

# ARIES *freecooling*

Air-cooled chillers featuring integrated freecooling with R407C equipped scroll compressors. Cooling capacity 65 - 226 kW.

FREECOOLING OFFERS NOTABLE ENERGY SAVINGS AND RAPID PAYBACKS IN INDUSTRIES REQUIRING COLD WATER ALL YEAR ROUND. ARIES FC FEATURES SEPARATE REFRIGERATION AND FREECOOLING SECTIONS, FOR IMPROVED EFFICIENCY VERSUS TRADITIONAL SOLUTIONS.



## ENORMOUS UTILISATION POTENTIAL

Aries Free-Cooling units are the ideal solution for industrial processes which require cooling throughout the entire year, especially when the ambient air temperature is lower than the temperature of the fluid returning from the process circuit. As an example of the potential of the free-cooling operating mode, for applications with 24 hour/day production cycles the annual percentage of free-cooling operation can be in excess of 90%, resulting in energy savings in the region of 40-50%.

## ADVANCED SOFTWARE

Apart from managing the free-cooling parameters, the innovative software, specifically developed by MTA, controls the automatic rotation of the compressors start sequence, the unloading procedure and the management of the optional electronic thermostatic valves.

The microprocessor also interfaces with peripheral systems at several levels, from user level to supervision network level. GSM modem connection is offered, as is guaranteed compatibility with the most widely used BMS system communication protocols: BACnet, Lonworks, and ModBus.

## A PLUG AND PLAY SOLUTION

AS 201-301 FC are equipped, as standard, with a storage tank with a finned evaporator immersed within it, whilst AS 351-751 FC feature a shell-and-tube evaporator and an optional storage tank. All hydronic components can be pre-installed inside the unit, creating a packaged solution. This translates into savings in time otherwise required to select hydraulic circuit components plus less complex installation procedures and hence a reduction in installation times and costs.



## INDEPENDENT AERAILIC SECTIONS

The total aerailic independence of the free-cooling coils with respect to the condensing coils is achieved using dedicated fans and coils within separate compartments. This solution offers maximum efficiency in the exploitation and control of the free-cooling mode, providing a simple and reliable solution to the problems associated with conventional designs in which the free-cooling coils are positioned in front of the condensing coils and served by shared fans. In fact such conventional solutions result in a significant reduction in energy savings because of the higher power consumption of the fans and the critical conditions caused by the concurrency of conflicting requirements, namely the need to reduce the air flow for condensing pressure control and to increase it to maximise the useful free-cooling effect.

## VERSIONS

- N - standard;
- SN - low noise;
- SSN - super-silent;
- Low ambient temperature version (min. -15 °C).

## ACCESSORIES

- Compressor discharge and intake valves;
- Condensing section electronic fan speed regulation;
- Electronic thermostatic valves;
- Storage tank (AS 351-751 FC);
- Single or double pumps with standard or elevated head pressures;
- Metal mesh protection filters for coils;
- Pre-coated coils for aggressive ambients;
- Crankcase heaters;
- Phase monitor;
- Power factor correction capacitors;
- Antivibration dampers kit;
- Replicated remote user terminal kit;
- Supervisor kits.

|                    |                                  | Model ARIES <sup>freecooling</sup> | 201          | 251  | 301  | 351  | 401  | 501  | 551  | 601  | 701  | 751  |
|--------------------|----------------------------------|------------------------------------|--------------|------|------|------|------|------|------|------|------|------|
| Free Cooling OFF   | Cooling capacity (1)             | kW                                 | 65,4         | 70,8 | 88,2 | 104  | 126  | 148  | 170  | 185  | 206  | 226  |
|                    | Absorbed power (1)               | kW                                 | 13,9         | 16,2 | 17,0 | 26,3 | 30,2 | 35,7 | 39,6 | 45,4 | 47,0 | 53,9 |
|                    | Max external air temperature (1) | °C                                 | 42           | 45   | 45   | 39   | 41   | 40   | 40   | 38   | 42   | 41   |
| TOTAL Free Cooling | Cooling capacity (1)             | kW                                 | 65,4         | 70,8 | 88,2 | 104  | 126  | 148  | 170  | 185  | 206  | 226  |
|                    | Absorbed power (*)               | kW                                 | 1,6          | 2,3  | 2,3  | 4,0  | 4,0  | 4,0  | 4,0  | 4,0  | 6,0  | 6,0  |
|                    | Total freecooling (1)            | °C                                 | 4,3          | 4,7  | 2,7  | 5,0  | 3,7  | 2,3  | 3,4  | 2,2  | 4,6  | 3,5  |
| Free Cooling OFF   | Cooling capacity (2)             | kW                                 | 46,5         | 49,5 | 63,1 | 72,8 | 88,6 | 105  | 121  | 133  | 147  | 162  |
|                    | Absorbed power (2)               | kW                                 | 15,7         | 18,8 | 19,5 | 29,0 | 33,1 | 38,5 | 42,7 | 48,6 | 50,8 | 57,8 |
|                    | Max external air temperature (2) | °C                                 | 46           | 48   | 48   | 44   | 45   | 44   | 44   | 43   | 46   | 45   |
| TOTAL Free Cooling | Cooling capacity (2)             | kW                                 | 46,5         | 49,5 | 63,1 | 72,8 | 88,6 | 105  | 121  | 133  | 147  | 162  |
|                    | Absorbed power (*)               | kW                                 | 1,6          | 2,3  | 2,3  | 4,0  | 4,0  | 4,0  | 4,0  | 4,0  | 6,0  | 6,0  |
|                    | Total freecooling (2)            | °C                                 | -1,1         | -0,7 | -2,3 | -0,6 | -1,5 | -2,5 | -1,5 | -2,5 | -0,6 | -1,6 |
| Power supply       |                                  | V/Ph/Hz                            | 400±10%/3/50 |      |      |      |      |      |      |      |      |      |
| Noise level        |                                  | dB(A)                              | 60,2         | 60,2 | 61,5 | 62,6 | 61,6 | 61,6 | 61,6 | 61,6 | 62,3 | 62,3 |
| Depth              |                                  | mm                                 | 1400         | 1400 | 1400 | 2188 | 2188 | 2188 | 2188 | 2188 | 2188 | 2188 |
| Width              |                                  | mm                                 | 2550         | 2550 | 2550 | 3495 | 3495 | 3495 | 4595 | 4595 | 4595 | 4595 |
| Height             |                                  | mm                                 | 2136         | 2136 | 2136 | 1989 | 1989 | 1989 | 1989 | 1989 | 1989 | 1989 |
| Installed weight   |                                  | Kg                                 | 1494         | 1494 | 1509 | 1858 | 1980 | 2276 | 2536 | 2541 | 2752 | 2803 |

All data refers to standard units at the following nominal conditions:

(1) Evaporator water inlet-outlet 20-15 °C, external air temperature 25 °C; glycol water at 30%.

(2) Evaporator water inlet-outlet 12-7 °C, external air temperature 35 °C; glycol water at 30%.

(\*) In total freecooling mode the total absorbed power is only the fans absorbed power.

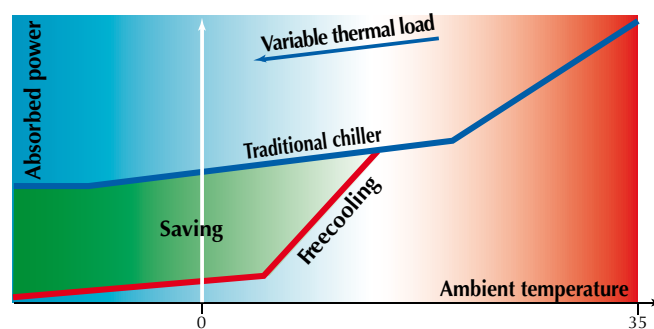
Sound pressure level in hemispherical field at 10 m from condenser side and 1.6 m from ground. Values with tolerance ± 2 dB.

The sound levels refer to operation of the unit under full load in nominal conditions.

## INSTANT COOLING, FREE OF CHARGE

The difference between the ambient air temperature and the temperature of the fluid in the process circuit is continuously monitored by the microprocessor which, as soon as conditions permit it, automatically activates the free-cooling mode, starting the dedicated fans and diverting the flow of fluid to the free-cooling coil by means of a three-way modulating valve (fitted as standard). The microprocessor independently controls the speed of both the free-cooling and the condensing fans, maximising energy savings and simultaneously optimising refrigerant cycle performance. The resulting overall EER value is higher than 10.

## THE BENEFITS OF FREE-COOLING



Backlit semi-graphic user terminal



Aeratically separate sections for the maximum exploitation of free-cooling



Servo-controlled three-way modulating hydraulic valve supplied as standard



Shell-and-tube evaporator: a reliable solution

