

ENERG Y OPT I M I S A T I O N

AIR - WATER

air

R410A



water

# AQUACIAT 2

Heating pumps & Chillers from 20 to 170 kW

## THE WINNING ALLIANCE



COMFORT AIR QUALITY

# aquaciat 2 evolution

## the multi-performance chiller

The extended AQUACIAT 2 range meets the most varied requirements in the fields of air conditioning and liquid cooling. Offices, collective housing, shopping centres, hotels, industrial processes ... Just some of the many applications for all versions of AQUACIAT 2.



Designed to provide the best in technology, AQUACIAT 2 combines essential assets:

- **Energy efficiency:** the developed and implemented technological solutions make the AQUACIAT 2 range the most efficient of chilled water and heat pump units. Their efficiency results in energy savings and respect for the environment.
- **Thermal precision:** AQUACIAT 2 is managed by Connect 2, the new generation of CIAT controllers. Versatility, adaptability, networking capacity, user-friendliness, control capacity... Everything has been carefully designed to combine performance with economical operation all year round.
- **Acoustic comfort:** each component undergoes a rigorous selection process based on its optimum acoustic characteristics, and all the assembly work is carried out with special care and using specific methods.
- **Design:** Compactness, fluid lines, sobriety of the lacquered steel panels... Thanks to its discreet aesthetic qualities, AQUACIAT 2 blends in well with all types of architecture.



# the **winning** alliance: energy efficiency & **preservation of the environment**

With AQUACIAT 2, CIAT contributes to sustainable development with an air conditioning unit totally in line with the ecological and economic stakes. It thus meets the requirements of the future European thermal regulations and helps to preserve our environment for the generations to come.

- The choice of R410A, a stable fluid with high levels of thermodynamic characteristics, provides extra power while reducing electricity consumption. AQUACIAT 2 not only provides lower operating costs, and hence appreciable energy savings for the user, it also reduces greenhouse gas emissions resulting from electricity production.
- The physical and thermodynamic qualities of R410A have been associated with increased efficiency in the design of the refrigerating circuit:
  - all the components used are brazed to reduce the risk of leaks.
  - reduced refrigerant charge thanks to reductions in pipe diameters and the presence of brazed plate heat exchangers.
- Furthermore, thanks to the almost total absence of «glide» and to the characteristics of R410A, which are similar to those of a «pure fluid», temperature levels are better controlled throughout the full circuit. The risk of the heat exchangers freezing is reduced, and this therefore greatly increases the reliability of the installation as a whole.

## HIGH ENERGY EFFICIENCY

**EER\***  **COP\*\*** 

ENVIRONMENTALLY-FRIENDLY  
CDP = 0  
Recyclable refrigerant  
Reduced load



SAFETY  
Non-flammable  
Non-toxic

DISCREET  
Sound level  
Inconspicuous

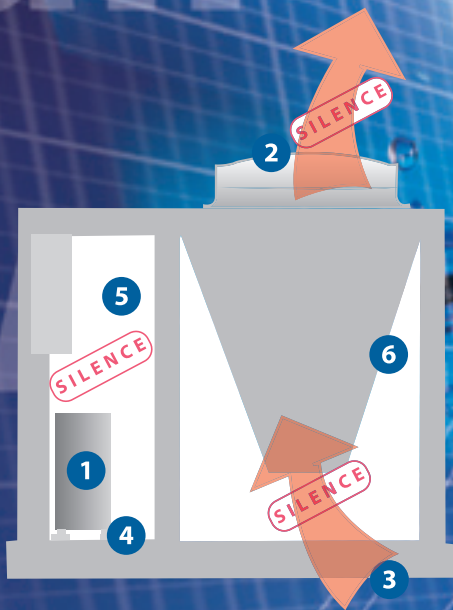
AQUACIAT 2 attains high levels of performance: EER 3 and COP 3.3. The electricity consumption is reduced by 20% when compared with traditional equipment using R407C. It provides direct savings in operating costs and ensures good levels of return on investment for the user.



# aquACIAT<sup>2</sup> evolution

## low noise version

preserves the  
environment



AQUACIAT 2 has been designed to comply with the most stringent acoustic requirements for the premises on which it is installed.

To do so, it includes:

- The most efficient components:

1 A new generation of Scroll compressors with continuous spiro-orbital movement. They generate very low levels of vibration and are set on anti-vibration mounts.

2 New fans with optimised aerodynamic blade profiles. The air flows through without any turbulence.

3 Anti-vibration mounts supplied as standard. No vibration is transmitted to the structure of the building.

- NOISELESS assembly to guarantee LOW NOISE levels:

4 Structure of the compressors separated from the rest of the unit by anti-vibration mounts.

5 Compressors in a technical compartment, isolated from the airstream. A real soundproof casing that avoids propagation of sound outside the unit.

6 Automatic adjustment to suit the exact airflow needs under partial loads: reductions in power levels, low outdoor temperatures (night time, mid season, early morning, late evening), namely 75% of the time.

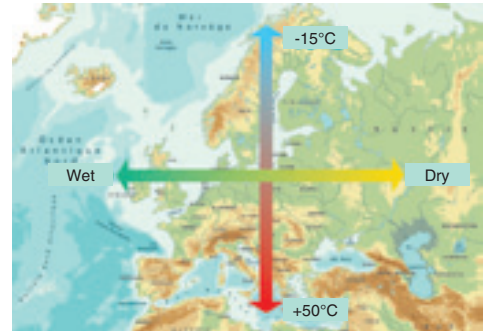


# Multi-climate and multi-application

- Multi-climate: -15°C to +50°C

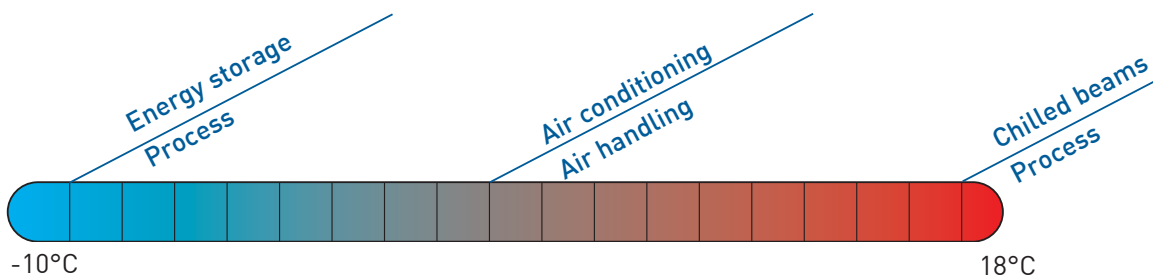
AQUACIAT 2 is fitted as standard with all the parts and control algorithms necessary to allow it to operate all year round whatever the climate.

AQUACIAT 2 can run in the heat of the Mediterranean basin or in the cold of Scandinavia, in the humid Atlantic coasts or in the dry climates of Central Europe.



- Multi-application: heating, cooling, industrial processes

AQUACIAT 2 meets all the traditional applications of heating and air conditioning in fields as varied as those of collective housing, hotels, shopping centres or offices. It can also operate at temperatures as low as -10°C to comply with the requirements of process applications, or with energy storage and at high temperature at 18°C for use in process cooling or air conditioning via chilled beams.



## Cheaper to run

- Reversible  
Lower operating costs

The reversible version of the AQUACIAT 2 ensures regular comfort all year round: cooling the air in summer or heating it economically in winter.

Thanks to the exceptional coefficient of performance provided by R410A, your heating system presents an unrivalled comfort/operating cost ratio while respecting your property and adding to its value.

DEGIPAC is an intelligent defrosting system developed by CIAT. It automatically detects frost on the batteries halving the frequency of defrosting and making it more effective. The result is an additional energy gain of 5% over one season.



- Energy recovery  
Even greater savings

AQUACIAT 2 can be fitted with an energy recovery unit. While carrying out its air conditioning or heating functions, AQUACIAT 2 produces hot water free of charge; the water can then be used for various applications (domestic hot water, processes, etc.), leading to further cost savings and an even faster return on investment.



# aquACIAT 2 evolution

the  
**multi-solution** chiller

**Compact**

**Easy to install**

The «Plug & Cool» solution

Integration in an existing building and optimum use of the surface area available - constraints to which AQUACIAT 2 is able to respond efficiently thanks to its integrated hydraulic module. No technical room is required to install the pumps, expansion vessel, water tank or other accessories... AQUACIAT 2 reduces the foot print required for the installation by 30%, thus freeing extra space for other uses.

No time is wasted to find, select, arrange for supplies or carry out administrative work linked to all the hydraulic components: AQUACIAT 2 integrates them all.

With ever shorter lead times for the installation and commissioning of this type of unit, AQUACIAT 2 on average saves 30% more time. No unpleasant surprises with the hydraulic module either: it is factory tested systematically.

The hydraulic pack, with or without a buffer tank, incorporates all the circuit components as standard:

- Self-adapting control
- Buffer tank (H version)
- Diaphragm type expansion tank
- Water flow controller
- Draining system
- Automatic and manual bleed
- Safety valve
- Wide range of simple or twin pumps

## Multi-equipment

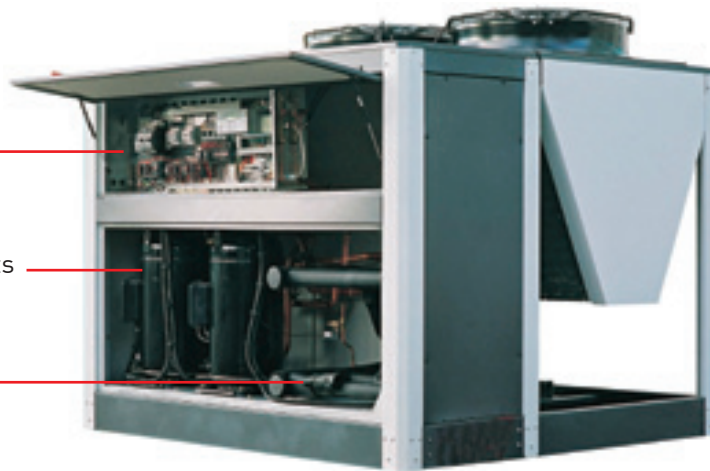
Installation is facilitated by the assembly and inspection of standard kits in the factory: master switch, flow controller, all year round control, remote control transformer. The only power requirements are a three-phase power supply without neutral. Which again saves time.



## Accessibility of all the components

For easier installation and maintenance

All the different components are housed in a single technical compartment.  
 All the electrical, refrigerating and hydraulic components are accessed via wide, quick-opening panels.  
 Maintenance and inspection operations are all carried out via the front panel, which means they can be completed quickly and easily.



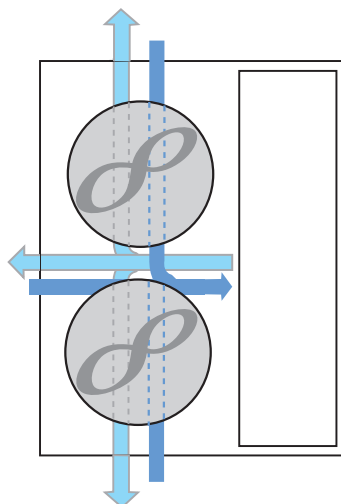
- Access to electrical elements
- Access to refrigeration elements
- Access to hydraulic elements

There is no air bypass at the condenser level to disrupt the unit operation during servicing. The various elements are therefore easier to adjust, and the measurements made are much more accurate.

Adjustment work, settings, as well as the reading of the various sensors and meters, are carried out directly on the Connect 2 console that is accessible from outside the unit.  
 To secure the installation, it can easily be locked on reading only.

## High flexibility for connections

Because no two sites are the same



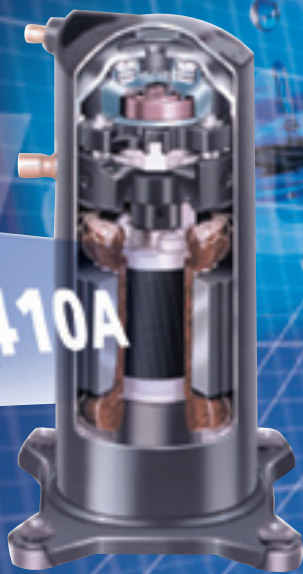
AQUACIAT 2 provides a wide range of possibilities for the layout of hydraulic connections to adapt the equipment perfectly to each site and ensure full flexibility for connections.

This reduces the surface area needed, and the space thus saved can be used for service operations or other activities.



# aquACIAT<sup>2</sup> evolution

technology  
& **performance**



## The best technology

R410A + Scroll compressors  
+ Plate heat exchangers

The latest-generation compressors used in the AQUACIAT 2 range have been developed specifically for R410A. Associated with plate heat exchangers, they harness the fluid's remarkable thermodynamic characteristics:

- High cubic capacity = reduction in the size of the compression mechanism and increased casing thickness lead to a reduction of about 40% in compressor volume, smaller overall unit measurements and lower noise levels.
- High level of isentropic efficiency for the compression sequence = unequalled high energy efficiency (EER-COP) for this type of equipment.
- Lower pressure drops = reduction in pipe diameters and reduced refrigerant charge.
- Excellent heat transfer coefficient: capitalised on by backflow operation of the plate heat exchangers, the size of the exchangers and refrigerant load are therefore reduced.

## Fan - Heat exchanger coil

### Optimised airflow

The coil - fan association has been subjected to hours of thermal and aero-acoustic studies in our Research and Innovation centre.

For each AQUACIAT 2, the choice of a fan motor assembly with a specific size, shape, material, layout and speed of rotation provides a linear airflow over the whole coil, without turbulence, thus generating a pleasant sound spectrum.

Depending on the climatic conditions and the required power level, AQUACIAT 2 thus adjusts its airflow to the strict minimum in order to reduce noise levels and enhance performance.



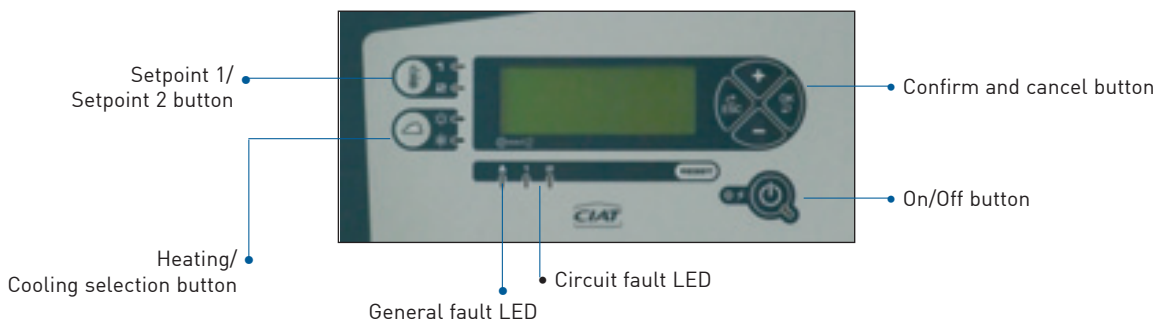


## Communicating control

for increased adaptability and comfort

Full use is made of the capacity of the Connect 2 controller to meet the widely fluctuating needs of the different seasons and throughout the course of the day. It detects any changes, anticipates their results and optimises the water temperature by controlling all the unit's components:

- **Versatile control:** it meets the specific requirements of each installation (control on the water return or feed pipe, water law depending on weather conditions, energy storage, etc.) and controls two set points, with remote selection of the set point in use, for enhanced comfort and increased energy savings.
- **Remote communication:** with all types of Building Management System (BMS) via the RS 485 serial port and the MODBUS/JBUS (standard) or LONWORKS (option) open communication protocol.
- **Numerous safety devices:** they provide full protection for the installation, ensure long service life, and control the water flow, outlet temperature, high and low pressure switches, the anti short cycle system, etc...
- **Volt free contacts:** they can be used to provide information on general faults and peak capacity operation.
- **Multiple inputs available:** they can be used to connect the AQUACIAT 2 to an external control (programmable timer, BMS, etc.) and enable load shedding as well as set point switching.



## A user-friendly interface

for easy operation

The user interface console makes the unit easy to operate.

The wide LCD screen supplies comprehensive information in various languages:

- Summary of operating parameters on a single display
- Parameters read-out
- Temperature, pressure level and running time values.

A logbook provides access to the last 9 faults that have occurred.

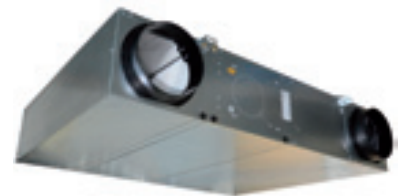
The display panel can be placed in a remote technical room located at a distance of up to 1,000 m.

# aquaCIAT<sup>2</sup> evolution

a **system offer**  
that is compatible  
right down the line



Comfort units  
Cassettes  
**Coadis Line 600**  
**Coadis Line 900**



Ductable comfort units  
**Comfort Line**



**Industrial process**



Comfort Units  
**Major Line**  
Fan coil units  
Vertical / horizontal  
with or without casing



Energy storage  
**Cristopia**



Air handling units  
**Climaciat Concept**





aquaciat<sup>2</sup>  
evolution



# Modular design

to meet all requirements

2 series (cooling only or reversible), 20 models (from 20 to 300 kW)  
3 levels of hydraulic equipment and 2 acoustic levels:

AQUACIAT 2										
N°	COOLING (1) kW		HEATING (2) kW		MEASUREMENTS (mm)			WEIGHT (kg)		
	Pf	Pa	Pc	Pa	Length	Width	Height	Std	C	H
80V	20,06	7,03	20,84	7,14	1995	1055	1170	328	346	371
90V	22,72	8,17	23,38	8,08	1995	1055	1170	331	349	374
100V	27,21	9,29	28,30	9,80	1995	1055	1393	366	384	409
120V	30,26	10,83	31,85	10,95	1995	1055	1393	368	386	411
150V	40,22	13,27	41,69	13,89	1995	1055	1393	452	470	495
180V	46,77	15,52	48,74	15,74	1995*	1055	1743	611	648	845
200V	53,16	18,64	55,25	18,25	1995*	1055	1743	614	651	848
240V	61,50	21,09	64,12	21,32	1995*	1055	1743	620	656	853
300V	75,29	27,90	81,75	26,65	1995*	1055	1743	756	789	986
350V	92,41	31,78	95,40	31,80	2190	2129	2117	1096	1194	1257
400V	104,77	35,61	109,25	36,45	2190	2129	2117	1195	1292	1356
500V	127,51	44,98	133,22	43,72	2190	2129	2117	1283	1355	1418
540V	139,23	46,76	147,83	48,43	2740	2129	2117	1570	1675	1748
600V	154,68	53,11	164,68	53,68	2740	2129	2117	1706	1804	1868
700V	162,42	60,21	182,37	58,89	2740	2129	2117	1878	1976	2040

Nominal conditions: (1) water 12°C/7°C, air 35°C (2) air 7°C water 40°C/45°C  
Pf Net cooling capacity Pa Net absorbed power Pc Net heating capacity  
\*Length of H version = 2676

EQUIPMENT	
Hydraulic module	C & H version
Wide range of single or twin pumps*	C & H version
SCROLL compressors	Standard
Brazed STAINLESS STEEL plate heat exchangers	Standard
Anti-vibration mounts	Standard
Self-adapting electronic control	Standard
Multi-language LCD screen	Standard
Water law according to the outdoor temperature	Standard
MODBUS-JBUS open communication protocol	Standard
Energy storage function	Standard
All year round operation	Standard
Master switch	Standard
Water flow controller	Standard
Remote control transformer	Standard
Low Noise	Standard
800 µm water filter	Standard on C & H version Optional on basic version
Remote control	Optional
Dry contact relay card	Optional
LONWORKS communication protocol	Optional
Communication gateway ETHERNET TCP	Optional
Flexible connecting sleeves	Optional
Soft Starter	Optional
Phase controller	Optional
ALTENA or Polyurethane protection on coil	Optional
Variable speed fan	Optional
Ductable XTRA FAN	Optional
Partial energy recovery*	Optional
Shell and tubes evaporator *	Optional

\* depending on model

## A CIAT solution for each specific situation

With its wide range of refrigeration units, CIAT covers all fields of application to provide comprehensive solutions for cooling and heating alike.

Water/Water	<b>Ageo+</b> 6 to 36 kW	<b>Dynaciat</b> 35 to 180 kW	<b>Hydrociat</b> 370 to 1170 kW
	<b>Ageo Caleo</b> 16 to 25 kW	<b>Dynaciat Power</b> 220 to 720 kW	
Air/Water	<b>Aqualis 2+</b> 6 to 19 kW	<b>Aquaciat 2</b> 20 to 170 kW	<b>Powerciat2</b> 660 to 1350 kW
	<b>Aqualis Caleo</b> 14 to 20 kW	<b>Aquaciat Power</b> 190 to 640 kW	



CIAT plays an active part in the EUROVENT certification programme. This is an independent organisation that tests products and certifies the validity of the given performance figures.

EUROVENT certification is a guarantee for engineering and design firms, installers and users, concerning the performance figures given for AQUACIAT 2.



With over 80 years' experience, more than 2,000 employees, and 6 production sites including a vast industrial complex in the Rhône-Alpes region, CIAT has obtained ISO 14001 certification and is renowned as a major player in the HVAC industry.



## The CIAT Group: European leader in heating, cooling and indoor air quality



### An environmentally-responsible company working towards a greener world

For many years, CIAT has been pursuing an industrial policy based on an ongoing strategy of continued sustainable development and eco-design in order to minimise the environmental impact of its equipment. The equipment integrated into Hysys system solutions benefit from this commitment.



### A Group resolutely focused on innovation

CIAT's Centre for Research and Innovation, one of the largest in Europe, brings engineers and technicians together around a simulation platform dedicated to well-being. As a team, they constantly improve the comfort, IndoorAir Quality and energy performance levels of CIAT solutions to meet the requirements of consumer sectors.

### An exclusive network of advisers



Industry

Offices

Healthcare

Hotels

Shopping Centres

Administration Education

Residential

To ensure customer satisfaction, at CIAT we have organised our teams into seven centres of expertise. Operating in France and in Europe, our experts listen to your needs and, because they speak your language, they provide you with the best solution to meet your requirements.



[www.ciat.com](http://www.ciat.com)