Tender Specification

SERIES: SyScroll 20-35 Air CO / HP

TYPE: Air cooled water chiller and heat pump unit

TECHNOLOGY: scroll compressor, R410A refrigerant

CAPACITY RANGE:

Cooling → 21-34 [kW]

Heating → 21-35 [kW]

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1. General description

SyScroll 20-35 Air CO / HP units have been designed and optimized to operate with R410A refrigerant and scroll compressors.

SyScroll Air CO units are available in 4 sizes, with a nominal capacity range from 21 to 34 [kW].

SyScroll Air HP units are available in 4 sizes, with a nominal capacity range from 20 to 33 [kW] in cooling mode and from 21 to 35 [kW] in heating mode.

An external buffer tank can be supplied as accessory for field installation; it is mainly recommended to provide compensation to water temperature decrease occurring during defrost operation.

All units are equipped with a multistage centrifugal pump as standard.

A fan speed controller is included in the standard equipment allowing the unit operating in cooling mode at low ambient temperature and in heating mode at high ambient temperature.

Partial heat recovery option is available:

- Desuperheater: plate type heat exchangers fitted on the compressor discharge line, to recover about 20 % of the total heat rejected to the condenser

2. Key points

- Excellent efficiency performances at full load
- Simple refrigerant circuit with easy access to inner components for maintenance purpose
- Aeraulic independence between refrigerant circuit and condensing side
- New fan motors (Erp 2015 compliant) with integrated grill, nozzle and condensers
- Several options / accessories provided with standard delivery:
    - Multistage centrifugal pump → easy hydraulic installation
    - Fan speed control → cooling operation with low OAT / heating operation with high OAT
    - Phase sequence control → safe electric installation
    - Double set-point→ different daily profiles
    - Dynamic set-point → water profile in accordance with OAT
    - Water filter → protection against impurities
    - Water differential pressure switch → protection against low water flow
    - Rubber pads → basic vibration attenuation

3. Cabinet

The cabinet is made of heavy gauge galvanized steel.
All galvanized steel components are individually painted by a special painting process before the assembly of the unit. This painting system performs a homogeneous protection to the corrosion.
The painting is a polyester powder based type, colored in RAL 7040. The units are suitable for outdoor installation, directly on the building roof or at the ground level.

4. Compressors

Compressors are of hermetic scroll type and fitted with an electronic control system ensuring protection against high temperature and excessive load.
All compressors have direct-on-line starting and are mounted on rubber vibration isolators in order to minimize noise and vibration transmission

5. Evaporator

Indoor heat exchangers are brazed stainless steel plate type. They are insulated with a 10 [mm] thick closed cell polyethylene foam material and provided with male gas threaded connections.
They are protected by a 35 [W] antifreeze electric heater to ensure a good protection against freezing at low ambient temperature when the unit is switched off.
Maximum working pressure is 10 [bar] at water side and 45 [bar] at refrigerant side.

6. Condenser

Condenser coils are made of seamless copper tubes, arranged in staggered rows, mechanically expanded into corrugated aluminum fins.
Fin spacing is optimized according coil version (CO/HP).

7. Condenser fans

Units are equipped with two 500 [mm] diameter axial fans with profiled, sickle shaped blades designed with bionical know how, optimized full bellmouth with static blades (motor suspension) and short diffusor.
They are placed directly in front of the coil in order to increase the air flow and the heat transfer between air and refrigerant.
Fan motors have IP54 protection grade, and thermostat protection placed in the bearings. Both fans are equipped with a safety grill.

8. Refrigerant circuit

All the units are equipped with a single refrigerant circuit.
Refrigerant circuit is equipped with filter-drier with solid core, sight glass and thermostatic expansion valve.
Heat pump units (HP) are additionally provided with 4-way reversing valve and liquid receiver.

9. draulic circuit

All units are equipped with multi-stage centrifugal pump providing outdoor available static pressure. Pump impeller is insulated with anti-condensation shell. Water filter is supplied as standard. Safety valve and expansion tank

are placed on suction side of the pump. Water connections are 1" 1/4 male GAS threaded type.

10. Control panel

A new optimized control is supplied on all the units with a simple user interface (possibility to customize keys functions and to set menus visibility). In addition to standard features as water temperature control (with possibility to choose LWT/EWT probe), the control can also manage following functions:

- DHW control with anti-legionella function daily and weekly activated
- Dynamic set point (4-20 [mA], 0-1 [V], 0-5 [V], 0-10 [V])
- Double set point
- OAT compensation
- Boiler / Electrical heater integration
- Auto adaptive function to reduce the water content of the plant
- Managing of DHW 3 ways valve (ACCESSORY)
- Advanced pump management
- Remote keyboard (ACCESSORY) with possibility to connect (up to 100 [m] distance) without any serial interface

11. Safety and control devices

Each unit is complete with the following safety and control devices.

Safety

- Fan motor overload protection
- Compressor motor overload protection
- Phase sequence control
- Pump motor overload protection
- High pressure switch
- Low pressure switch
- Discharge gas thermostat (HP units)
- Evaporator antifreeze electric heater
- Crankcase oil electric heater

Control

- Return water temperature sensor
- Leaving water temperature sensor
- Coil temperature sensor (HP units)
- Air temperature sensor
- Discharge pressure transducer

12. Standard equipment

- Multistage centrifugal pump
- Fan speed control
- Phase sequence control
- Double set-point
- Dynamic set-point
- Water filter
- Water differential pressure switch
- Compressor/pump hour meter
- Compressor box
- Evaporator antifreeze electric heater
- Compressor belt electric heater

- Water buffer tank (112 [l])
- Water flow switch
- Water pressure switch
- In/out valve kit
- No pump kit
- Remote ON/OFF control
- Remote keyboard
- Sequencer for up to 4 chillers installation

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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

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