



ecoFOREST

Heat Pumps

Our history

Ecoforest was founded in 1959 by Jose Carlos Alonso; his vision was to develop innovative products that were both economic and environmentally-friendly, with the intention of making the world a better place.

Today, more than 50 years later, Ecoforest is the technological leader in the heating sector, with solutions based solely on clean and natural energy.

During the 70's, Mr Alonso visited the sector's most important international fairs to provide his home market with the latest developments. With this knowledge, the first biomass boiler was created using wood chips.

Then in 1993, with the aim of continuing to add value to the region and industry, Mr Alonso released the first pellet factory in Villacañas (Toledo) and introduced his new invention to the market: the first pellet stove-boiler.

Ecoforest continues to offer green products which benefit both people and the environment, and to this day is the only Spanish manufacturer of ground source heat pumps and an array of HVAC solutions which utilize renewable energy.

Now, after securing the heat pump market in Europe with the ecoGEO range, Ecoforest continues to increase its influence by becoming a technological leader with HVAC systems.

Since its creation, Ecoforest's main goals have been to make people more aware of the possibilities of green energy, to take care of our planet and to achieve significant savings on the costs for the end user. So far the mission has been a success! but there is still more work to be done.



Why pay for something that nature gives you?

Without realising it, we all come across forms of green energy everyday, more infact than our society will ever need. Most people now know about the benefits of solar pannels and wind turbines, but few realise we have the technology to take advantage of earth we walk on, or the air we breathe.

A huge part of the energy we use in our homes now goes towards heating and cooling. Heatpumps are able to utilise the energy that lays dormant all around us to power our heating, DHW and even refrigeration. All this is done at no extra cost to the planet, making it an invaluable technology for our society.



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Why choose Ecoforest?

Pre planning conditions



ADVICE

The technical team at Ecoforest is composed solely of engineers who can support you in any project that requires unique or complex solutions.

The Ecoforest study generator is now also available on our website.

ENGINEERING

All Ecoforest heat pumps are subject to exhaustive quality controls that start at the development / design stage and finish at the end of the assembly line.

SPEED

Ecoforest is characterized by speed, both in customer service and problem solving. Our team is able to react to new projects in the shortest possible time, which presents a great competitive advantage.

PRESCRIPTION

Ecoforest equipment, including heat pumps and biomass products have been introduced into price generator and design software such as CYPE engineers, CYPE MEP and Construnario.

INFORMATION

At Ecoforest we have a strong technical and academic background, this has influenced our decision to spread our own experience, and to publicize the advances obtained by our R + D department in our laboratories and in collaborations with foundations such as Energylab.

TAILORED TRAINING COURSES

The quality of our products is matched only by the training and knowledge of our professionals offer. For this reason, we periodically organize workshops and courses so that this knowledge is translated into efficient installations and satisfied customers.



Product range

Biomass ▶



◀ Ground-source heatpumps

Energy Managers ▶



◀ Electric-bikes

Geothermal heat pumps



ecoGEO Basic / ecoGEO compact

The models 1,2,3 and 4 (either Basic or Compact) have multiple control strategies to supply Sanitary Hot Water, Heating and Refrigeration, both passive and active.

* Without inverting cycle has the possibility of managing the primary circuit and the secondary to cover the needs of refreshing (16-19°C), without the compressor, simply the circulators.

** Possibility of inverting the refrigeration circuit, by means of a 4-way valve, to reach delivery temperatures of 7°C.

<p>Module 1</p> <hr/> <p>DHW Heating (Possibility of HTR)</p>
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<p>Module 2</p> <hr/> <p>DHW Heating Cooling* (Possibility of HTR)</p>

<p>Module 3</p> <hr/> <p>DHW Heating Passive cooling** HTR</p>

<p>Module 4</p> <hr/> <p>DHW Heating Passive cooling* Active cooling** HTR</p>

ecoGEO HP



Models HP1 and HP3 have different control strategies to supply Sanitary Hot Water and Heating.

* By not inverting the cycle you have the possibility of managing the primary and secondary circuits to cover the needs of Heating + Cooling. Consult simultaneous production scheme.

** By inverting the 4-way valve, the cycle is inverted to produce cooling.

*** Possibility of managing an external exchange to cover the need to refresh, without the consumption of the compressor.

<p>HP1</p> <hr/> <p>DHW Heating Passive cooling*** Active cooling*</p>

<p>HP3</p> <hr/> <p>DHW Heating Passive cooling*** Active cooling**</p>
--

Aerothermal heat pumps and energy managers



ecoGEO + Air units

The Basic and Compact heat pumps are compatible with fan heaters for an air-water configuration.

* Temperature management goes from 4 to 3 zones.

** Must be combined with modules 2 or 4.



Module 2
DHW
Heating
(Possibility of HTR)

Module 4
DHW
Heating
Active cooling
HTR

High power
Compatible with:
- ecoGEO HP1*
- ecoGEO HP3*
*Management through e-source



ecoAIR EVI

This model has various control strategies to supply sanitary hot water, heating and cooling. Pool management included and ability to reverse the cycle to produce refrigeration.

CM
Controller screen

HK
Controller screen
Filler and filter kit
DHW 3-way valve

HK-EH
Controller screen
Filler and filter kit
ACS 3-way valve
Support resistance

HK-EHS
Controller screen
Filler and filter kit
ACS 3-way valve
Support resistance
Exchanger-separator
Production Circulator

Energy managers

e-manager



Energy manager compatible with the ecoGEO and ecoAIR range to take advantage of the energy coming from the photovoltaic capture, communicating with the heat pump it can adapt the thermal production with maximum efficiency.

e-system

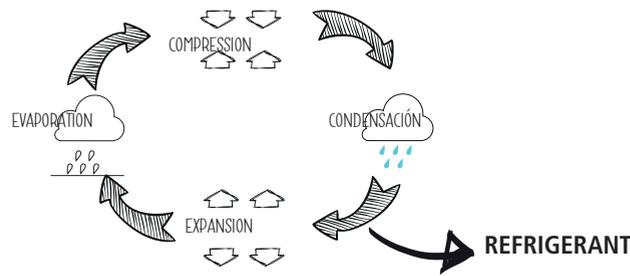


Energy manager compatible with the ecoGEO and ecoAIR range to take advantage of the energy coming from the photovoltaic capture, communicating with the heat pump it can adapt the thermal production with maximum efficiency **and store electricity in batteries if necessary. Contains solar inverter and batteries** offering a more compact installation

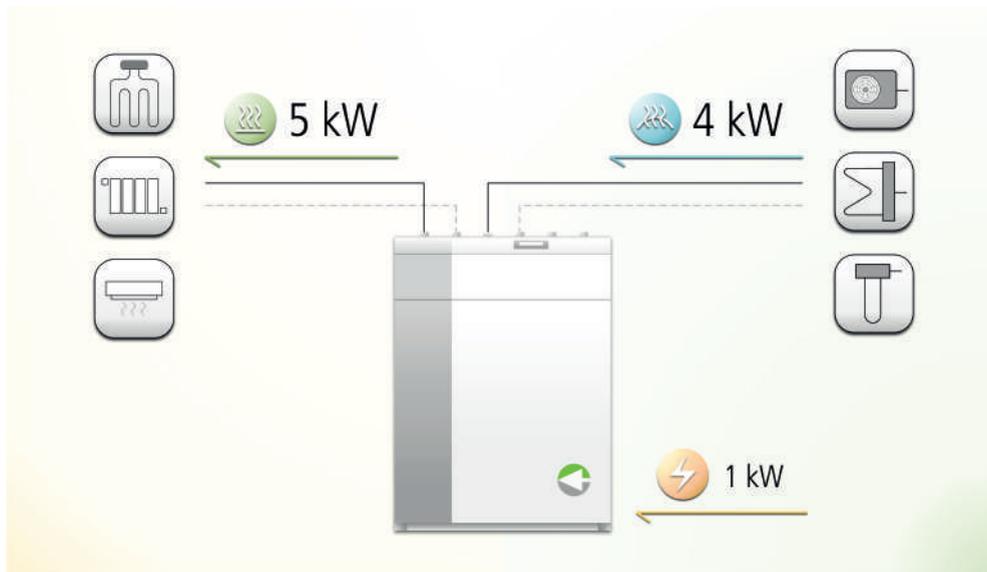
How does an ecoGEO heat pump work?

The system is based on the simple refrigeration cycle, so why is the system so efficient?

The reason is that a high percentage of energy delivered to the home comes from the collection array, between 70 and 80%. The rest of the energy that is demanded comes from the compressor. Ecoforest applies a series of control strategies that adapt the consumption of energy to meet the demands of the house.

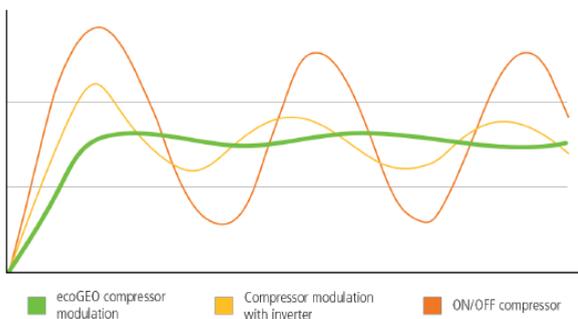


The performance (COP, in heat mode and EER, in cold mode), will be the power delivered to the house between the electrical power that is consumed by the heatpump



$$\text{COP}_{\text{ecoGEO}} = \frac{\text{POWER GAINED}}{\text{POWER USED}} = \frac{5 \text{ kW}}{1 \text{ kW}} = 5$$

Adaptación del compresor a la demanda



One of the reasons for the use of the inverter in a heat pump is the adaptation of the heat pump to the demand of the building.

The difference between the adaptation of the demand of the building and the contribution of the heat pump, causes the inverter heat pump to have higher intake temperatures which implies higher yields when working closer to the temperature spotlights

Why choose the ecoGEO heat pump?



Quiet



Integral control system



Economical



Long lasting



Confort



Minimum Maintenance



Efficient



Greatly reduces CO2 emissions₂

- SAVING:** Ecoforest heat pumps provide a substantial increase in savings, not only because of the high efficiency in their day to day running, (which causes a reduction in CO2 emissions) but thanks to the ecoGEO control technology and strategies. Ecoforest heat pumps are very simple, compact and economical to install, by allowing the user to dispense with certain components that would be necessary in a traditional heat pump installation, the ecoGEO has an edge over other heat pumps on the market.
- LOCAL RESOURCE.** Heatpumps take most of the energy they need from their surrounding environment. Although they still have to be connected to the grid, they do not need to be supplied with any type of fuel, increasing user convenience and comfort
- MINIMUM NOISE:** Heatpump technology and insulation reduce noise levels to those of a common household appliance. Between 35 and 46dB
- MINIMUM MAINTENANCE:** The technology used by Ecoforest heat pumps is the same as a normal refrigerator, providing them with a long lifespan and minimal maintenance requirements.
- Safety:** There is no combustion and therefore there is no smoke or flames. In addition, the ecoGEO heat pump is fully supervised by the software, which allows security shutdowns in case of any own or external anomalies.
- MINIMAL VISUAL IMPACT:** In the case of ground-source collection array, there is no components visible. In the case of air-source or hybrid configuration, the air-source pump can be appropriately concealed to reduce the impact.
- INTEGRAL SYSTEM:** The Ecoforest programming allows the entire installation to be managed from the control screen. Thanks to the programming developed by Ecoforest, the entire system can be configured intuitively.

CONSUMED(kW)

PERFORMANCE(%)

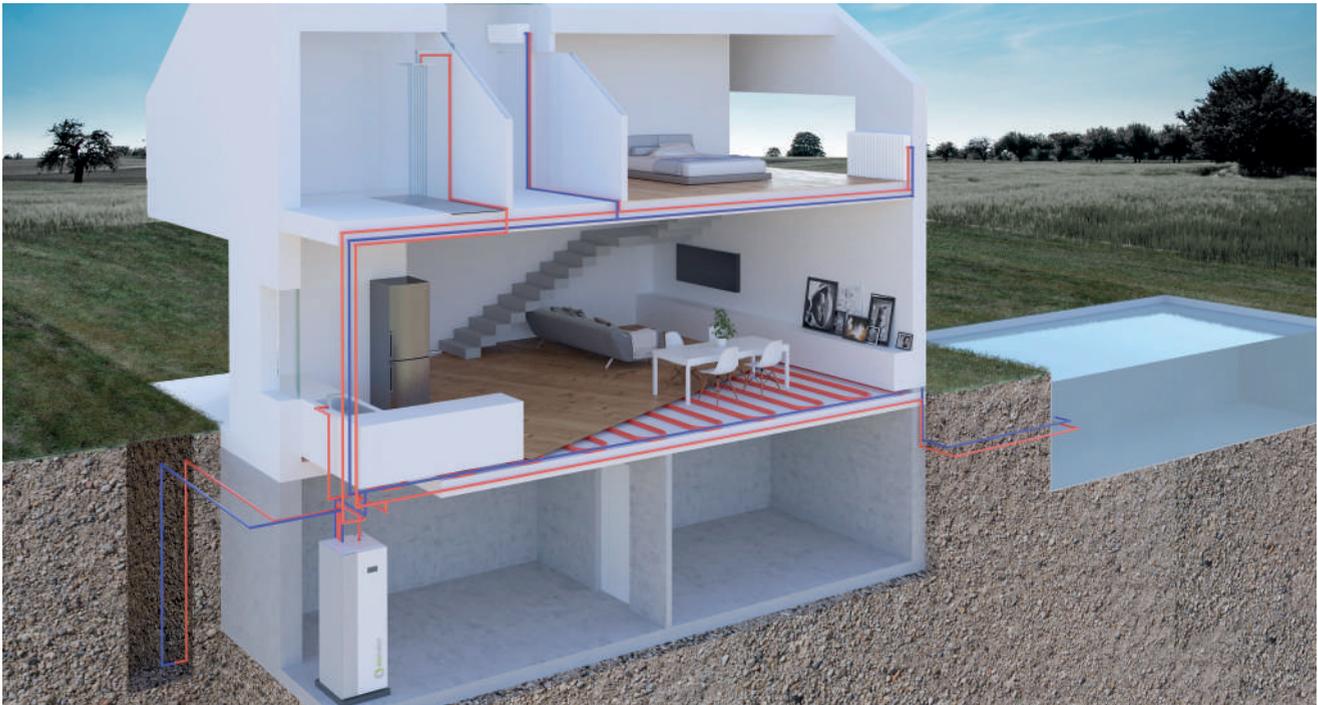
11	90	GAS BOILER
9,5	107	CONDENSING BOILER
11,5	85	OIL BOILER
ECOGEO 2	500	

The following comparison corresponds to a house with a thermal demand in heating of 10 kW in Madrid. Depending on the type of heat, fuel and performance generator, consumption may vary significantly, having ECOFOREST is the most ecological and economic solution.

Capture methods for ecoGEO

Collection

The primary circuit of an ecoGEO heat pump can use some of the following solutions. Each one has its own benefits and features



Vertical collection

Is made through a borehole and a plastic pipe which creates a closed loop and takes advantage of the temperature of the surrounding soil. It has positive heating and cooling properties



Horizontal collection

In this case the closed loop is horizontal and at a more shallow depth, however still has heating and cooling properties



Ground-water collection

Ideal in cases where there is a constant water flow. The water is collected from one point, to later be returned to the flow in a different point after transferring heat.



Energy blades or slinky

By using these systems it is possible to take advantage of rivers, lakes, or any other water accumulation of flowing water.



Air-source : Unique!

Ideal for air source and hybrid configuration (air+ground-water).

Ground-source screens or structures

Takes advantage of the underground part of the buildings. Useful because it's more economical and it saves more space than other collection systems.



Ground-source piles

A different variant, but still using the foundations of buildings



Ground-source baskets or helix

Pipes are attached to structures which keep them distributed in the above mentioned shapes. They are buried at depths between 3 and 6 meters. Saves space in comparison with the horizontal collection.



Process water heat recovery

Many industries or businesses waste energy in the form of fluids which may have a high value.



Greywater heat recovery

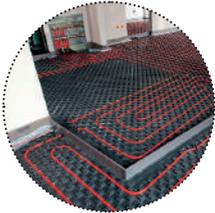
Greywater can also act as energy source as long as their flow stays stable along their working period.



Dispersal methods for ecoGEO

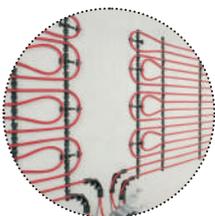
Distribution system

The distribution systems can massively affect the efficiency of any heating generation system. Together with the heat pump, the right system provides higher savings and greater comfort.



Underfloor heating

This system provides the most similar curve to the ideal profile curve. It can run with temperatures around 35°C for heating and around 15°C for cooling, which is a great value for passive cooling.



Wall heating

This system runs with temperatures around 35°C for heating and around 15°C for cooling, which is a great value for passive cooling.



Ceiling heating

This system is more useful in those cases in which cooling is the most prevalent service.



Low temperature radiators

This system allows an intermediate heat distribution between the 3 previous mentioned systems and fancoils.



Fancoils

Temperatures around 45°C for heating and ideal for cooling with temperatures around 7°C. This system has the lower buffer and hence higher speed than the first mentioned 3 systems first mentioned 3 systems.

ecoGEO Characteristics

Ecoforest heat pumps stand out from the competition due to their holistic control management system and physical characteristics that provide performance levels acknowledged by several laboratories throughout Europe.

► Outdoor temperature control

The possibility to adjust according to the outdoor temperature. The possibility to switch between WINTER/SUMMER modes manually or automatically. The option of switching between the HEATING/COOLING operating modes automatically by reading the accumulated outdoor temperature (this setting can be changed). The option of generating HEATING and/or COOLING in both summer and winter, thanks to the our unique design and software.

► Software

Another significant advantage of the ecoGEO heat pumps by Ecoforest is that their software is designed to be user-friendly. This enables quick and easy start-ups since the customer does not need tedious technical explanations.

► Simplicity

The wide modulation range makes possible to avoid having to install the typical buffer storage tanks in most facilities.

► Control

The operating ranges have been optimised (operation map) to reach more operating conditions in different installations.

► Modulation

Ecoforest can provide a wide range of products to cover from 3 kW to 600 kW. In each model, the range of modulation can reach up to 25%, a differential fact. SEE CHART 2.

► Information

The possibility of viewing all the operation and performance information is an important advantage. All the data of the refrigeration circuit, hydraulics or component status, etc. can be viewed on the screen.

► Defrost

Our defrost technology makes us unique, since it does not need electrical heaters. An additional exchanger is enough to carry out heat exchange with the circuit of choice -the heating circuit, swimming pool circuit or DHW. This operating mode carries out defrost with a minimal effect on the comfort temperature of the service used to contribute the energy.

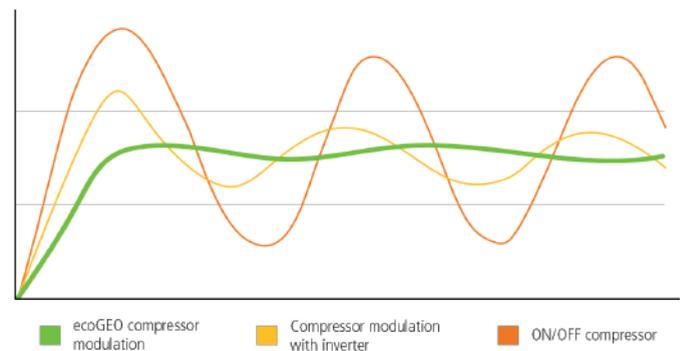
► Adaptation

The ecoGEO control adapts to the ideal conditions of the comfort zone, thereby enabling a rational use of the energy consumed. It provides the building with what it needs at all times. SEE CHART 1.

► Metering

The heat pumps are equipped with energy and performance meters for: instantaneous, daily, monthly and annual periods

Adaptación del compresor a la demanda



ecoGEO
Range



ecoGEO Characteristics

► Management

Control of 4 outlet groups (3 shunts groups and 1 direct) in domestic ecoGEO installations and up to 30 groups in high-power units.
Control over the pool.
Control over zone and modulating valves.
Control of heaters.
Depending on the installation.

► Hybridisation

The use of this technique for collection and thermal production becomes more and more interesting every day.
ecoGEO software can be used to manage both.
See Pages 20-21

► Simultaneity

Some installations require simultaneous production of COLD+HEAT. The high power ecoGEO range can provide this thanks to probe, valve and circulator pump control that can be used to generate the specific energy at any time and distribute excess energy to the collection circuit.

► Connectivity

Possibility through the internet via Ecoforests Easynet. Cab aksi ve combined with home system through MODBUS language and BACnet.

► Design

The option of placing intakes at the top or rear of the equipment (domestic product range).
Condensate drain pans.
A hydraulic system that is easy to access (domestic and HP product range).
The option of using the desuperheater in the domestic product range. HTR system.
Improved acoustic insulation.
Large pipe diameter, lower load losses.
Electrical cards that are easy to connect.
The domestic product range is completely equipped

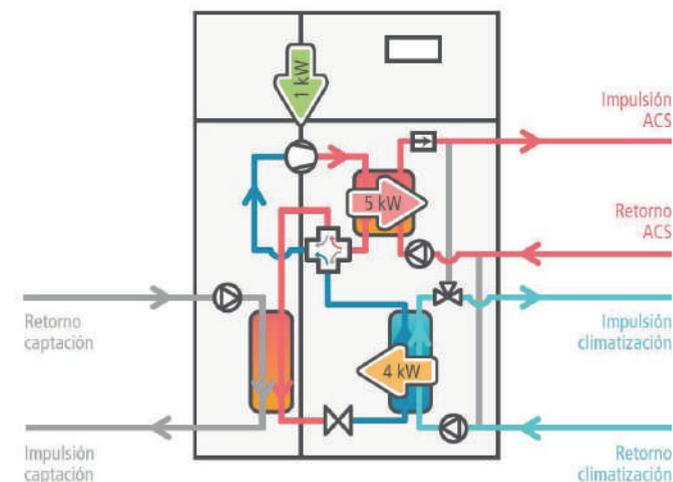
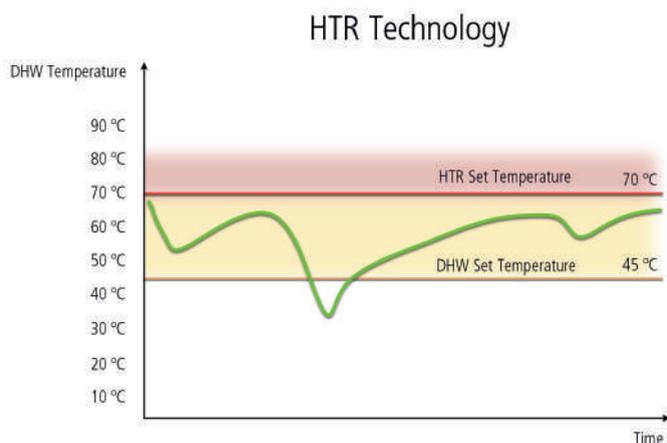
► DHW Management

Control of DHW recirculation. Simultaneous production of: COLD and HEAT. The compact model includes a 3/4" intake for recirculation. Generation of up to 70°C with the heat pump, without electrical heaters and with HTR technology. SEE CHART 3. HTR: High Temperature Recovery. Increase in overall performance of the system by using more thermal energy with the same compressor consumption.

► Cascade

In HP range, several heat pumps placed in "parallel" can be managed by the Supervisor; contrary to other cascade controls, the Supervisor distributes the number of hours of operation and the point of maximum efficiency. In other words, a given amount of power is provided by several pumps running at their highest COP point, instead of a single heat pump. The domestic product range can use 3 heatpumps in cascade without the need for a supervisor.

HTR technology



B0/W35

Model	0	5	10	20	25	30	35	40	45	50	55	60	70	80	90	100	110
ecoGEO 1-8																	
ecoGEO 3-12																	
ecoGEO 5-22																	
ecoGEO 12-40																	
ecoGEO 15-70																	
ecoGEO 25-100																	

ecoGEO Basic / Compact



- ▶ Inverter technology and Scroll compressor
- ▶ Power ranges: 1-9 kW / 3-12 kW / 5-22 kW
- ▶ Domestic hot production with an internal DHW tank
- ▶ Production of heating and swimming pool
- ▶ Integrated production of active cooling
- ▶ Integrated production of passive cooling (free cooling)
- ▶ Control through Internet with the ecoSMART Easynet
- ▶ Hybridization with photovoltaic energy with the energy managers
- ▶ ecoSMART e-manager & e-system
- ▶ HTR technology for the production of domestic hot water
- ▶ up to 70 ° C.
- ▶ Integrated cascade control up to 3 units
- ▶ Single-phase (230V) or three-phase (400V) power supply

ecoGEO B1

DHW
Heating

ecoGEO B2

DHW
Heating
Passive Cooling

ecoGEO B3

DHW
Heating
Passive Cooling

ecoGEO B4

DHW
Heating
Passive Cooling
Active Cooling



ecoGeo Basic / Compact



Models



Sources



Services



POWER
1-9 kW
3-12 kW
5-22 kW

MODULATION
INVERTER

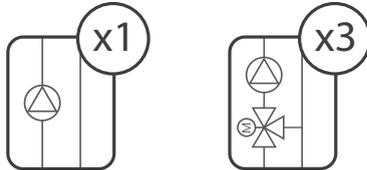
DHW
HTR
70°C

POW.SUPPLY
1-phase
3-phase

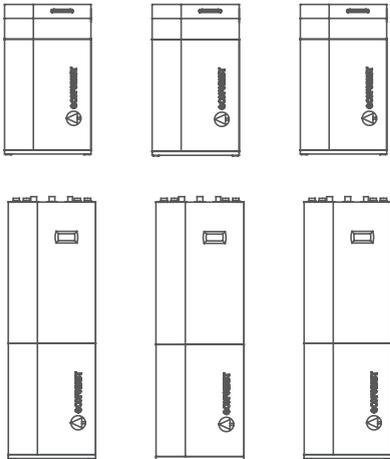
DIMENSIONS
Hight: 1060/1804 mm
Length: 600/600 mm
Depth: 710/710 mm

WEIGHT
193/255 kg

Productions management



Cascade



ecoGEO HP



- ▶ Inverter technology and Scroll compressor
- ▶ Power ranges: 12-40 kW / 15-70 kW / 25-100 kW
- ▶ Domestic hot water production with external deposit
- ▶ Production of heating and swimming pool
- ▶ Integrated production of active cooling
- ▶ External production of passive cooling (free cooling)
- ▶ Control through Internet with the ecoSMART Easynet
- ▶ Hybridization with photovoltaic energy with the energy managers
- ▶ ecoSMART e-manager & e-system
- ▶ Simultaneous heating and cooling production
- ▶ Hybridization of the sources of collection with the ecoSMART e-source
- ▶ Integrated cascade control up to 6 units
- ▶ Three-phase power supply (400V)

ecoGEO HP1

DHW
 Heating
 Passive cooling *

ecoGEO HP3

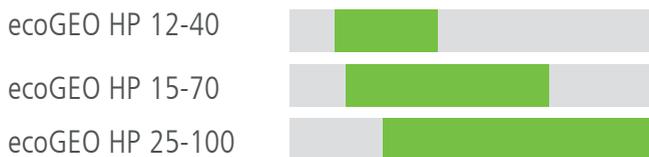
DHW
 Heating
 Passive cooling *
 Active cooling

*Management of external passive cooling





Models



Sources



Services



POWER

12-40 kW
15-70 kW
25-100 kW

MODULATION

INVERTER

SIMULTANEOUS

Heating
Cooling

POW.SUPPLY

3-phase

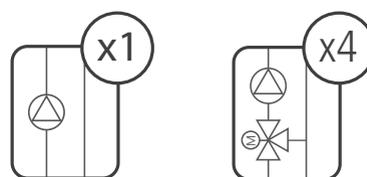
DIMENSIONS

Heigh. 1000mm
Lengt. 950 mm
Depth. 900 mm

WEIGHT

355 kg

Productions management



Cascade



Applications of the ecoGEO domestic product range

Single zone scheme

The scheme that is most frequently implemented because of its simplicity and the little space it requires. Depending on the module, this configuration can supply heating, passive cooling, active cooling and domestic hot water. This only requires the following probes; external probe, DHW probe and an activation signal.

In BASIC models, the domestic hot water storage tank has to be installed separately. The DHW probe is already wired in COMPACT models.



Variant scheme

An attractive scheme for installations that work at the same outlet temperature. Valves are installed per zone to distribute the installation in as many zones as necessary.

Dual zone scheme

This scheme is ideal for installations that require two different outlet temperatures, either because there are 2 different types of emission systems or 2 areas with different uses. Depending on the module, this configuration can supply heating, passive cooling, active cooling and domestic hot water. This only requires the following probes: external probe, DHW probe and an activation signal to manage each zone. In BASIC models, the domestic hot water storage tank has to be installed separately. This scheme can be expanded to a version with up to 4 zones, 3 shunt groups and 1 direct (See the scheme). The DHW probe is already wired in COMPACT models.



4. Temperatures and pool heating

A very compact scheme that uses only a few square metres of technical room to cover a very complete and simple installation, avoiding the need to install valves, buffer storage tanks, etc. Depending on the module, this configuration can supply heating, passive cooling, active cooling and domestic hot water. This only requires the following probes: external probe, DHW probe, pool activation signal and an activation signal to manage each zone. In BASIC models, the domestic hot water storage tank has to be installed separately. The DHW probe is already wired in COMPACT

Cascade

Scheme which allows to build installations with thermal powers higher than 22 kW and with heat pumps including pumps, expansion vessels, etc... The modulation range is an advantage, because it is possible to reach up to 66 kW from a lower power of 5 kW, what means a modulation range of 95%.



Applications of the ecoGEO High Power Range

Basic



This scheme covers high thermal demands, while simplifying both the hydraulic part and management. Module 1 covers the heating, pool heating and domestic hot water demand. This only requires the following probes: external probe, DHW probe and a heat activation signal. It should be noted that a proper external hydraulic design will enable the system to generate active cooling (see the diagram below) and passive cooling, which would be external but managed from the ecoGEO control. Control of up to 5 different outlet temperatures.

Simultaneous



A high energy performance scheme that produces cooling and heating (without REVERSE cycle) simultaneously with the same consumption required to generate heating, which can reach a SPF of 7 or 8, depending on the design specifications. This only requires the following probes: external probe, DHW probe (if required by the installation) and one or more heating activation signals. It should be noted that a proper hydraulic design can cover passive cooling requirements; this would be external but managed from the ecoGEO control. Control of up to 5 different outlet temperatures. Cabe señalar que con un correcto diseño hidráulico es posible cubrir frío pasivo, el cual sería externo pero gestionado desde el control de la ecoGEO. Control de hasta 5 temperaturas de impulsión diferentes.

Cascading installation scheme

Cascade&Simultaneous



A typical scheme that requires power over 100 kW. Up to 6 ecoGEO HP units can be managed with the Supervisor (external control) in parallel. The Supervisor is in charge of optimising the operation of the block so it always runs at the maximum point of efficiency and distributes the work load among the ecoGEOs of the block. Note that a DHW tank can also be managed from the heat pump. -Control of up to 5 outlet units for each ecoGEO HP (4 mixed units and 1 direct unit). Cabe señalar que se puede gestionar un depósito de ACS por bomba de calor. Control de hasta 5 grupos de impulsión por cada ecoGEO HP (4 mezclados y 1 directo).

* The image above shows an installation scheme with simultaneous production and cascade.

ecoAIR EVI



- ▶ Inverter technology and Scroll compressor
- ▶ Power ranges: 3-12 kW / 4-20 kW
- ▶ Domestic hot water production with external DHW tank
- ▶ Production of heating and swimming pool
- ▶ Integrated production of active cooling
- ▶ EVI technology to get the best performance even in unfavorable conditions
- ▶ Unique system with Flash tank
- ▶ Control through Internet with the ecoSMART Easynet
- ▶ Hybridization with photovoltaic energy with the e-managers ecoSMART e-manager & e-system
- ▶ Single-phase (230V) or three-phase (400V) power supply



Interior units

CM

Controller
Screen

HK

Controller
Screen
3-way valve DHW

HK-EH

Controller
Screen
3-way valve DHW
Electric Heater

HK-EH

Controller
Screen
3-way valve DHW
Electric Heater
Heat exchanger
Circulation pump

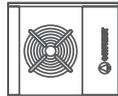


Heat pump monoblock



Outdoor unit - ecoAIR EVI

Indoor Unit - Hydrokit



Range

ecoAIR EVI 3-12

ecoAIR EVI 4-20



Services



DHW



Heating



Cooling
Active/Passive



Pool

POWER

3-12 kW
4-20 kW

MODULATION

INVERTER

TECHNOLOGY

EVI

POW.SUPPLY

1-phase
3-phase

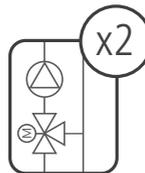
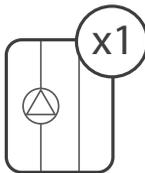
DIMENSIONS

Height. 970 mm
Length. 1140 mm
Depth. 475 mm

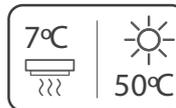
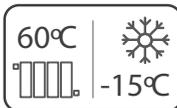
WEIGHT

134 kg

Production management



Inverter-EVI-Flash tank technology



EVI

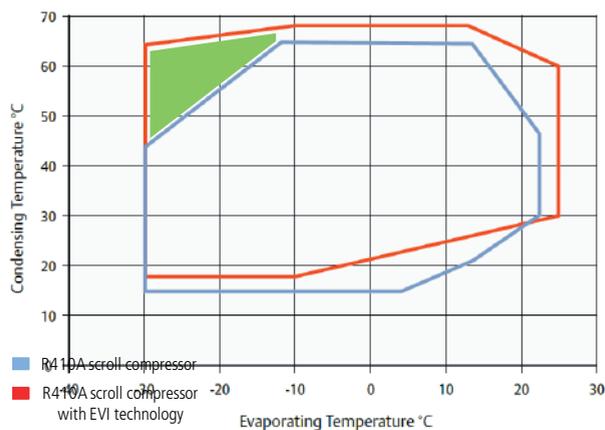
The ecoAIR heat pumps count with EVI system in their cooling circuits. With EVI it is possible to reach extraordinary temperature levels when comparing them with other technologies. The EVI Scroll compressor is developed especially for heat pumps and it is a compressor model high stands out because it has an intermediate step in its cycle, what maximizes its performance.

The modern EVI technology reinjects vaporized refrigerant in the compressor in an efficient way, what allows reaching higher temperatures. This vaporized refrigerant injection allows heating water 10°C higher with the same compressor output. EVI technology improves meaningfully the cooling circuit and also provides higher efficiency heating.

EVI technology advantages:

1. Improvement of the capacity and the output temperature
2. Improvement of the seasonal performance
3. Higher utilization of the heat capacity of the system

However, the main advantage is obtained when combining it with air source heat pumps since the compressor map is wider, what can be translated into high output temperatures even at low outside air temperatures. The main feature of the ecoAIR is that this vaporized refrigerant injection comes from a flash tank, which simplifies reversing the cycle and avoids complex situations as the ones existing nowadays in the market.



ecoGEO + Air units



- ▶ EcoGEO heat pump with aerothermal or hybrid capture by external aerothermal unit (AU)
- ▶ Different models depending on the required feedback power: AU12 / AU40 / AU70 / AU100 / AU150
- ▶ Fully hydraulic installation without the need to add additional refrigerant charge
- ▶ No limitation of distance between the outdoor unit and the heat pump
- ▶ Unique defrosting technology: defrosting stopped compressor without the need for a cycle inversion that allows to reduce the duration and the repletion of the same
- ▶ Seasonal yields considerably higher than those of conventional aerothermal
- ▶ Heat pump as an indoor unit: longer life
- ▶ Control via Internet with the ecoSMART easynet kit
- ▶ AU12: single-phase power supply (230V) AU40 / AU70 / AU100 / AU150: three-phase power supply (400V)

Compatible with:

ecoGEO Basic

ecoGEO B2
ecoGEO B4

ecoGEO Compact

ecoGEO C2
ecoGEO C4

ecoGEO HP

ecoGEO HP1*
ecoGEO HP3*

* Management through ecoSMART e-source

Advantages of using AU12

- Much simpler installation, exclusively hydraulic.
- Exclusive defrosting technology.
- Main components in the interior module, which means it has a longer life.
- Compressor disabled during defrosts, greatly increasing the performance.
- Significant reduction in the number of defrosts.
- Low external noise level
- No limitation of distance between the indoor and outdoor unit.
- Great versatility with the possibility of hybridizing with geothermal and photovoltaic capture, made possible by using ecoSMART (patented technology).
- HTR technology (exclusive Ecoforest) that allows to produce heating / cooling and DHW / pool simultaneously
- DHW temperature up to 70° without the need for any extra electricity thanks to the HTR technology.

1 Air source



Scheme with a heat pump that has an aerothermal configuration, an attractive option for locations with fair weather, where it is not possible to use boreholes due to prohibitive cost or type of terrain or because the area is protected by legislation, etc. This configuration avoids the need to install refrigerant connections between the aerothermal installation and the heat pump, which simplifies the necessary testing in installations with refrigerant (direct expansion).

ecoGEO + Air units

Hybrid

Allows for a reduction in the number or depth need of boreholes, perfect when money or space is an issue. It can even be used when there isn't enough space available for horizontal collection system.

2 Air source



Scheme that provides a high catch for the combination with the ecoGEO 5-22 models, in situations in which the climatic conditions of design require it. Check rate.

Now also in high power

- The e-manager is an electronic control specifically designed for ecoGEO HP heat pumps.
- With the ecoSMART e-manager it's possible to manage up to four different sources of energy capture simultaneously. For the first time it's now possible to combine ecoGEO HP heat pumps with external aerothermal units, lowering the cost of the systems of capture and allowing more versatile and efficient installations.



All the advantages of e-source

- Thanks to e-source, the energy efficiency of the entire installation is considerably increased. Allowing users to combine up to four different sources of catchment.
- Possibility of hybrid installations with ecoGEO HP (High Power) heat pumps, combining several types of capture (Geothermal, Aerothermal, Freatic, Solar ...)
- Defrost the aerothermal sources without using the compressor (greatly increasing the performance) and without the need to reverse the cycle (elimination of waiting times)
- Continuous operation, sequential defrosts when there is more than one aerothermal source.
- Great versatility: possibility to adapt to any budget by playing with the percentage to cover for each source of catchment. cover for each source of catchment.

AU100

ecoSMART



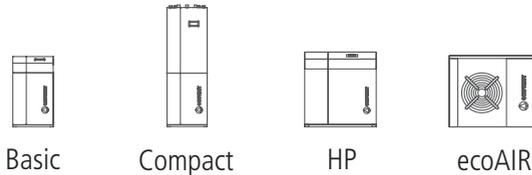
e-manager

e-system

Hybridization

Energy manager
Heat pump & renewable energies

Compatible heat pump models



Basic

Compact

HP

ecoAIR

Renewable energies compatible



Photovoltaic

Wind

Hydroelectric

Others

EXCEDENTES

Zero net
balance

INCREASED-SVINGS

kWh[€]
Control consumption
during hours in which
prices peak

CONTROL

$P_{\text{máx}}$
Regulation of the
power consumed

LOADS

Management of
non critical loads

SMART GRID

SG MODE

DIMENSIONES

Height: 600/1058 mm
Length: 400/720 mm
Depth: 155/710 mm

Features

- Unique technology: European patent.
- Domestic single-phase installations less than 5 kW of renewable electricity production (only e-system).
- Hybrid inverter (single e-system) and integrated energy meter.
- Modular system: from 0 to 5 integrated batteries (only e-system).
- Surplus management: storage of surplus renewable electric energy as thermal energy.
- Rate control: prioritises consumption of electricity for the heat pump during the periods in which the price of electricity is at a low point
- Limitation of power: modulation of the power consumed by the heat pump in order not to exceed a maximum power consumed established



e-manager



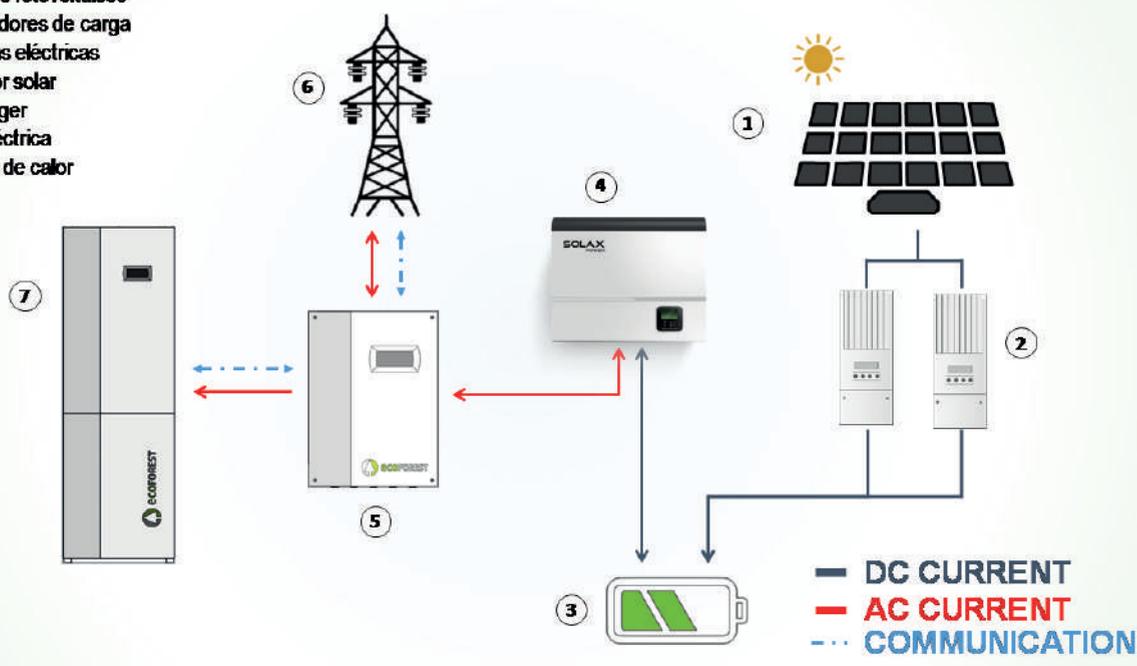
- ▶ Hybridization of ecoGEO and ecoAIR heat pumps with electric power produced by renewable energy systems
- ▶ Compatible with production systems: photovoltaic, wind, and hydro
- ▶ System allows the user to reduce or eliminate the need for electric batteries, which are an expensive addition to the install, often needed for the storage of energy excess energy
- ▶ Allows for serious reduction in energy bills through a combination of management of surplus renewable energy, effective use of electricity prices changes, and the regulation of the power consumed by the installation
- ▶ SmartGrid ready: compatible with smart grid SG modes
- ▶ Compatible with single-phase (230V) and three-phase (400V) production systems

- ▶ Hybridization of ecoGEO and ecoAIR heat pumps with electric power produced by renewable energy systems
- ▶ Compatible with production systems: photovoltaic, wind, and hydro
- ▶ Optimized system for domestic installations with hybrid solar inverter and integrated electric storage batteries
- ▶ Allows for serious reduction in energy bills through a combination of management of surplus renewable energy, effective use of electricity prices changes, and the regulation of the power consumed by the installation
- ▶ SmartGrid ready: compatible with smart grid SG modes
- ▶ Compatible with single-phase (230V) and three-phase (400V) production systems

e-system



1. Módulos fotovoltaicos
2. Reguladores de carga
3. Baterías eléctricas
4. Inversor solar
5. Emanager
6. Red eléctrica
7. Bomba de calor



Reference installation

ecoGEO 1-9 + e-system + 5 kW SolarPV

Area: Nigrán, España
 Building type: Design house (250 m²)
 Year: 2018
 Installation type: Ground-source
 Power: 1-9 kW
 Service: Heating, cooling, DHW and pool



6 ecoGEO HP 25-100 + e-source



Area: Girne, Chipre
 Year: 2018
 Installation type: Water / Air-source
 Power: 1200 kW
 Services: Heating, cooling, DHW, pool and spa

63 ecoGEO 3-12

Area: Boadilla del Monte, España
 Building type: 5 stars Hotel
 Year: 2017
 Installation type: Ground-source
 Power: 63 x ecoGEO C4 3-12 HTR
 Services: Heating, cooling passive-active and DHW



ecoGEO 3-12 + AU12 + 5 Ground-source basets

Area: Coyhaique, en la Patagonia chilena.
 Building type: Kindergarten
 Year: 2016
 Installation type: Hybrid
 Power: 3-12 kW
 Services: Heating, active cooling and DHW

Reference installation

3 ecoGEO 5-22



Area:	Suiza
Building type:	Hotel with pool and spa
Year:	2018
Type of installation:	Ground-source
Power:	66 kW
Service:	Heating, Cooling, DHW, pool and spa

Our new headquarters



Towards the end of 2018 we opened our new facilities, boasting an area more than 13,000 m². It has a laboratory and an office area of 1,500 m² each. As for the manufacturing part, we have managed to increase our production up to 350%, allowing us to satisfy the demand of our customers, as well as maintain the growth year after year.

2 ecoGEO HP 25-100 + e-manager + 80 kW Solar PV + e-source

Our headquarters are heated by 2 ecoGEO heat pumps (both 25-100 kW), controlled by the e-source source manager. There is a 850K liter tank which acts as a source of catchment, built under the offices. The tanks construction was mandated in order to comply with the fire regulations. However it has allowed us to do without the use of geothermal wells, reducing the expense of the installation. We also have 80 kW of photovoltaic panels that are managed together with the heat pump by the e-manager.





More information:
www.ecoforest.es

