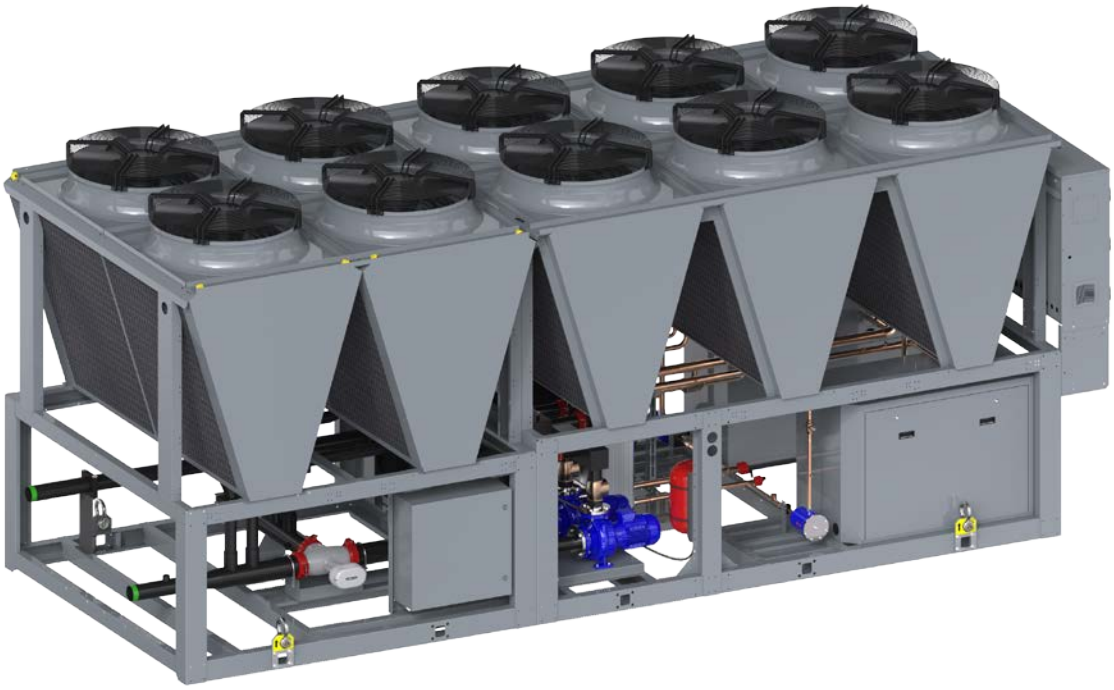
Tender Specification



SERIES: SysFreeCool

TYPE: Free-cooling module

CAPACITY RANGE: Cooling capacity from 100 to 550 [kW]

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SysFreeCool

1 General description

Free cooling option is available in two versions:

- Slave: the module can be linked to a unit of the SyScroll range with structural and hydronic links. In this case the chiller and the free-cooling module will be delivered as a monoblock unit from factory
- Stand-alone: an independent module to be linked to Systemair existing air cooled range but also to existing units (already on field), acting as an intelligent pre-cooler

10 sizes are available, with a nominal[1] capacity range from 100 to 550 [kW]

Each module can be supplied with 2 acoustic options:

- Basic Low Noise (-): delta connected fan motors, controlled through fan speed controller
- Low Noise (L): star connected fan motors, controlled through fan speed controller

To increase their field of application, 2 additional versions are available:

- EC version: same equipment as the Basic version, but the units are fitted with brushless fan motors to ensure low energy consumption
- HPF (High Pressure Fans) version: same equipment as the Basic version, but the units are fitted with brushless fan motors providing external static pressure up to 120 [Pa]

[1] Data refers to 15 (°C) Return brine temperature, 10 (°C) Leaving brine temperature, 0 [°C] Outdoor air temperature; 30% ethylene glycol

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2 Key points

Main advantages of free-cooling module if compared to the standard integrated free-cooling solution are:

- Flexibility: thanks to the fact that the module is physically independent from the unit it is possible to choose the best size matching, according required free-cooling capacity and sound level
- Fan deck independency: there is no need to find a compromise between chiller and free-cooling fan deck management. In partial free-cooling operation, chiller fan deck is typically part loaded (due to low outdoor ambient temperature, unit part loaded operation and - as a consequence - low condensing pressure) while free-cooling fan deck has to run at max speed in order to catch the maximum available energy from outdoor environment, due to the limited difference between outdoor air temperature and return water temperature

Free-cooling technology allows significant energy saving, rapid investment pay back and a remarkable CO2 seasonal indirect production decrease

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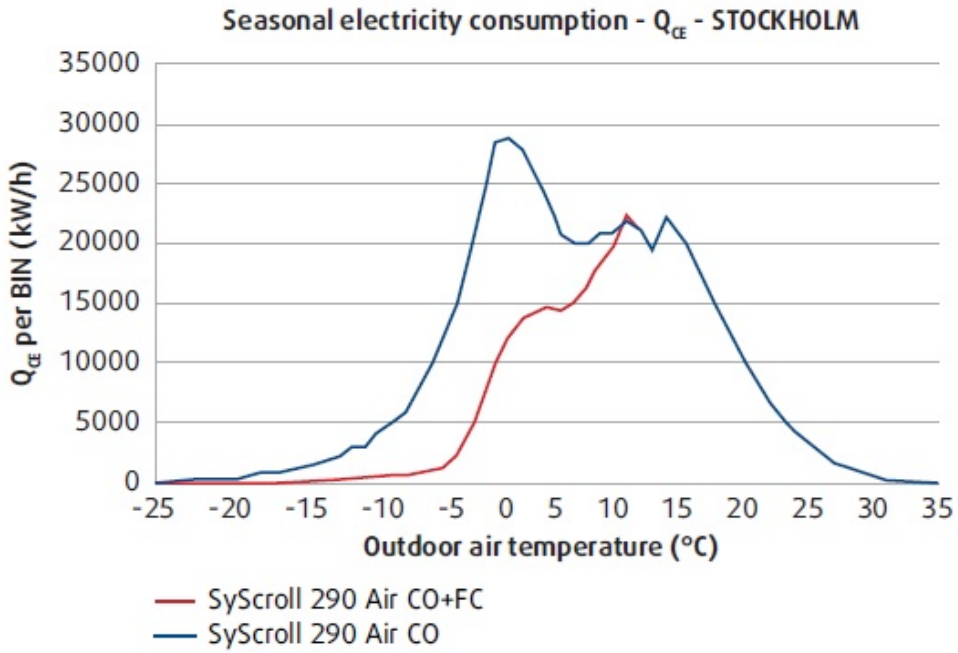

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3 Cabinet and structure

Cabinet and structure are made of heavy gauge galvanized steel coated with polyester powder based painting (RAL 7040). All parts of the structure are totally fastened with non-corrosive screws and bolts.

4 Air heat exchangers

Air heat exchangers are made of seamless copper tubes, arranged in staggered rows, mechanically expanded into corrugated aluminum fins.

5 Condenser fans

For each size and acoustic version, large diameter, direct drive axial type fans with asynchronous three-phase motors are used.
Dedicated fans with electronic brushless type motors are used in EC and HPF versions.
Fans are always equipped with externally mounted nozzle profile housing ensuring low sound levels.

6 Hydraulic circuit

Besides air heat exchangers, hydraulic circuit is including copper pipes to

connect free-cooling coils to hydraulic manifolds, 3-way flow distribution valve, air vent and drain valves.

7 Electrical board

Metal case, externally arranged at one end of the module, with IP44 protection rating, complete with grille for natural air ventilation.

8 Electronic control

A dedicated controller is available on both Slave and Stand-alone versions, providing following functions:

- Management of fan motors
- Management of 3-ways valve
- Return brine temperature set-point setting
- Antifreeze protection
- Management of external interlocks
- Remote ON/OFF
- Remote alarm signaling

The controller can also clearly show all control parameters through a liquid crystal display, such as:

- Return brine temperature
- Leaving brine temperature
- Outdoor air temperature
- Brine set-point
- Display of the various alarm and operation status:
    - flow switch signal for lack of water
    - fan motors thermal protection
    - faulty sensors

9 Safety and control devices

Each unit is complete with the following safety and control devices

Safety

- Power disconnect switch with an emergency stop function
- Antifreeze temperature sensor, set to +4 [°C]
- Safety valve, set to 6 [bar]

Control

- Return brine temperature probe
- Leaving brine temperature probe
- Outdoor air temperature probe

10 Factory installed options

- ModBus protocol kit for BMS
- Automatic circuit breaker
- E-coating for AL/CU fins
- Coils with copper fins
- Coil grilles

- Free-cooling grilles
- High static pressure fan motors - HPF Version
- Brushless fan motors - EC Version

11 Field installed accessories

- Remote ON/OFF control
- Remote keyboard panel
- Anti-vibration spring
- Water filter

12 Conformity with standards

The units are in conformity with the following standards:

- Machine Directive: 2006/42/EC
- Electromagnetic Compatibility Directive: 2014/30/EU
- Pressure Equipment Directive: 2014/68/EU