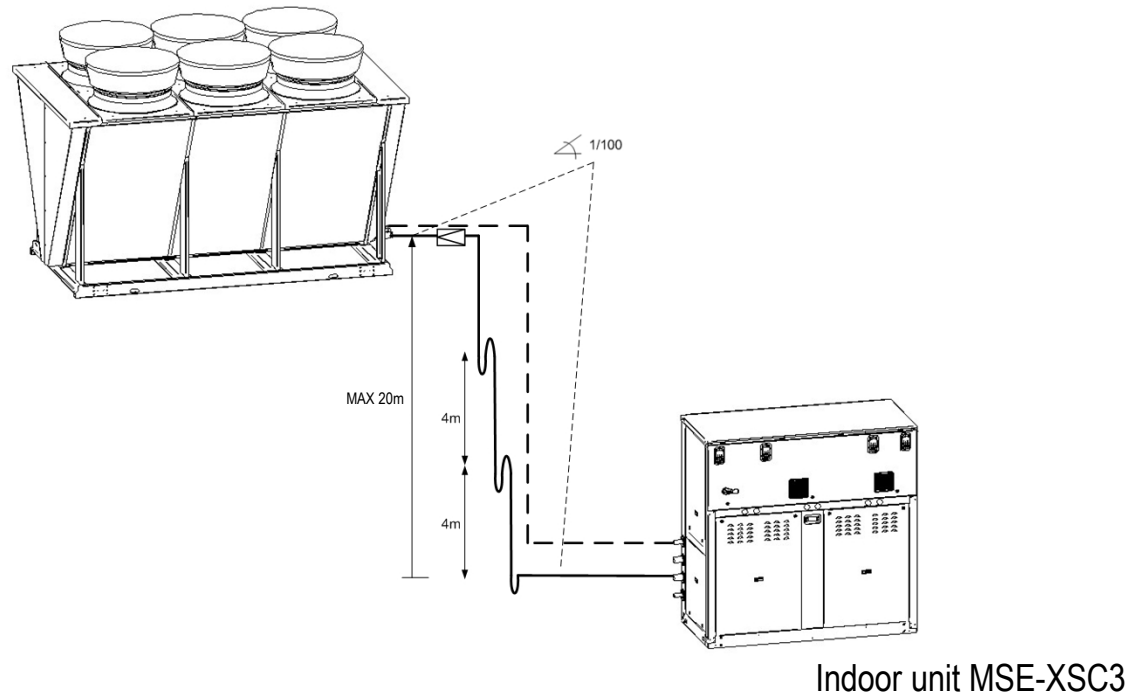
- Chilled water between **+4°C and -8°C**
- **Process** application or high **dehumidification**
- Evaporators are **complete with thick closed-cell insulation**
- Anti-freeze **glycol solution** is needed



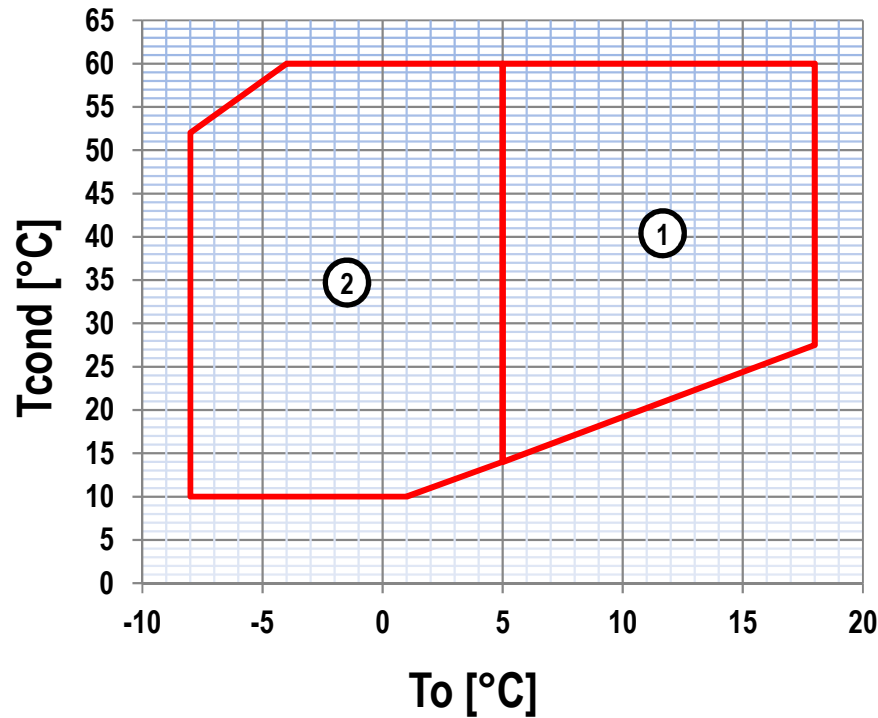
MSE-XSC3 - Application conditions

Maximum length and height of allowed refrigeration lines:

	Maximum equivalent piping length (m)	Maximum difference in height (m)
Water chiller is below remote condenser	50	+20
Water chiller is above remote condenser	50	-20



MSE-XSC3 - Wide operating range



Provide a condensation management systems for the outdoor unit (not supplied by Clivet)

Tcond [°C] = condensation temperature with 5m equivalent piping length and 0m of height level.

To [°C] = internal exchanger outlet water temperature.

1. Standard unit operating range at full load
2. Unit operating range in 'B – Low water temperature' configuration (40% ethylene glycol). Only with CREFB option.

Technical insights

Functionalities and accessories

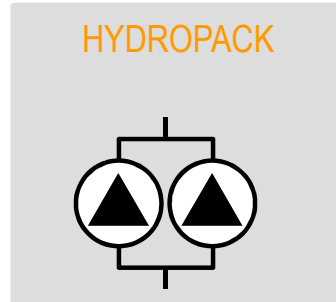


Simplifies and industrializes the system

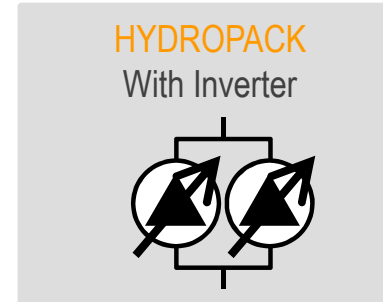
On-board integrated pumping groups let to save:

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

Available options on water side:



2 On/Off pumps
installed in parallel
Modular activation



2 inverter driven pumps,
installed in parallel
Modulating activation based on
load needs

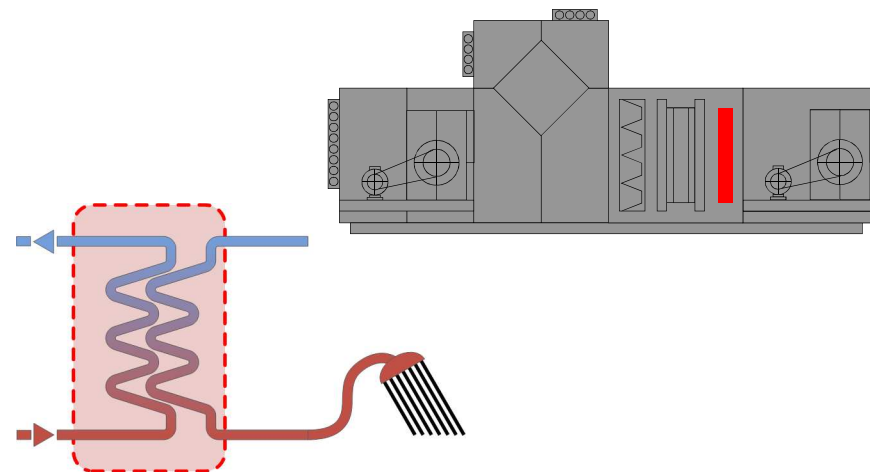
High efficiency of heat recovery

Recovery of the condensing heat, in cooling mode

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

It allows **free hot water** production for

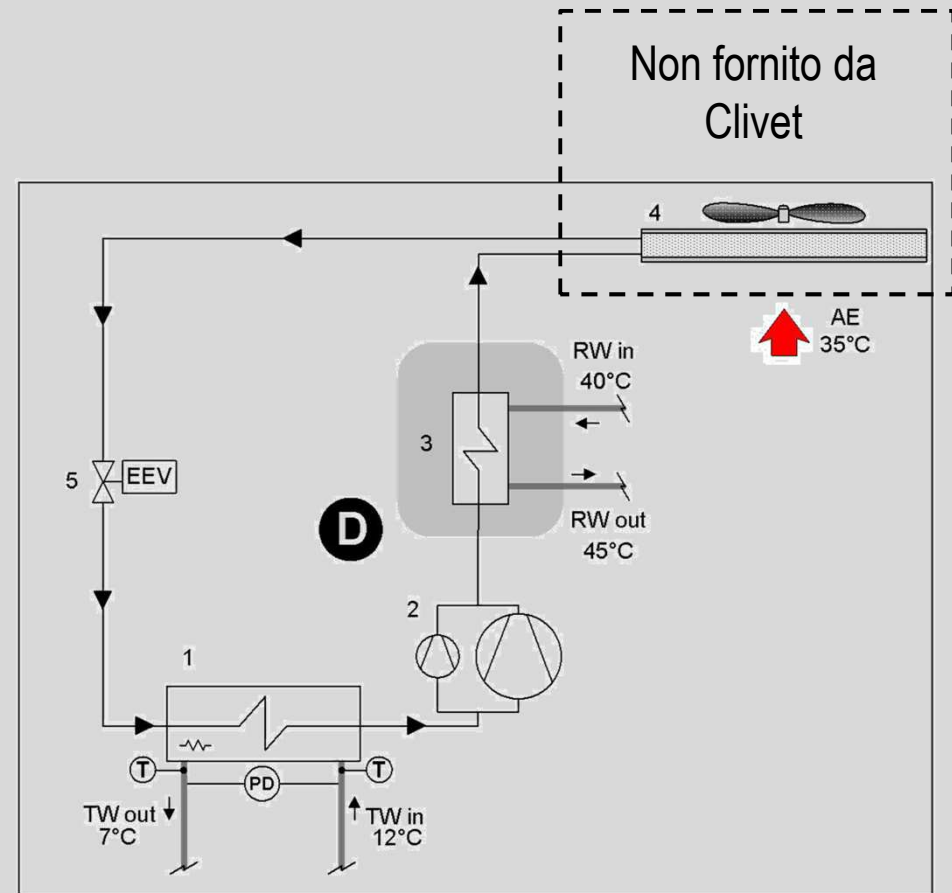
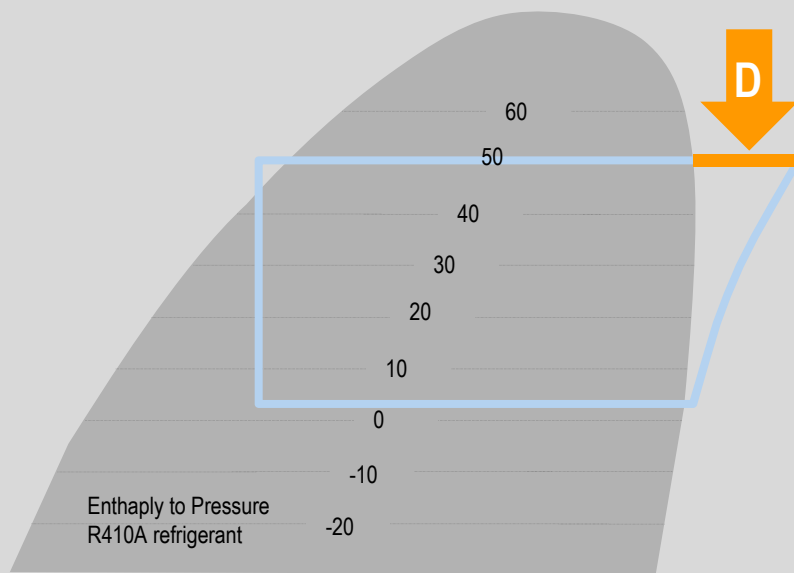
- **Re-heat** hot water coil
- **Domestic** hot water
- Other **processes** or **operation**



High efficiency of heat recovery

Deepening **partial** heat recovery (D)

- Approx. **20%** of rejected heat
- **Settings** up to the user

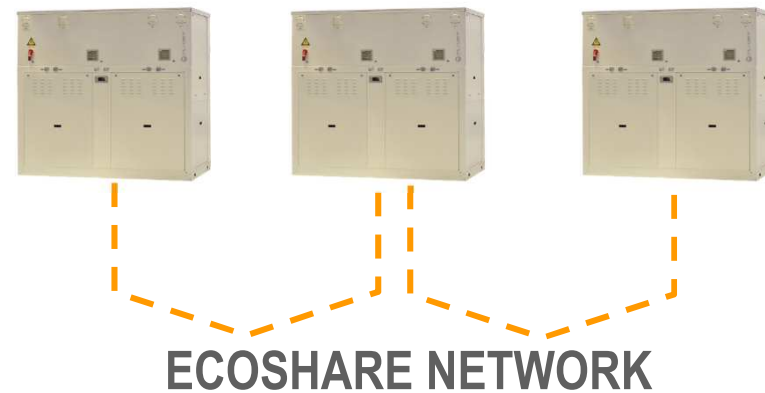


ECOSHARE: Automatic management of a group of units

ECOSHARE modular system manages up to 7 units in local network

Respect to a single unit with the overall capacity it offers **many advantages** such as:

- **Increased energy efficiency**
- **Higher redundancy**



ECOSHARE: Automatic management of a group of units

ECOSHARE functionality: automatic management of a group of units that operates 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
- **2 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, etc.) **is in operation**.

ECOSHARE: Vertical saturation

Vertical saturation: Units are gradually activated following the increasing load, only after then the previous unit has reached the 100% of its available capacity.

~ 30%
LOAD



~ 50%
LOAD



~ 80%
LOAD



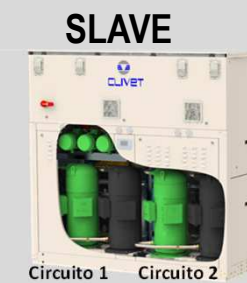
ECOSHARE: Horizontal saturation

Horizontal saturation: the requested thermal load is spread on different units, in order to exploit the higher efficiency that the units have at partial load operation.

~ 30%
LOAD



~ 50%
LOAD



~ 80%
LOAD



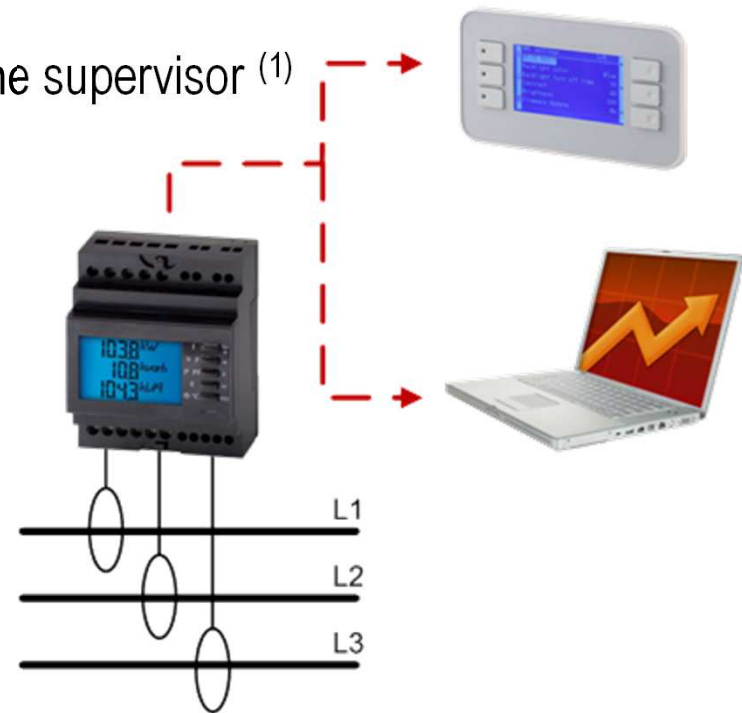
Simplifies and industrializes the system

Energy measuring

- It displays the main unit's electrical parameters
- It displays them on the unit display
- It transmits them via the serial connection to the supervisor (1)

The monitored **electrical parameters** are:

- Voltage/ Current/ Frequency
- Cos phi/ Harmonic components
- Power input/ Energy

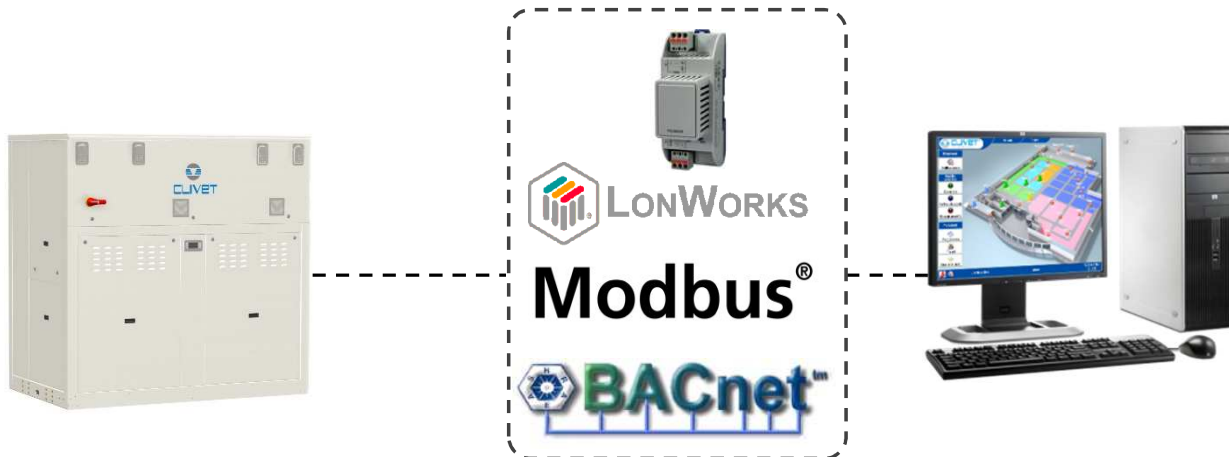


(1) In Lon-Works protocols are available: Power absorbed(kW) and Energy (kWh)

Simplifies and industrializes the system

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 protocol



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