



## Air-cooled scroll chillers

160 kW - 520 kW

30RBM & 30RBP

### SIMPLICITY **OR** INTELLIGENCE?



**AQUASNAP® WITH  
GREENSPEED® INTELLIGENCE,  
BECAUSE YOU SHOULD NOT  
HAVE TO CHOOSE.**



The Aquasnap liquid chillers are the best value solution for commercial and industrial applications where installers, consultants and building owners require reduced installed costs, optimal performances and maximum quality.

The new generation Aquasnap, features two new versions:



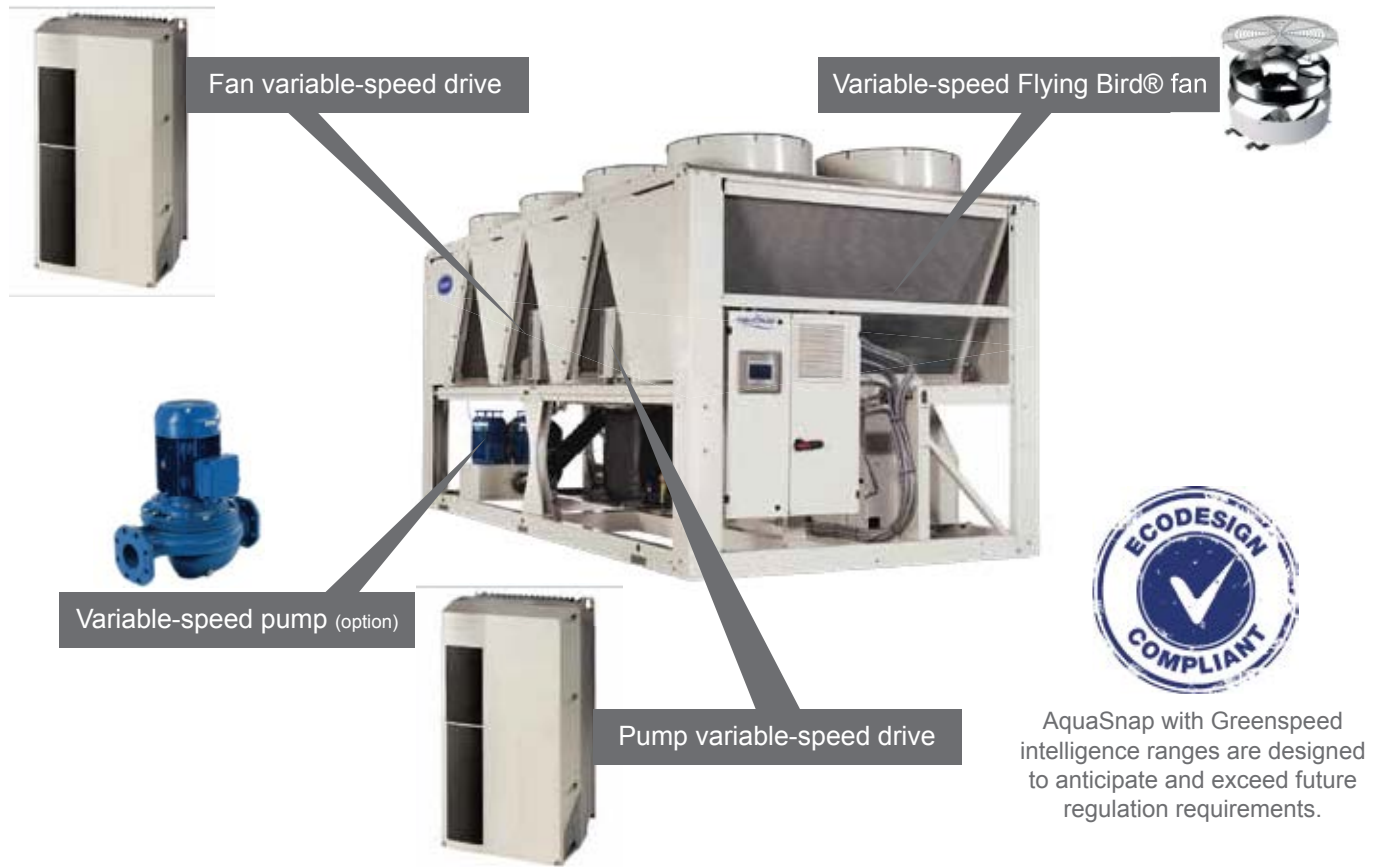
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## FIRST VERSION 30RBM



The 30RBM Aquasnap version - a compact all-in-one package optimized for full-load applications where reduced investment cost (low Capex) is required. For cold or hot climates, the Aquasnap can be equipped with specific options to operate from -20°C up to 52°C ambient temperatures.

## SECOND VERSION 30RBP



AquaSnap with Greenspeed intelligence ranges are designed to anticipate and exceed future regulation requirements.

The 30RBP Aquasnap Greenspeed® version - a compact all-in-one package optimized for part-load applications where high ESEER/IPLV\* are required. The Aquasnap Greenspeed®, equipped with variable speed condenser fans and variable speed pump, provides premium part load efficiency to reduce utility costs over the lifespan of the chiller. Additionally, the low sounds levels achieved at part load conditions can be very beneficial for sensitive acoustic applications. Besides operating efficiently and quietly, Aquasnap Greenspeed® operates from -20°C up to 48°C ambient temperatures as standard.

\*ESEER: European Seasonal Energy Efficiency Ratio

\*IPLV: Integrated Part Load Value (for USA)

## Features and Benefits



The Aquasnap liquid chillers are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO<sub>2</sub> emissions. They use the best technologies available today:

- ▶ Reduced refrigerant charge of ozone-friendly refrigerant R-410A.
- ▶ Scroll compressors.
- ▶ Greenspeed® variable-speed driven fans (30RBP models).
- ▶ Novation® micro-channel heat exchangers with new aluminum alloy.
- ▶ Brazed plate heat exchangers with reduced water pressure drops.
- ▶ Auto-adaptive microprocessor control with Greenspeed® intelligence.
- ▶ Optional Touch Pilot control with web connectivity possibilities and colour touch screen user display.
- ▶ Extra energy savings through multiple options: Direct-expansion free cooling system on one or two circuits, hydronic free-cooling system, partial or total heat recovery (Options available during 2015).

Both Aquasnap versions can be equipped with an integrated hydronic module.

Recommended by Carrier, the Aquasnap can be equipped with one or two Greenspeed® variable-speed pumps.

For operation in the most stringent environments that cumulates high temperature, dusts and sand, the Aquasnap (30RBM) can be equipped with optional IP54 electrical box and cabinet fan to operate up to 52°C outside air temperature.

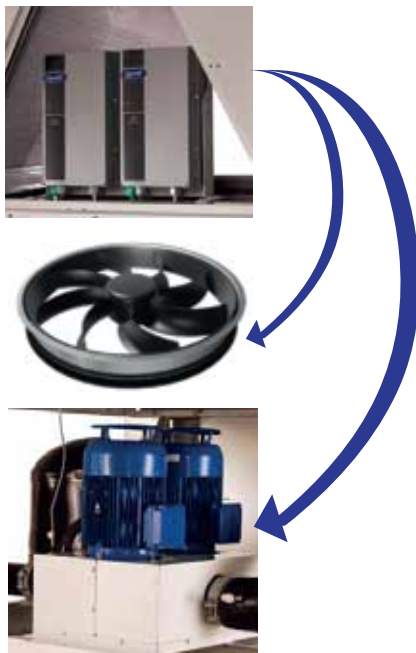
## 1 Very economical operation

### Full and part load energy efficiency:

- Eurovent energy efficiency class A or B.
- EER up to 3,10 and ESEER up to 4,35 (30RBP version).
- Multiple scroll compressors equipped with a high-efficiency motor.
- Electronic expansion device.
- Condenser with high-efficiency Novation<sup>®</sup> aluminum micro channel heat exchangers and Greenspeed<sup>®</sup> variable speed fans (30RBP version).
- Low pressure drop brazed plate heat exchangers.

### Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods.

### Greenspeed<sup>®</sup> variable-speed pump to reduce pumping energy.



### Extra energy savings through multiple options:

- Glycol free direct-expansion free cooling.
- Partial or total heat reclaims.

### Reduced maintenance costs.

## 2 Low sound level

### Condenser section with fixed speed fans (30RBM models):

- Optional low-speed fans (700 rpm) and compressor enclosure to reduce full load noise level by 6 to 7dB(A).
- Low-noise 4th generation Flying Bird fans.

### Condenser section with Greenspeed<sup>®</sup> variable-speed fans (30RBP models recommended by Carrier for even quieter operation):

- Optional factory setting of the fan in low speed together with compressors enclosure to reduce full load noise level by 6 to 7dB(A).

### Specific control functions or features to reduce noise level during night or unoccupied periods.

## 3 Fast and easy installation

### Compact design.

### Integrated hydronic module (option):

- Low or high-pressure water pump (as required).
- Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops.
- Water filters protecting the water pump against circulating debris.
- Pressure transducers for direct numerical display of the water flow rate and water pressures.
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (option).
- High-capacity membrane expansion tank (option).



### Integrated hydronic module with Greenspeed® variable-speed pump (option recommended by Carrier):

- Easy and fast electronic setting of the nominal water flow at unit commissioning thus eliminating the water flow control valve adjustment.
- Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.

### Simplified electrical connections.

### Fast unit commissioning:

- Systematic factory test before shipment.
- Quick-test function for step-by-step verification of the instruments, electrical components and motor.

## 4 Superior reliability

### State-of-the-art concept.

### Auto-adaptive control:

- Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the water loop (Carrier patent).
- Automatic compressor unloading in case of abnormally high condensing pressure.
- Automatic fan speed adjustment in case of coil fouling (30RBP models).
- Smooth fan start to increase unit lifetime (30RBP models).

### Exceptional endurance tests:

- Partnerships with specialized laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
- Transport simulation test on an endurance circuit based on a military standard.

## Controls

### Pro-Dialog+ control (standard)



Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the evaporator water pump for optimum energy efficiency.

### Energy management:

- Internal time schedule clock: Controls chiller on/off times and operation at a second set-point.
- Set-point offset based on the outside air temperature.
- Master/slave control of two chillers operating in parallel with operating time equalization and automatic changeover in case of a unit fault.

### Integrated features:

- Night mode: Capacity and fan speed limitation for reduced noise level.
- With hydronic module: Water pressure display and water flow rate calculation.

### Pro-Dialog+ control (standard)



The Touch Pilot features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 5" color touch screen.



**Energy management:**

- Monitoring of the cooling and pumping energy use on Touch Pilot user interface with optional electricity meter.

**Integrated advanced communication features:**

- Easy and high-speed communication technology over Ethernet (IP) to a building management system.
- Access to multiple unit parameters.

**5" Touch Pilot user interface:**

- Intuitive and user-friendly 5 inch touch screen interface.
- Concise and clear information is available in local languages.
- Complete menu, customized for different users (end user, service personnel or Carrier engineers).

## Remote management (standard)

Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection.

**The Aquasnap also communicates with other building management systems via optional communication gateways. A connection terminal allows remote control of the Aquasnap by wired cable:**

- Start/stop.
- Dual set-point.
- Demand limit.
- Operation indication.
- Alarm indication.

## Energy Management Module (option)

**The Energy Management Module offers extended remote control possibilities:**

- Room temperature: Permits set-point reset based on the building indoor air temperature (with Carrier thermostat).
- Set point reset: Ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal.
- Demand limit: Permits limitation of the maximum chiller power based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the time schedule effects.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: This on/off output controls an independent boiler to provide hot water.

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