

Heat Pumps

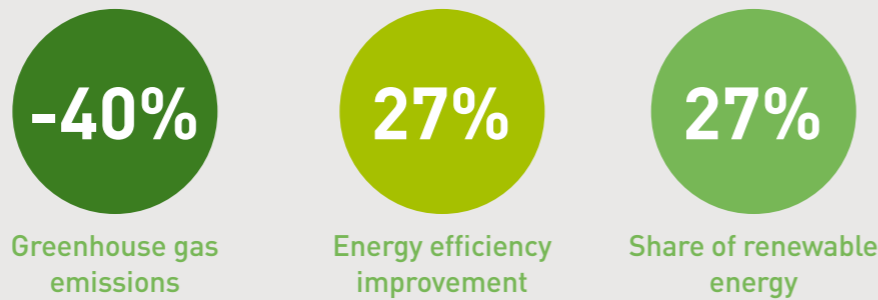


# EUROPEAN ECODESIGN AND ENERGY LABELLING REGULATIONS



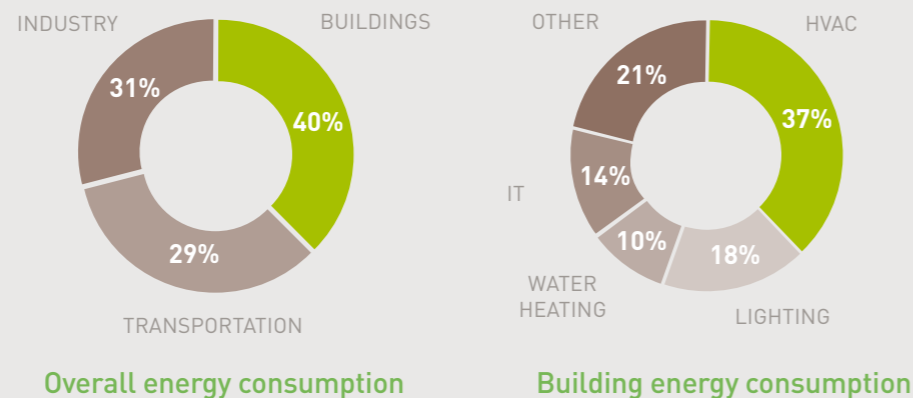
# CIAT: RESPONSIBLE THINKING

Designing products and solutions with a lesser impact on the environment and smaller energy consumption lies at the heart of CIAT's longstanding engagement for sustainable development, in keeping with the European climate and energy package objectives for 2030.



The heating, ventilation and air conditioning (HVAC) market is primarily concerned by this energy efficiency improvement policy.

Buildings being the largest energy consumers and HVAC systems accounting for the better part of this consumption, providing users with energy efficient solutions is both a challenge to be met and a major sustainable development opportunity to be seized by the HVAC industry.



Two directives have been developed by the European Union in order to meet these objectives, regarding equipment consumption, lighting, IT, water heating and HVAC:

## ECODESIGN & ENERGY LABELLING

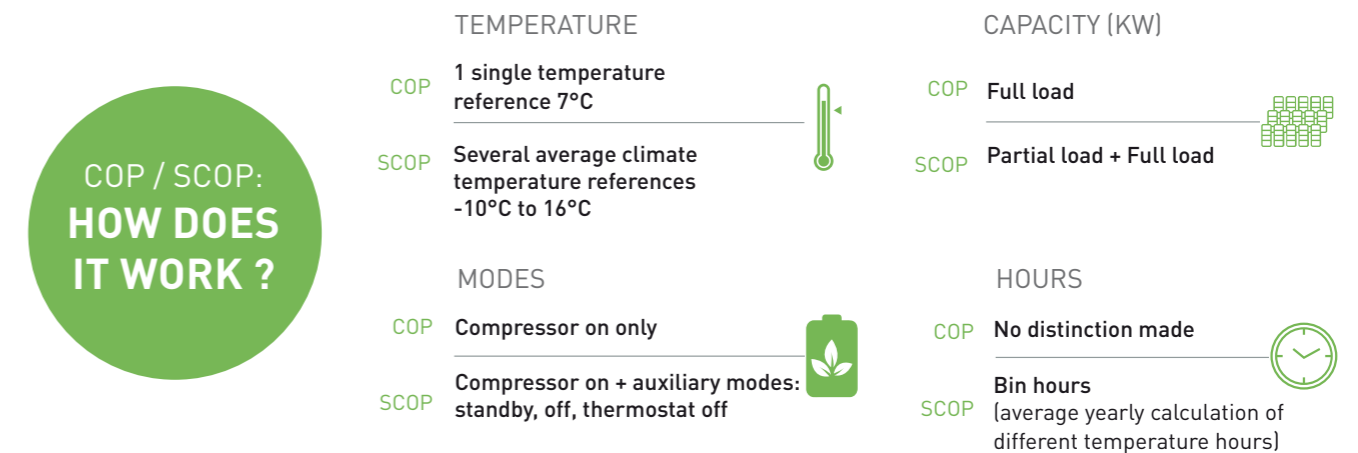
## THE ECODESIGN REGULATION

The objective of the Ecodesign directive is to bring manufacturers to design their products so as to reduce their environmental impact throughout their life cycle. Most important, the Ecodesign Regulation N° 813/2013 sets mandatory energy efficiency requirements for air-to-water and water-to-water heat pumps up to 400 kW.

### MEASUREMENT

#### SCOP: A NEW WAY OF EVALUATING ENERGY EFFICIENCY

Contrary to the COP (Coefficient of Performance) which measures power consumption in the heating mode from a single point of analysis, the SCOP (Seasonal Coefficient of Performance) takes into account the seasonal variations of outside air temperature, using several operating points, thus bringing more precision to the procedure. Both these coefficients will be used to determine which energy efficiency class a heat pump belongs to.



$$SCOP = \frac{\text{Annual heating demand}}{\text{Annual energy input}^*}$$

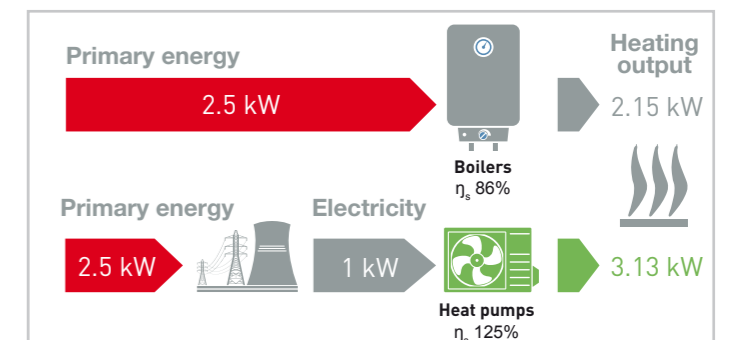
\*Yearly energy input : Compressor running (SCOPon) / Compressor not running : thermostat OFF, standby, OFF mode & crankcase heater / Backup heater to supplement heat pump capacity.

### PRIMARY ENERGY EFFICIENCY MEASUREMENT: $\eta_s$

In order to compare the energy efficiency of products using different sources of energy, such as boilers (gas, fuel) and electric heat pumps, the Ecodesign regulation introduces a new measurement expressed in primary energy:  $\eta_s$  (eta s).

$$\eta_s = SCOP / 2.5 \times 100 - i^*$$

\*Air source heat pump  $i=3$   
Water source heat pump  $i=8$



Source : EU Regulation 813/2013



# THE ENERGY LABELLING REGULATION

The objective of Energy Labelling is double: give clear understandable label information on the product energy efficiency, and classify products according to their level of efficiency (from A to G), with an overall effect of pulling the market towards more energy efficient products.

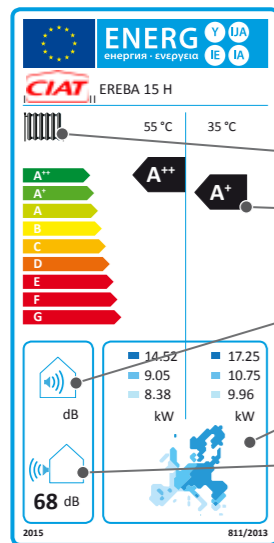
## All CIAT heat pumps under 70 kW are labelled A to A++

Both Ecodesign and Energy Labelling regulations entered into force in September 2015. Products marketed prior to this date are not affected. The next regulations upgrade will come into effect in 2017.

## THE NEW EU ENERGY EFFICIENCY CLASSES AS DEFINED BY THE REGULATION

ENERGY EFFICIENCY CLASS	BOILERS AND MID-TEMPERATURE HEAT PUMPS 47/55°	LOW TEMPERATURE HEAT PUMPS 30/35°
A***	$\eta_s \geq 150$	$\eta_s \geq 175$
A**	$125 \leq \eta_s < 150$	$150 \leq \eta_s < 175$
A*	$98 \leq \eta_s < 125$	$123 \leq \eta_s < 150$
A	$90 \leq \eta_s < 98$	$115 \leq \eta_s < 123$
B	$82 \leq \eta_s < 90$	$107 \leq \eta_s < 115$
C	$75 \leq \eta_s < 82$	$100 \leq \eta_s < 107$
D	$36 \leq \eta_s < 75$	$61 \leq \eta_s < 100$
E	$34 \leq \eta_s < 36$	$59 \leq \eta_s < 61$
F	$30 \leq \eta_s < 34$	$55 \leq \eta_s < 59$
G	$\eta_s < 30$	$\eta_s < 55$

\*A\*\*\* New energy label for low temperature heat pump  
 Heat Pumps minimum energy efficiency level from September 2015  
 Heat Pumps minimum energy efficiency level from September 2017



## NEW ENERGY LABEL FOR HEAT PUMPS

- Space heating application
- Energy class @ 30/35° (always under average climate)
- Sound power indoor unit dB (A)
- Heating capacity (P rated) @ 35° under colder, average & warmer climates
- Sound power outdoor unit dB(A)

# ANTICIPATING THE CHANGES: CIAT UNIQUE EXPERTISE AND ASSETS

With highly skilled Research & Development experts and facilities among the largest dedicated to HVAC in Europe, CIAT stands out as a leader and its product offering is already in line with the Ecodesign regulation.

## ULTRA MODERN LABORATORIES

CIAT benefits from unique facilities, both in terms of cooling coverage, air treatment capacities and measurement accuracy.

### Cooling:

- 15 individual test rooms
- ambient control from -25°C to 55°C
- total test capacity of 6 MW

### Ventilation:

- acoustics, aerualics, characterisation of heat recovery systems
- wall panels insulation, casing air leakage and strength, filter by-pass leakage
- air flow testing on heat recovery units from -10°C to +90°C
- individual unit test capacity up to 35 000 m³/h, humidity from 30 % to 90 %

## EUROVENT CERTIFICATION AND TESTING CRITERIA

Although products and performances are assessed in CIAT's laboratories under their application conditions, CIAT also supports and participates to stringent independent Eurovent certification programs for refrigeration, air conditioning, air handling and heating products including tests in accordance with relevant European standards (EN14511, EN14825, EN16147...)

The list of CIAT's certified products and data can be checked on the certification body web site <http://www.eurovent-certification.com>. For product under the scope of these regulations Eurovent LCP-HP, European HP are relevant programs.



## FORWARD-LOOKING INNOVATIONS

CIAT's internal R&D capabilities and our consistent involvement in the European ERP (Energy Related Products) programs such as Ground-Med have been taking our products to new levels of combined thermal and acoustic performance, including ground breaking innovations such as:

- free defrost (natural ventilation optimised defrost)
- overall operating optimisation (heating mode machine and auxiliaries consumption optimisation) EN14825, EN14511 standards
- thermodynamic sanitary hot water production for individual and collective applications, EN1647 standard



## CIAT: LEADING THE WAY TO SUSTAINABLE COMFORT

CIAT is one of Europe's leading names in heat pump heating, summer comfort and air handling solutions for the residential, commercial, healthcare and industrial sectors. From product design to the definition of water-source systems, CIAT provides solutions based on three fundamentals - comfort, optimisation of energy consumption, and improvement of indoor air quality of buildings. Such triple expertise allows CIAT to offer sustainable systems that guarantee highly advanced energy-efficient equipment that meets environmental certifications and standards.

### HEAT PUMPS & ECODSIGN IMPACT

By 2020, the estimated annual energy saving induced by the Ecodesign regulation 813/2013\* will amount to 19000 PJ\*\*, the equivalent of:



78  
million

vehicles removed from the road  
for one year\*\*\*



55  
million

homes' electricity use  
saved for one year\*\*\*

\* Commission Delegated Regulation (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device.

\*\*PJ = 10<sup>15</sup> Joule

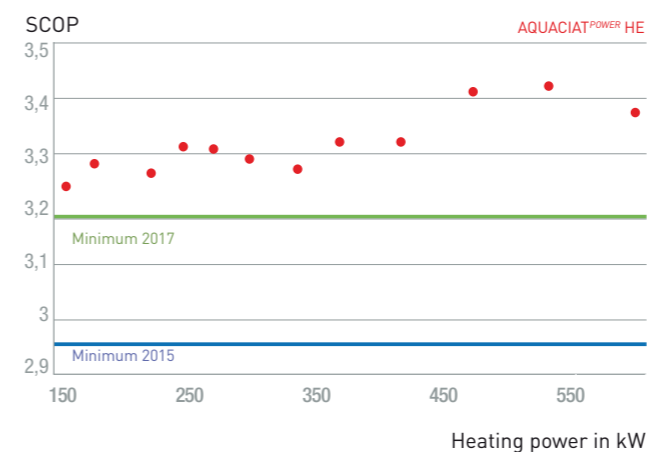
\*\*\*According to the United States Environmental Protection Agency Green Power Equivalency Calculator.

\*Source: European Heat Pump Association – Statistics and market report 2015

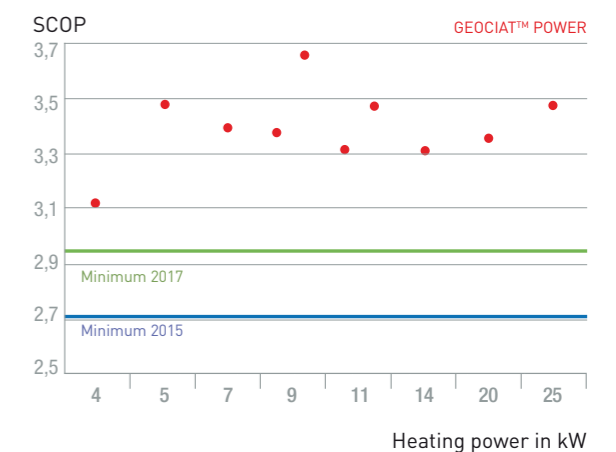
## CIAT SOLUTIONS: ONE STEP AHEAD OF REGULATION

The AQUACIAT<sup>POWER</sup> High Efficiency chillers rated A+ and the geothermal heat pumps GEOCIAT<sup>TM</sup> POWER rated A++ illustrate CIAT's advance regarding regulations and sustainable thinking.

### AQUACIAT<sup>POWER</sup> HE



### GEOCIAT<sup>TM</sup> POWER







## CIAT AT YOUR SERVICE

At CIAT, our objective is to provide high quality service and develop partnerships with you throughout the lifecycle of your HVAC system. We understand your changing needs, develop smart services and energy solutions that optimise energy performance and enable savings.

We provide the support you need to get the most out of your solution:

- Preventive and corrective service maintenance.
- On-site inspection by experts close at hand
- Online parts shop.
- Dedicated hotline for off-site technical support.

We also offer you a comprehensive range of smart services:

- Consultancy service on energy performance upgrade.
- Advanced monitoring and plant system management solutions.
- Equipment and system modernization.

PRESENT  
IN  
OVER **50**  
countries  
AVAILABLE  
**24/7**  
OVER  
**80**  
years  
OF EXPERIENCE

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