HEAT PUMPS

CATALOGUE

ecoFOREST

www.ecoforest.com

CLEAN TECHNOLOGY

At Ecoforest we develop increasingly efficient products using renewable energies.

We provide solutions to today's society to make the planet a greener place.

ecoGEO+
HEAT PUMPS

The most advanced ground-source heat pumps on the market with Inverter technology and variable speed compressor, achieving the best performance with the most compact installations.

We have developed the first ground-source heat pump with **natural refrigerant R290** for indoor installation.

R290 ecoFOREST

ecoAIR+

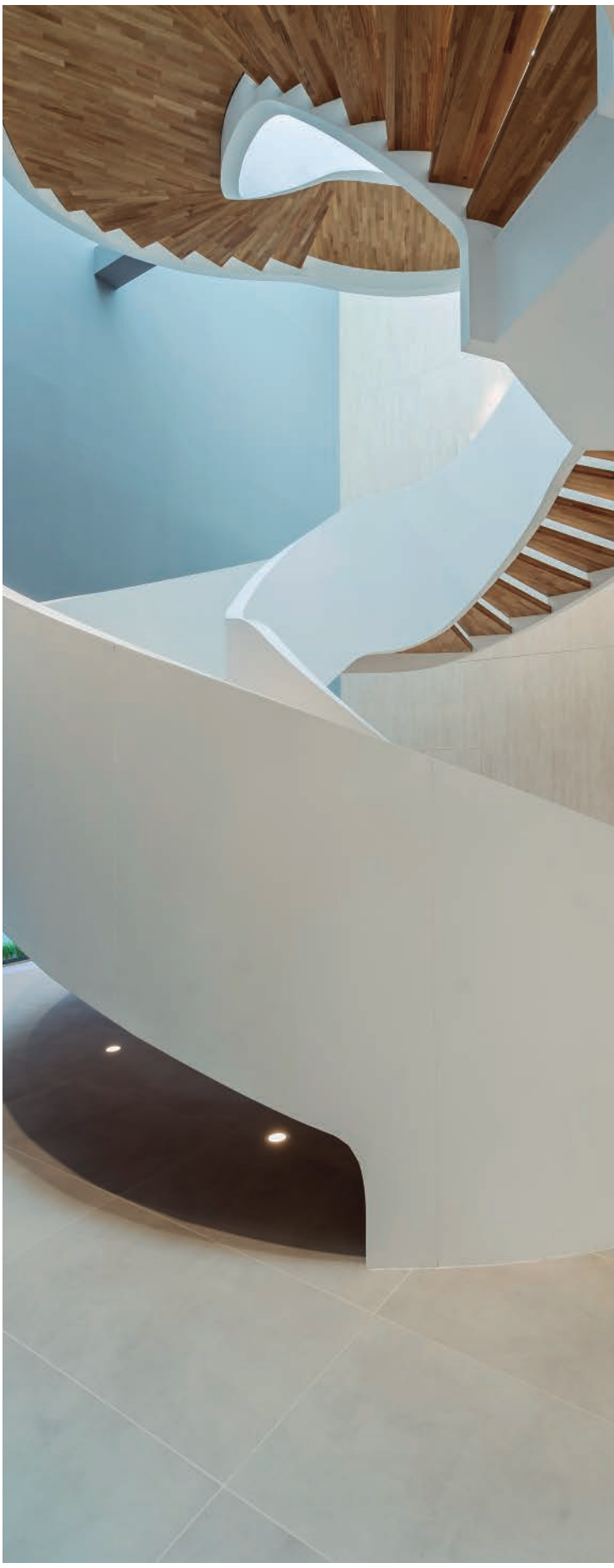
The most environmentally friendly air-source installation with **natural refrigerant R290** for heating, cooling and domestic hot water.

HEATING DHW SWIMMING POOL COOLING

ecoFOREST

INDEX

Ecoforest offers climatisation solutions with renewable energies and is the only Spanish manufacturer of ground-source heat pumps, leading sales in Spain



Ecoforest

Ecoforest was founded in 1959, driven by the vision and determination of **José Carlos Alonso**, its founder and president. A trip to the United States led him to discover pellets, a then-unknown fuel in Europe. As a result, Ecoforest became the first distributor of pellet stoves on the continent, laying the foundation for a now well-established market.

In the 1990s, Ecoforest took a step further by inventing the **pellet hydro-stove**, positioning itself internationally as a leader in the climatisation and renewable energy sectors.

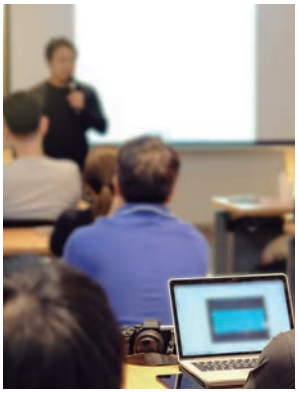
In 2012, Ecoforest launched a new range of products: the **ecoGEO heat pumps**, becoming the first Spanish manufacturer of ground-source heat pumps and the first in Europe to incorporate Inverter technology and four-way valves for heating, domestic hot water (DHW), and cooling.

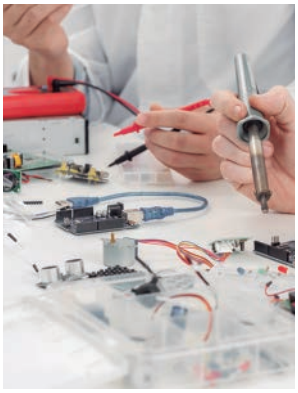
In 2013, the company developed **water-to-water heat pumps**—an exclusive type of air-source energy system featuring innovative technologies, such as defrosting without compressor consumption and the ability to hybridise collection sources, optimising both performance and installation costs.

This was followed in 2014 by the introduction of a **high-power heat pump range and peak performance tracking technology**, designed to optimise cascade operation.

Our recent technological advancements have positioned us as one of the fastest-growing manufacturers in Europe in recent years. Notably, we have developed **energy managers to hybridise** our heat pumps with photovoltaic installations—the perfect combination of present and future. Additionally, **our ecoAIR family of air-to-water heat pumps** integrates the latest advancements, utilising 100% natural refrigerants.

Why Ecoforest





1 *Innovation and development*

Our technical expertise and academic focus, combined with our own R&D department, enable us to develop innovative products, respond swiftly to market demands, and drive continuous improvements in collaboration with research centres and foundations.

2 *Tailor-made training*

We regularly organise events and courses through the Ecoforest Academy to upskill our distributors and installers.

3 *Support*

Ecoforest's technical team is composed mainly of specialised engineers with extensive expertise in product development and the requirements of heat pump installations.

4 *Quality*

Ecoforest implements a quality strategy with rigorous controls from design to the final stage of assembly.

5 *Prescription*

To ensure the correct selection of Ecoforest equipment, BIM files for heat pumps and biomass systems are available for easy integration into price generators.

6 *Agility*

Ecoforest stands out for its fast order delivery, prompt customer service, and high production flexibility, enabling it to adapt to the market in the shortest possible time.

ecoAIR+ PRO

HEAT PUMPS

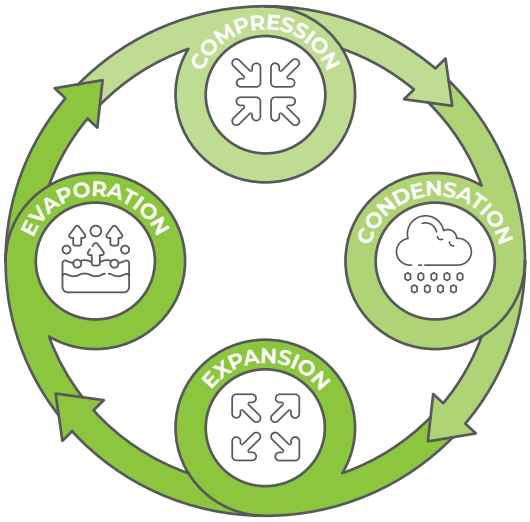
ecoGEO+
Compact PRO

In our daily lives, we encounter countless forms of energy. Just as technology allows us to harness solar energy or the kinetic energy of the wind, **there are now advanced systems capable of capturing heat from the ground or air and transferring it to our homes and businesses.**

Heat pumps utilise this clean, renewable, and free energy to provide heating, domestic hot water (DHW), and even cooling, making them an efficient and sustainable solution.

How an Ecoforest heat pump works

This technology is based on the thermodynamic cycle, which transfers energy in the form of heat from one environment to another (such as air, water or soil). But why is it so efficient?



The heat pump has the ability to absorb energy from clean and free sources, such as air, water or soil. To transfer this energy to the interior of the house, it only requires the power of the compressor, the only component of the system that consumes electricity. For this reason, the heat pump is highly efficient.

The efficiency of heat pumps is measured through their performance: the COP (Coefficient of Performance) in heating mode and the EER (Energy Efficiency Ratio) in cooling mode. These indicators are calculated by dividing the thermal energy generated by the heat pump by the electrical energy consumed.

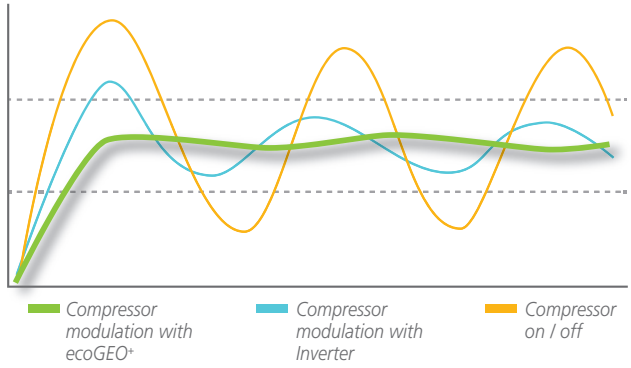
$$COP = \frac{\text{Thermal power delivered}}{\text{Thermal power consumed}} = \frac{5\ kW}{1\ kW} = 5$$

$$EER = \frac{\text{Thermal power delivered}}{\text{Thermal power consumed}} = \frac{4\ kW}{1\ kW} = 4$$

Inverter technology: the modulating heat pump

Inverter technology, unlike conventional on/off technology, controls the speed of the compressor to adjust both the thermal power produced and the electrical consumption of the heat pump.

The main benefit of Inverter technology is the adaptation of the operation of the heat pump to the thermal demand of the building at each moment, which optimises its performance and reduces the seasonal electricity consumption of the unit.



By regulating the compressor's speed, the power difference between the building demand and the heat pump power is minimised, allowing to supply the exact energy at each instant. This results in more flexible installations, able to respond to the specific needs of each case and eliminating some components that would be necessary in systems with on/off heat pumps.

This means that heat pumps with Inverter technology are not only more efficient but also allow for more compact and economical installations.

Ecoforest has extensive experience in this technology, as it has incorporated it in all models since the manufacture of its first heat pump in 2012, being the only manufacturer whose entire range is composed of Inverter products.

ADVANTAGES

Savings

Comfort

Connectivity

Integrated Management

Quiet

Lower maintenance

Efficient

No CO_2 emissions

Amortisation of the installation **vs.** Traditional heating systems

The efficiency achieved by an Ecoforest heat pump, with efficiencies of up to 500%, is unattainable for other systems

The Ecoforest heat pump is the best alternative to traditional heating systems. The most significant difference lies in the coefficients of performance (COP), which can reach up to 500% (COP 5.0) under optimal conditions. This is possible because heat pumps obtain much of their energy from freely available renewable sources, such as air, water or soil.

In contrast, traditional systems, such as gas boilers, have efficiencies close to 90-100%, converting approximately 1 kW of fuel into 0.9-1 kW of thermal energy. This means that the efficiencies achieved by a heat pump are unattainable for other conventional heating systems.

The following is a comparison for a house with a heating demand of 10 kW in Madrid. Depending on the type of heat generator, the fuel used and its performance, the energy consumption can vary significantly. In this context, the Ecoforest heat pump is positioned as the most ecological and economical solution.

Annual energy consumption (kWlh)

Yield (%)

AIR-SOURCE INSTALLATIONS

Air-source heat pumps harness the energy of the air. Ecoforest has developed two types of air-source heat pumps:

ecoAIR+: an innovative range on the market of monobloc air-source heat pumps that guarantees extraordinary performance even in the most unfavorable conditions and adapts to the needs of the installation at all times.

ecoGEO+ & AU: a unique solution that combines an ecoGEO+ heat pump with an outdoor air unit (AU). It offers extraordinary efficiency and allows the realisation of ground-air source hybrid systems to achieve a perfect balance between investment and performance.

How air-source systems work

Air-source heat pumps **use outside air as an energy source**, producing domestic hot water, heating and cooling. By means of the thermodynamic cycle, they use the energy of the air to produce the thermal energy required by the building.

Air-source heat pumps **have an average price and a more affordable installation than ground-source systems**, although their efficiency is influenced by external environmental conditions, resulting in a slightly lower performance than geothermal installations.

The installation of air-source heat pumps is simpler than ground-source heat pumps, since they only require the installation of an outdoor unit, which captures energy from the air, and an indoor unit.

Air-source systems require a lower initial investment than ground-source installations and, in turn, offer a slightly lower performance. However, it is still a much more efficient system than conventional heating systems.

Types of air-source heat pumps

AIR – TO – AIR

The air-to-air heat pumps exchange heat with the outside air and emit this heat to the installation by means of hot or cold air. The best-known air-air heat pump of this type is commonly known as air-conditioning.

AIR – TO – WATER

Air-to-water heat pumps exchange heat with the outside air and emit this heat to the installation by means of hot water or cooling with chilled water. This type of air-water heat pump can be connected to radiators, underfloor heating or fan coils, in addition to producing DHW.

Ecoforest air-to-water heat pumps are **monobloc systems**, in which all components are located inside the outdoor unit. Therefore, the connection between the outdoor unit and the building is completely hydraulic, without including refrigerant, which allows for simpler and faster installations and maintenance.

ecoAIR+ PRO

AIR - WATER MONOBLOC

Air-source heat pump with natural refrigerant

- Inverter technology and natural refrigerant R290. GWP: 3. Power ranges: 1-7 kW / 1-9 kW / 3-12 kW / 3-18 kW / 6-24 kW.
- **Operation in extreme outdoor temperatures from -25 to 55 °C.**
- **Hot water production temperatures of up to 75 °C** without electrical support.
- Domestic hot water production, heating, swimming pool and active cooling.
- Variable speed fan.
- Integrated energy meters and internet control via ecoSMART easynet.
- Hybridisation with photovoltaic energy.
- **Single-phase (230V)** or three-phase (400V) power supply depending on the model.
- Cascade of up to 6 units.
- Dynamic Defrost Cycle (DDC): faster defrosting.
- No need for a buffer tank in most installations (*).
- **HTR technology** for DHW production, simultaneous production of services up to 75 °C without electrical support in the ecoAIR+ 6-24 PRO model.

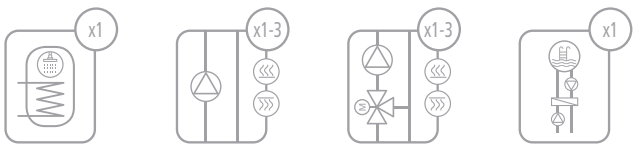
SERVICES

DHW | *Heating* | *Cooling* | *Swimming Pool*

EMISSION SYSTEMS

Radiators | *Fan coils* | *Underfloor heating and cooling*

MANAGEMENT OF PRODUCTION AREAS



DHW Management | *Management of 1 to 3 direct zones* | *Management of 1 to 3 mixed zones* | *Pool management*

Features

ecoAIR⁺ 6-24 PRO outdoor unit

Power output of up to 144 kW

R290 ecoFOREST

WITHOUT BUFFER TANK (*)

HTR HIGH TEMPERATURE RECOVERY

ecoAIR⁺ 6-24 PRO

-10 °C | 75 °C

With -10 °C outdoors we reach 75 °C in heating

50 °C | 5 °C

At 50 °C outdoors, we reach 5 °C of cooling production

CM / HK Indoor Unit

CM Lite Indoor Unit

HK-Compact Indoor Unit

MODELS

- ecoAIR⁺ 1-7 PRO
- ecoAIR⁺ 1-9 PRO
- ecoAIR⁺ 3-12 PRO
- ecoAIR⁺ 3-18 PRO
- ecoAIR⁺ 6-24 PRO

Propane, innovation is natural

R290 natural refrigerant offers the following advantages:

1. Naturally derived, unlike synthetic refrigerant gases.
2. Sustainable, with a near-zero greenhouse effect (GWP: 3).
3. Highly economical.
4. High performance and energy efficiency.
5. Wide range of working temperatures.
6. No buffer tanks are required.

When replacing a boiler with a heat pump in a radiator system, a key aspect is the **high temperature required by these emitters**. The ecoAIR⁺ PRO heat pump can reach more than 75 °C without additional electrical support, even in extreme weather conditions, making it fully compatible with radiator installations.

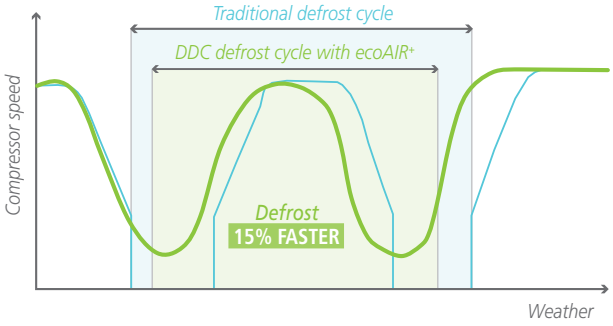
Thanks to the technology developed by Ecoforest, replacing an old boiler with a heat pump is a simple and economical process, while guaranteeing the best thermal comfort.

(*) *In most of the installations*

DDC, dynamic defrost system

Ecoforest has developed the Dynamic Defrost Cycle (DDC), an innovative defrost management system that optimizes the effective output of ecoAIR⁺ heat pumps.

DDC allows the compressor to slow down without stopping operation. Thanks to this innovation, defrosts are managed more quickly and efficiently, increasing the effective power available to the installation.



ecoAIR+ EVI

SERVICES

DHW

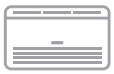
Heating

Cooling

Swimming Pool

EMISSION SYSTEMS

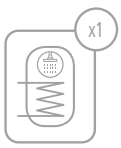
Radiators



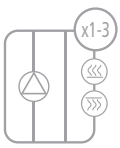
Fan coils

Underfloor heating and cooling

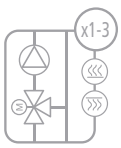
MANAGEMENT OF PRODUCTION AREAS



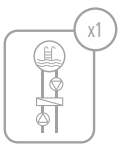
DHW Management



Management of 1 to 3 direct zones



Management of 1 to 3 mixed zones



Pool management

AIR - WATER

Air-source heat pump with EVI technology

- Inverter and EVI technology.
- Power ranges: 4-20 kW.
- Operation down to -25 °C, using the exclusive EVI technology through the Flash Tank, to achieve the best performance even in the most adverse conditions.
- Domestic hot water production, heating, swimming pool and active cooling.
- Variable speed fan.
- Integrated energy meters and internet control via ecoSMART easynet.
- Hybridisation with photovoltaic energy.
- **Single-phase (230V)** or three-phase (400V) power supply depending on the model.
- Dynamic Defrost Cycle (DDC): faster defrosting.
- No need for a buffer tank in most installations (*).

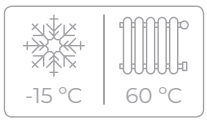
Features

ecoAIR+ EVI 4-20
Outdoor unit

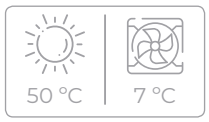
CM / HK
Indoor unit

HK-Compact
Indoor unit

CM Lite
Indoor unit



With -15 °C outdoors we reach 60 °C in heating



At 50 °C outdoors we reach 7 °C cooling production

MODEL

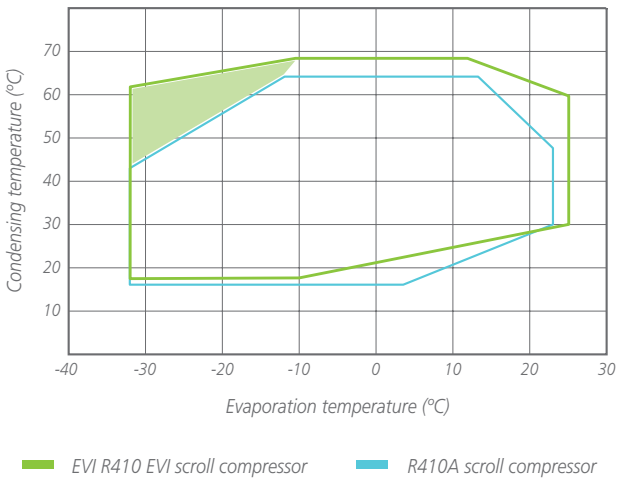
ecoAIR+ EVI 4-20

EVI technology, performance in all conditions

The ecoAIR+ EVI heat pump incorporates an EVI scroll compressor, which allows optimised gas re-injection into the compressor, thus achieving higher production temperatures and superior performance. Thanks to this advanced technology, the ecoAIR+ EVI offers three key advantages:

1. **Ideal for retrofitting:** higher capacity and production temperature, reaching more than 60 °C without additional electrical support.
2. **High performance even in extreme outdoor temperatures.**
3. **High temperature water production.**

The technology developed by Ecoforest makes the replacement of an old boiler with a heat pump simple and economical, while guaranteeing maximum comfort.



DDC, Dynamic Defrost Cycle

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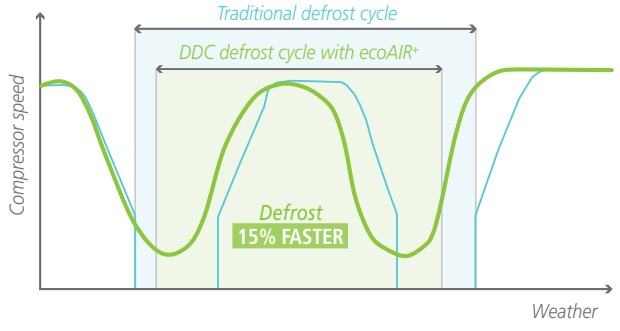


(*) *In most of the installations*

ecoGEO+ & AU

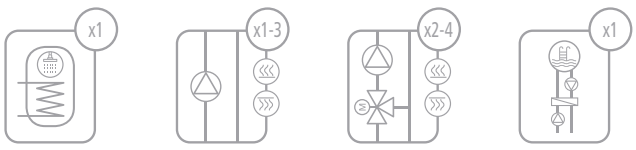
SERVICES

DHW | *Heating* | *Cooling* | *Swimming Pool*

EMISSION SYSTEMS

Radiators | *Fan coils* | *Underfloor heating and cooling*

MANAGEMENT OF PRODUCTION AREAS



DHW Management | *Management of 1 to 3 direct zones* | *Management of 2 to 4 mixed zones* | *Pool management*

A new way to make air-source installations

Water to water heat pump with air collection

- Inverter technology. Indoor water-water heat pump and hydraulic outdoor unit.
- Power ranges: 1-6 kW / 2-10 kW / 4-16 kW / 1-9 kW / 3-12 kW / 5-22 kW / 12-40 kW / 15-70 kW / 20-85 kW.
- Longer service life.
- Exclusive fully hydraulic defrosting system.
- Minimum noise emission.
- Domestic hot water production, heating, swimming pool and active cooling.
- Variable speed fan.
- Integrated energy meters and internet control via ecoSMART easynet.
- Hybridisation with photovoltaic energy.
- **Single-phase (230V)** or three-phase (400V) power supply depending on the models.
- Exclusive fully hydraulic defrosting system.
- No need for a buffer tank in most installations.

Features

Uptake / Production

ecoGEO⁺ Compact Indoor Unit

ecoGEO⁺ Basic Indoor Unit

ecoGEO⁺ HP Indoor Unit

AU Outdoor unit

ECOGEO MODELS⁺ BASIC & COMPACT	ecoGEO⁺ 1-6 PRO & AU 6	ecoGEO⁺ 2-10 PRO & AU 12	ecoGEO⁺ 4-16 PRO & AU 22
	ecoGEO⁺ 1-9 & AU 12	ecoGEO⁺ 3-12 & AU 12	ecoGEO⁺ 5-22 & AU 22
ECOGEO MODELS⁺ HP	ecoGEO⁺ 12-40 & AU40	ecoGEO⁺ 15-70 & AU70	ecoGEO⁺ 20-85 & AU100

ecoGEO⁺ & AU, a different kind of air-source installations

This system combines a water-water heat pump with air-collection by means of a dry cooler, offering multiple advantages:

1. **Installation flexibility:** adapts to different environments and needs.
2. **Initial savings:** more economical investment compared to ground-source installations.
3. **Longer service life:** important components are in the interior equipment.
4. **Efficiency in defrosting:** it is done without cycle inversion and with the compressor stopped.
5. **Purely hydraulic installation:** no refrigerant handling is required, which simplifies the process.
6. **Reduced noise** for a quieter experience.
7. **Easy repairs:** maintenance is performed indoors.
8. **Use of HTR technology:** virtually free DHW production.
9. **Simultaneous production of heat and cold.**
10. **No distance limitation** between outdoor and indoor unit.

Air-source solutions

ecoAIR+

CM Lite, simplicity

The ecoAIR+ system with the CM Lite indoor module offers an economical, compact and efficient solution for heating, cooling and DHW, allowing the management of a supply unit, thermal buffer tank (heating and cooling) and domestic hot water production, ideal for simple and optimised installations.

All in one, HK-Compact

This configuration, which combines an ecoAIR+ with the HK-Compact indoor module, allows for more compact and economical installations. The HK-Compact indoor unit integrates all the main elements of the hydraulic system, including a 165-litre stainless steel hot water tank that can be connected to the water circuit.

Maximum efficiency

The ecoAIR+ system with HK-EH-S module offers heating, cooling and DHW thanks to the 3-way valve and circulation pump that manages the distribution, with electric resistance as support, filter and integrated controller, allowing up to 3 mixed shunt groups, hybridisation with boiler and connection to DHW and swimming pool for an efficient, compact and versatile climatisation system.

Cascade

The cascade system with ecoAIR+ and the CM indoor module allows efficient management of up to 6 outdoor units, optimising performance and power modulation, as well as controlling up to 3 mixed shunt groups, DHW, swimming pool and boiler hybridisation, making it the ideal solution for building retrofit.

Air-source solutions
ecoGEO⁺ & AU

Water-to-water heat pump with air collection

The ecoGEO⁺ Basic and Compact units (models 2 and 4; see price list for details) can use an air collection system by means of AU outdoor units, making it possible to obtain air-source installations where the heat pump is indoors and the outdoor unit is a simple water exchanger.

The installation shown in this example combines an ecoGEO⁺ Compact heat pump with an AU12, ensuring the production of DHW (165 l stainless steel tank integrated in the unit), heating and cooling in several outputs (without the need for a buffer tank thanks to the wide modulation ranges) and swimming pool, all controlled by the heat pump.

Hybrid collection system: Ground and air sources

The ecoGEO⁺ units are also compatible with a hybrid system of ground and air collection, a technology exclusive to Ecoforest that allows the optimal use of both sources at any time.

This offers several advantages: on one hand, the number and length of ground probes required are significantly reduced compared to a fully ground-source system, making it more cost-effective. On the other hand, the system's efficiency can exceed that of a 100% ground-source system, as it dynamically manages and utilises each source based on its efficiency at any given time.

Hybrid cascade: ground and air sources

This configuration is perfect for the implementation of energy transition measures in buildings. It consists of a single air collector for the entire building, usually installed on the roof or other outdoor area, which can consist of a single unit covering all needs or several units distributed according to the space available.

Each apartment has its own heat pump, an ecoGEO⁺ Compact for example, which requires only 1 m² of floor space, and allows individual use of heating and cooling in each apartment. In addition, the energy meter is also simplified.

This type of installation offers higher performance than conventional air conditioning systems because it avoids the classic distribution heat losses and offers individualised comfort. It is also a very economical system, since all the units share the collection source.

ECOFOREST: MAXIMUM EFFICIENCY WITH THE MOST ADVANCED GROUND-SOURCE ENERGY

At Ecoforest we revolutionised ground-source energy with the first range of **heat pumps with variable speed compressor and Inverter technology**. Our heat pumps continuously adapt to real demand, eliminating the need for buffer tanks and reducing the size and cost of boreholes.

Compact, efficient and equipped with the main components, our heat pumps enable a simpler and more cost-effective installation without compromising top performance. Ecoforest leads the way in efficiency and sustainability in heating and cooling.

WE 'R' 290

How ground-source installations work

Ground-source heat pumps, also known as water-to-water heat pumps, **transfer heat from the ground or from a water source to a hydronic circuit**, which in turn distributes it to the building through another water circuit.

Ground-source systems stand out for their **lack of visual and acoustic impact**. However, they require a higher initial investment compared to air-source systems, due to the work required for heat collection (vertical boreholes, horizontal collection, phreatic collection, and other solutions).

The ground-source heat pump uses the thermodynamic cycle to provide heating, cooling and domestic hot water (DHW). In heating mode, it extracts heat from the ground or water and transfers it to the building. In cooling mode, it extracts heat from the building and dissipates it into the ground or water source.

In terms of efficiency, ground-source heat pumps offer higher performance than air-source heat pumps, which translates into **greater energy savings** and higher long-term cost-effectiveness.

TYPES OF COLLECTION SYSTEMS

Vertical boreholes

These wells consist of buried probes at depths between 80 and 150 metres.

Horizontal boreholes

These boreholes consist of probes buried horizontally at a depth of between 1 and 2 metres.

Groundwater collection

An open-circuit system that draws water from the groundwater table. After passing through a heat exchanger, the water enables the heat pump to extract energy.

Others

Geothermal baskets, thermoactive piles, geothermal pillars...

ecoGEO⁺ Inverter water-to-water heat pumps

Ecoforest's ecoGEO⁺ ground-source heat pumps can be coupled to any type of collection system thanks to their control strategies that adapt their operation to the characteristics of each type of source.

ecoGEO+ LITE

WATER - WATER

Inverter ground-source heat pump with natural refrigerant

- Inverter technology with R290 refrigerant. GWP: 3.
- Power range: 1-6 kW.
- Hot water production temperature of up to 75 °C without electrical support.
- Heating, domestic hot water (DHW) and active cooling services.
- In-built photovoltaic hybridisation.
- Integrated energy meters and internet control via ecoSMART easynet.
- Efficiency: up to 500%.
- Collection and production circulation pumps included.
- Production expansion vessel included.
- DHW 3-way valve included.
- Single-phase power supply (230V).

SERVICES

DHW *Heating* *Cooling*

EMISSION SYSTEMS

Radiators *Fan coils* *Underfloor heating and cooling*

MANAGEMENT OF PRODUCTION AREAS

x1 *DHW Management*

x2 *Management of 2 direct zones*

Features

R290 ECOFOREST

ecoGEO⁺ LITE 1-6 PRO

INVERTER TECHNOLOGY

MODEL

ecoGEO⁺ LITE 1-6 PRO

The ecoGEO⁺ LITE 1-6 PRO is the first compact ground-source heat pump with **natural refrigerant** for indoor installation without restrictions thanks to the low refrigerant charge.

Designed for the **building retrofits and decentralised systems**, its **ultra-compact** design allows a simple installation in small spaces, with the possibility of **ground-source, air-source or hybrid** collection, reaching **temperatures of up to 75 °C**.

An economical, versatile, efficient and sustainable solution to modernise any building.

WE 'R' 290

ecoGEO⁺ LITE 1-6 PRO

Less space, less emissions, more comfort

- **Direct replacement of boilers,** ideal for building retrofit.
- Perfect for **decentralised installations.**
- Possibility of **ground-source, air-source or hybrid collection.**
- **Production temperatures above 75 °C,** perfect for high temperature radiators.
- **Ultra-compact design** (79 x 59.5 x 57.5 cm), the size of a washing machine.
- **Integrated production of DHW, heating and active cooling,** without the need for additional equipment.
- **Flexibility in the size of the DHW tanks,** adapting to different needs.
- **No need for a buffer tank,** optimising space and installation.
- **Wide operation range,** optimum performance in all conditions.

ecoGEO+ PRO

WATER - WATER

Inverter ground-source heat pump with natural refrigerant R290

- Inverter technology with R290 refrigerant. GWP: 3. Power range: 1-6 kW / 2-10 kW / 4-16 kW.
- DHW production temperatures of up to 75 °C without electrical support.
- Domestic hot water production, heating, swimming pool and active cooling.
- 165 l stainless steel DHW tank integrated in the ecoGEO+ Compact models.
- Integrated energy meters and internet control via ecoSMART easynet.
- **Variable speed compressor. No need for buffer tank.**
- Hybridisation with photovoltaic energy.
- Single-phase (230V) or three-phase (400V) power supply depending on the models.
- **It reduces borehole depth by adapting to the actual power demand.**
- **HTR technology** for DHW production, simultaneous production of services up to 75 °C without electrical support, except for the ecoGEO+ 1-6 PRO model.
- No need for a buffer tank in most installations (*).

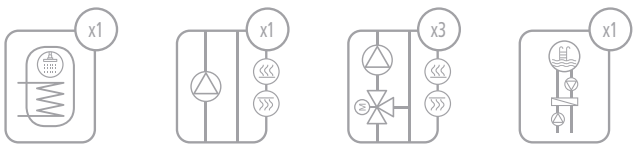
SERVICES

DHW · *Heating* · *Cooling* · *Swimming Pool*

EMISSION SYSTEMS

Radiators · *Fan coils* · *Underfloor heating and cooling*

MANAGEMENT OF PRODUCTION AREAS



DHW Management · *Management of 1 direct zone* · *Management of 3 mixed zones. Except ecoGEO+ 1-6 PRO: 2 mixed zones* · *Pool management*

Features

R290 ecoFOREST

ecoGEO+
1-6 / 2-10 / 4-16
Basic PRO

WITHOUT BUFFER TANK *

INVERTER TECHNOLOGY

HTR HIGH TEMPERATURE RECOVERY

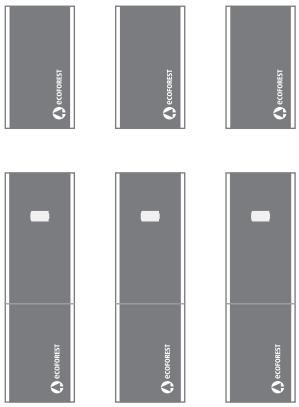
EXCEPT ecoGEO+ 1-6 PRO

ecoGEO+
1-6 / 2-10 / 4-16
Compact PRO

MODELS

- ecoGEO+ 1-6 PRO
- ecoGEO+ 2-10 PRO
- ecoGEO+ 4-16 PRO

CASCADE

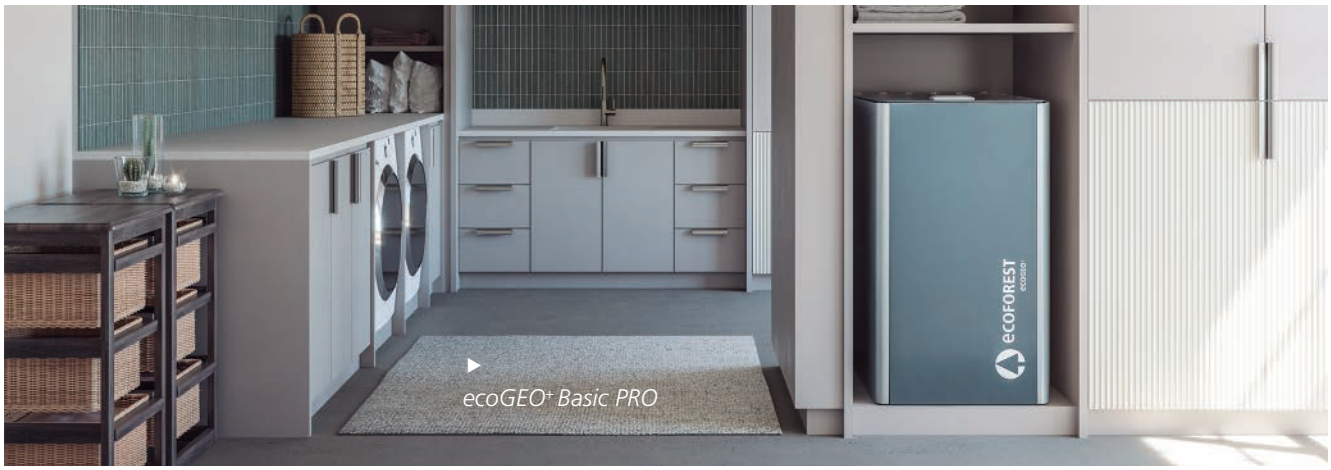


WE 'R' 290

ecoGEO+ PRO, the first with natural refrigerant R290

The ecoGEO+ PRO heat pump was **the first ground-source heat pump in the world** to use propane (R290) as refrigerant and to be suitable for **unrestricted indoor installation.** This is possible thanks to its low refrigerant charge (ecoGEO+ 1-6 PRO) and venting system (ecoGEO+ 2-10 PRO and ecoGEO+ 4-16 PRO).

The use of propane as a refrigerant offers exceptional performance, allowing **hot water temperatures above 75 °C** to be achieved with a natural and sustainable refrigerant. In addition, propane is combined with Ecoforest's unique advantages, such as photovoltaic hybridisation for optimal integration with solar energy, High Temperature Recovery (HTR) technology for virtually cost-free DHW production (except for the ecoGEO+ 1-6 PRO) or the ability to eliminate buffer tanks in most installations.



ecoGEO+ Basic PRO

(*) In most of the installations

ecoGEO+ Basic · Compact

SERVICES

DHW

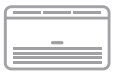
Heating

Cooling

Swimming Pool

EMISSION SYSTEMS

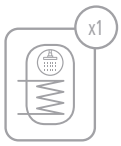
Radiators



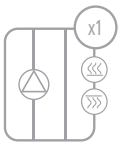
Fan coils

Underfloor heating and cooling

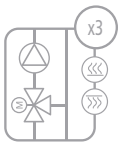
MANAGEMENT OF PRODUCTION AREAS



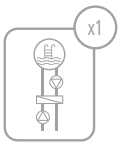
DHW Management



Management of 1 direct zone



Management of 3 mixed zones



Pool management

WATER - WATER

Inverter ground-source heat pumps

- Inverter technology and Scroll compressor.
- Power range: 1-9 kW / 3-12 kW / 5-22 kW.
- **HTR technology** for DHW production, simultaneous production of services up to 70 °C without electrical support.
- Domestic hot water production, heating, swimming pool and active cooling.
- Stainless steel DHW tank of 165 l integrated in the ecoGEO+ Compact models.
- Integrated energy meters and internet control via ecoSMART easynet.
- **Variable speed compressor. No need for buffer tank.**
- Hybridisation with photovoltaic energy.
- Single-phase (230V) or three-phase (400V) power supply depending on the models.
- **It reduces borehole depth by adapting to the actual power demand.**
- No need for a buffer tank in most installations (*).

Features

ecoGEO⁺ Basic

165 l

WITHOUT BUFFER TANK*

INVERTER TECHNOLOGY

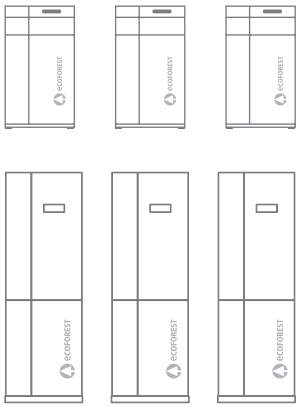
HTR HIGH TEMPERATURE RECOVERY

ecoGEO⁺ Compact

MODELS

- ecoGEO⁺ 1-9
- ecoGEO⁺ 3-12
- ecoGEO⁺ 5-22

CASCADE



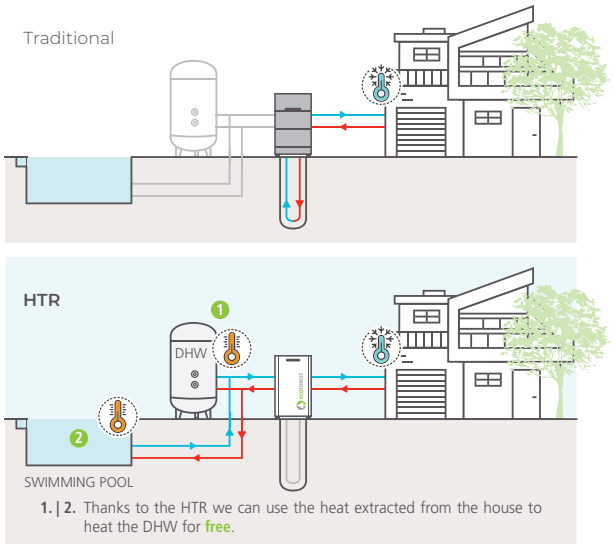
HTR, heat recovery for the best performance

The HTR (High Temperature Recovery) system consists of a heat recovery unit that allows recovering the thermal energy discharged by the compressor at high temperature when the unit is producing heating or cooling.

Through this heat recovery it is possible to produce domestic hot water up to 65 °C. This unique technology also allows the simultaneous production of DHW and heating or DHW and cooling, achieving considerably higher efficiencies than conventional heat pumps, since the production of hot water is done practically free of charge by recovering the high temperature at the compressor discharge.

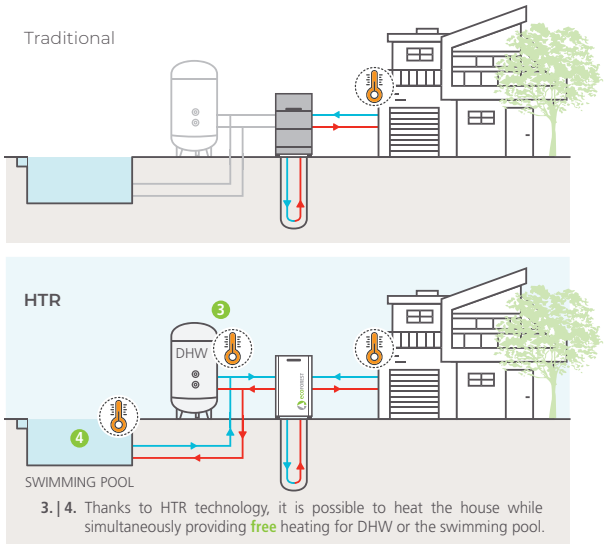
This, along with its Inverter technology and Ecoforest control strategies, optimizes the performance of the ecoGEO⁺ Basic and Compact units, positioning them among the most efficient ground-source heat pumps on the market.

REFRIGERATION



1. | 2. Thanks to the HTR we can use the heat extracted from the house to heat the DHW for free.

HEATING



3. | 4. Thanks to HTR technology, it is possible to heat the house while simultaneously providing free heating for DHW or the swimming pool.

These infographics are a representation. The heat pumps are installed inside the house

(*) *In most of the installations*

ecoGEO+ HP

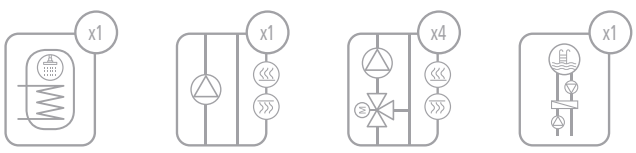
SERVICES

DHW | *Heating* | *Cooling* | *Swimming Pool*

EMISSION SYSTEMS

Radiators | *Fan coils* | *Underfloor heating and cooling*

MANAGEMENT OF PRODUCTION AREAS



DHW Management | *Management of 1 direct zone* | *Management of 4 mixed zones* | *Pool management*

WATER - WATER

Inverter ground-source heat pumps

- Inverter technology and Scroll compressor.
- Power ranges: 12-40 kW / 15-70 kW / 20-85 kW.
- Production of heating, active cooling, passive cooling, DHW and swimming pool.
- Control via the Internet with the ecoSMART easynet kit.
- Hybridisation with photovoltaic energy.
- Simultaneous production of heating and cooling.
- Hybridisation of collection sources with the ecoSMART e-source.
- Three-phase power supply (400V).
- Integrated energy and yield meters.
- Control of external auxiliary equipment (gas boilers, heating elements, etc.).
- **Variable speed compressor.**
- DHW recirculation control.
- **HTR technology** for DHW production, simultaneous production of services up to 70 °C without electrical support.

Features

HTR
HIGH TEMPERATURE RECOVERY

INVERTER TECHNOLOGY

ecoGEO+ HP

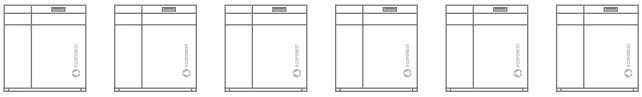
MODELS

ecoGEO+ 12-40

ecoGEO+ 15-70

ecoGEO+ 20-85

CASCADE

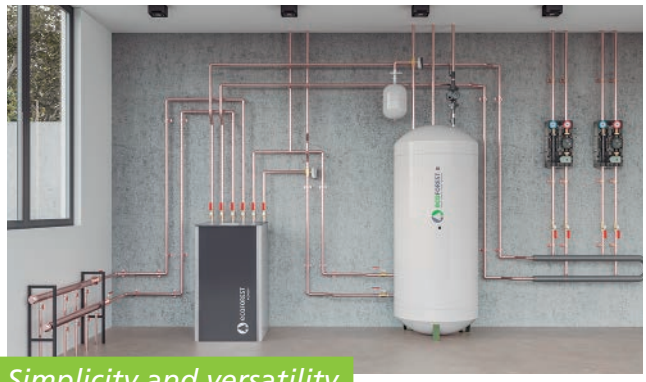


Simultaneous cooling and heating, the solution for high demands

The thermal needs of industrial, commercial and agricultural buildings present different energy demands than those of the residential sector. In many cases, such as hotels, fitness centres, spas, leisure centers or agricultural facilities, it is common to require simultaneous heating and cooling for a large part of the year. For these cases, a total heat recovery system with simultaneous production is the ideal solution. For this reason, Ecoforest has developed an exclusive technology for the efficient management of this type of installation.

The ecoGEO+ HP heat pumps are designed to handle these complex demands. Thanks to Ecoforest's advanced control strategies and their high modulation capacity, ecoGEO+ HP heat pumps can adapt their thermal power in real time, prioritising the most important demand at any given moment, and use ground-source collection in a modulated way, either as an energy source (heating mode) or as a dissipation system (cooling mode), to maintain an optimal thermal balance in any operating condition.

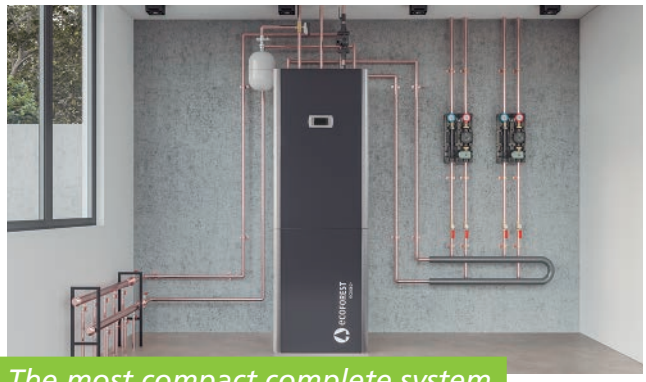
Ground-source solutions
ecoGEO⁺ Basic and Compact



Simplicity and versatility

The ecoGEO⁺ Basic units can be installed with an external hot water tank, so the size can be chosen according to the needs of each installation. Circulation pumps, expansion vessels, safety valves and the three-way DHW valve are integrated into the unit, making installation very simple and compact.

This diagram corresponds to an installation in which the required services are domestic hot water and heating or cooling in a single circuit. Since the heat pump includes the circulators, it is not necessary to add a buffer tank and no additional hydraulic elements are required.



The most compact complete system

The ecoGEO⁺ Compact units incorporate a 165-litre stainless steel hot water tank.

A complete four-zone heating and cooling installation, which would be very complex with other heat pumps, turns out to be very simple and easy to install. The ecoGEO⁺ Compact pumps avoid the installation of a buffer tank thanks to their high modulation capacity. In addition, the heat pump is also able to manage the heating of the pool.

Smart cascade management

The ecoGEO⁺ Basic and ecoGEO⁺ Compact heat pumps can be installed in cascade of up to 3 units in parallel, reaching a total modulating capacity between 5 kW and 66 kW in a single installation. This does not require any additional control devices because the cascade management is integrated in the control strategies included in the Ecoforest software. These control strategies for cascade installations have several advantages, as the system accurately tracks the operating hours of each cascade unit to extend its lifetime and prioritises its operation at part loads to optimise its performance at all times. In addition, the management capacity is multiplied by the number of units that make up the cascade, resulting in installations capable of meeting any demand.

Ground-source solutions
ecoGEO+ HP

The ideal solution for a classic installation

Simultaneous production

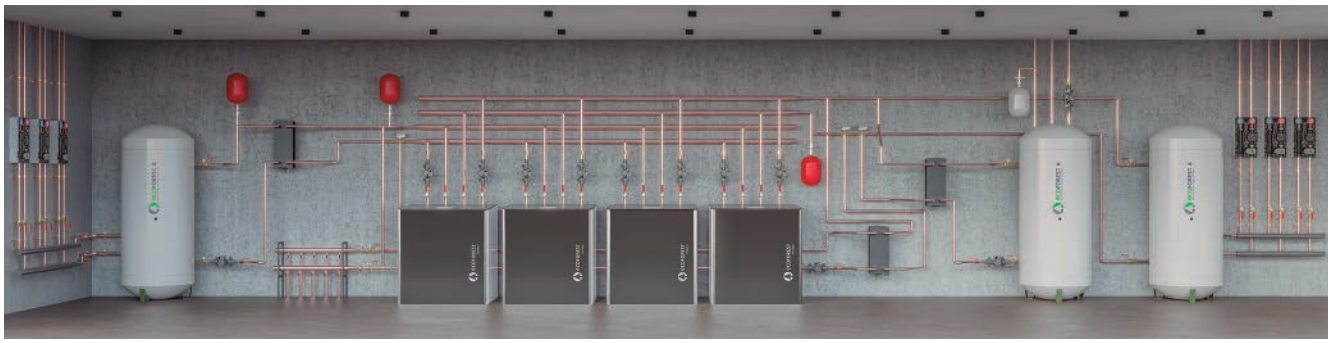
The ecoGEO+ HP heat pumps enable more efficient and simpler installations in both industrial applications and residential buildings with high thermal demands. Their ability to manage up to 5 heating and cooling zones, together with the integrated cycle inversion, ensures optimal adaptation to any type of demand. In addition, they offer the possibility of installing a DHW tank according to the needs of the building. Thanks to Inverter technology, with modulation ranges of up to 80%, the volume of the required buffer tanks is significantly reduced and can even be eliminated completely. Now, with the integrated HTR system, it is possible to produce DHW virtually free of charge, maximizing energy savings and system efficiency.

Cascade and simultaneous production

ecoGEO+ HP heat pumps can be installed in cascades of up to 6 units in parallel. This management capability is possible thanks to the use of the ecoSMART Supervisor manager, which allows an equal distribution of the operating hours of each unit in the cascade, optimising the life and efficiency of the system by seeking partial load operation of all heat pumps.

In addition, these heat pumps can manage heat recovery installations, simultaneous production of heat and cooling, with unique performance thanks to the exclusive control strategies developed by Ecoforest.

These two features make the ecoGEO+ HP ideal for installations where heating and cooling needs often occur simultaneously and represent a significant thermal power. In addition, the management capacity of the ecoGEO+ HP heat pumps is multiplied by the number of units that are part of the cascade, making this system more complete also in terms of control of the installation and its elements.



ENERGY MANAGER AS STANDARD

The ecoGEO+ and ecoAIR+ heat pumps incorporate hybrid management with electrical energy production systems from renewable sources, which allows reducing electricity consumption while optimising the operation of the heat pump in a unique way.

This unique management system enables Ecoforest heat pumps to store surplus electricity from renewable sources in the form of thermal energy, ensuring optimal usage and minimising electricity consumption from the grid. This patented technology makes it possible to take full advantage of the potential of renewable energies.

It is a unique system that also allows reducing the number of electric batteries required in a conventional photovoltaic or wind power installation or even eliminating them completely.

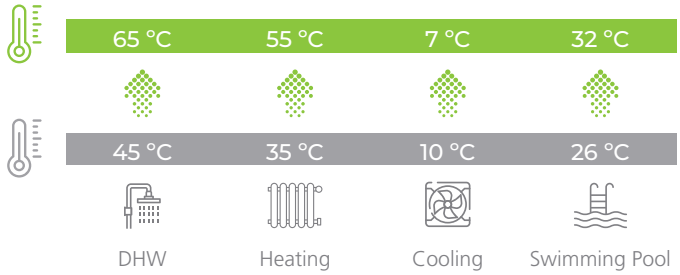
How photovoltaic hybridisation works

The heat pump is connected to an energy meter that measures the electrical balance between the installation and the grid. If the meter detects an injection reading corresponding to sufficient electrical power to start the system, the heat pump will activate a 'surplus mode.' This mode adjusts the setpoints of the installation's main services to store thermal energy, which will be fed into the grid if not consumed by this functionality.

This excess power is variable and can change over time, which is why the high modulating capacity of the ecoGEO+ and ecoAIR+ heat pumps is so important. The heat pump will adapt its consumption to consume only the excess energy available at any given time.

Once no excess energy is available, the heat pump will return to its normal operating mode, having stored as much energy as possible in the form of thermal energy for various services. This allows utilities to be supplied later without needing to restart the heat pump, significantly reducing electricity consumption from the grid.

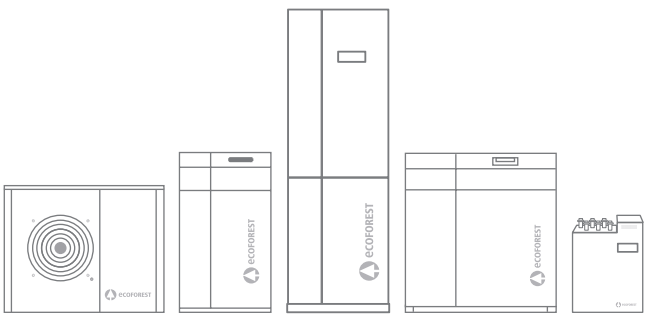
Setpoint temperatures



Unique hybridisation with photovoltaic panels

PV hybridisation is compatible with all types of installations and systems.

COMPATIBLE MODELS



ecoAIR+ | *ecoGEO+ Basic* | *ecoGEO+ Compact* | *ecoGEO+ HP* | *ecoGEO+ LITE*

Functionalities

- Unique technology: European patent.
- Surplus management: storage of surplus renewable electrical energy as thermal energy.
- Tariff control: priority for heat pump operation during off-peak electricity price periods.
- Power limitation: modulation of the power consumed by the heat pump in order not to exceed an established maximum contracted power.
- Compatible with different production systems: photovoltaic, wind, hydroelectric...
- System that allows reducing or eliminating electric batteries for energy storag.

ACCESSORIES

A heat pump must guarantee maximum comfort, so it is essential to consider every detail in its installation. The correct choice of the elements that make up the heat pump system is as important as having efficient equipment.

Ecoforest offers its customers a selection of state-of-the-art accessories, specifically designed to optimise the performance of their heat pumps. All accessories are fully adapted to our products, ensuring more efficient and reliable installations.

The Ecoforest range of accessories has been developed for exclusive use with the ecoGEO+ and ecoAIR+ heat pumps. In addition, each accessory has been rigorously tested to ensure the best solutions for any installation.

► *Complete information on accessories is available in the Ecoforest price list. Ask the Sales department.*

AU outdoor units

AU6 - AU150

The combination of our ecoGEO+ heat pumps and our AU outdoor units offers a combination of the ecoGEO+ heat pump with air-source or hybrid collection with air units.

Among the advantages of these installations is the ability to reduce installation costs and maintain power in installations where it is not possible to meet demand through ground-source collection alon.

► *AU 12*
Domestic range

► *AU 70*
High-power range

Single and double coil stainless steel DHW tanks

200 l - 2000 l

Domestic hot water tanks made of stainless steel AISI 316 specifically designed for Ecoforest heat pumps.

Flexible corrugated spiral coil with optimum contact surface and improved heat transfer.

Carbon steel buffer tanks

30 l - 2000 l

Carbon steel buffer tanks for heating and cooling applications specifically designed for Ecoforest heat pumps.

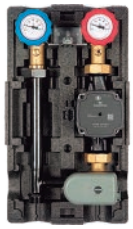
Thermal insulation in HCFC-free injected polyurethane rigid foam and exterior finish in semi-rigid PVC.

INOX steel buffer tanks

80 l - 2000 l

Steel buffer tanks INOX AISI 316 for heating and cooling applications specifically designed for Ecoforest heat pumps.

Thermal insulation in HCFC-free injected polyurethane rigid foam and exterior finish in semi-rigid PVC.



Boosting Groups

Photovoltaic Hybridisation

Circulation Pumps

SOURCE MANAGEMENT

High power control

ecoSMART e-source

Combination of up to 3 collection sources

The ecoSMART e-source is a source manager designed for the ecoGEO+ HP heat pumps, allowing the integration of up to three types of heat sources (ground, air, phreatic and solar) in hybrid installations.

It incorporates an advanced defrost system, which avoids cycle reversal and allows sequential defrosting in installations with air units, guaranteeing high efficiency. Connected via pLAN, it optimizes performance by selecting the most efficient combination of sources at all times, reducing costs and improving system efficiency.

Among the exclusive functionalities of the ecoSMART e-source, it is worth mentioning the defrost management of the air sources. In this case, defrosting is performed without reversing the heat pump cycle and sequentially, allowing uninterrupted operation of the system.

In addition, the e-source activates and deactivates the sources based on the building's thermal demand, prioritising the first source and activating or deactivating the other two as needed.

- **Hybrid installations:** combination with ecoGEO+ HP heat pumps to integrate multiple energy sources, including ground, air, phreatic and solar.
- **High efficiency:** defrosting of air units without using the compressor and without the need to reverse the cycle.
- **High efficiency with several air sources:** sequential defrosting with more than one air unit.
- **Great versatility:** possibility of adapting to various energy sources to obtain greater control over the cost of the installation.

Control in community facilities

ecoSMART e-source community

Combination of up to 3 collection sources

The ecoSMART e-source community is a system compatible with ecoGEO+ heat pumps, designed to manage installations with a common source of collection in community buildings. It allows the combination of up to three types of collection (ground-source, air-source and hybrid) and optimises performance with an advanced defrost system without cycle inversion.

It facilitates individualised management of heating, DHW and cooling, integrating energy meters to control individual and community consumption. In addition, the adaptive collection system and centralised defrosting maximise the useful life and performance of the installation.

- **Hybrid installations:** combination with ecoGEO+ HP heat pumps to combine several types of collection: air, ground and waste heat.
- **High efficiency:** defrosting of air units without the need to reverse the cycle.
- **Consumption control:** integrated energy meter for each house or common for the whole building.
- **High efficiency:** defrosting with dedicated air-source heat pump reduces defrosting time and improves seasonal performance.

Versatile solutions for buildings and communities

Decentralised installations

- Direct replacement of individual boiler installations.
- Compatible equipment: ecoGEO⁺ LITE 1-6 PRO, Compact models of the ecoGEO⁺ PRO and ecoGEO range, Basic models of the ecoGEO⁺ PRO and ecoGEO⁺.
- Compact size:
  - ecoGEO⁺ LITE 1-6 PRO: 79 x 59,5 x 57,5 cm.
  - Compact models: 185 x 60 x 72 cm.
- Services: DHW, heating, active cooling.
- HTR technology: simultaneous production of DHW with cooling or heating.
- No buffer tank required.
- DHW tank included (165 l) in Compact models.

Centralised installations

- Direct replacement of boiler rooms.
- Different types of installation available.
- Compatible equipment: ecoGEO⁺ HP.
- Production of temperatures above 70º C.
- Services: DHW, heating, active cooling.
- HTR technology: simultaneous production of DHW with cooling or heating.

Compatible with heating and cooling networks

Ecoforest offers equipment compatible with heating and cooling networks, ideal for both residential and commercial applications. In addition, its technical office provides specialised support, providing customised designs and resolving queries for each installation.

REFERENCE PROJECTS

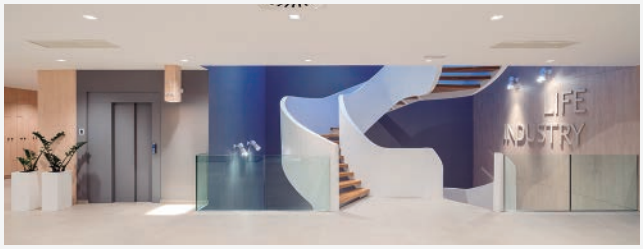
Commercial installation at Ecoforest headquarters

Cascade of high power water-to-water heat pumps with phreatic groundwater collection
SPF: 5.1
Spain

The Ecoforest installation uses the building's water tank as a collection system for the heat pumps, maintaining a stable temperature of 15 °C.

In addition, the ecoSMART e-manager optimises the use of the photovoltaic surplus generated by 80 kW of rooftop panels. The total installed power is 200 kW, with two ecoGEO HP3 25-100 kW pumps that produce heating and cooling for the offices and laboratory.

This system significantly reduces energy consumption and carbon footprint, improving the efficiency and sustainability of the facility.



Multi-family building in Puishaven with a centralised heat pump system

Cascade of high-power water-to-water heat pumps with air-source collection
Netherlands

▶

78 dwellings in a multi-family building in the Netherlands have four Ecoforest ecoGEO+ HP1 25-100 heat pumps with separate air collection through two air units that operate as independent sources. This 400 kW installation is capable of simultaneously producing heating and cooling, as well as DHW. Each apartment has an independent heating control unit.

▲

Passive House detached house in Northern Ireland

Domestic water-to-water heat pump
SPF: 5.29
Northern Ireland

A detached house in Northern Ireland shows the potential of buildings designed and constructed to high energy efficiency standards. The hybridisation of the ecoGEO+ B4 1-9 HTR EH pump with photovoltaic panels allows the surplus to be used as thermal energy and to raise setpoint temperatures at virtually zero cost.

This, together with the low demand of a Passivhaus house and the heat pump system, means that the cost of heating, DHW and cooling for six people for one year has been 156.1 € with an SPF of 5.29

Historic abbey with phreatic collection

Cascade of high-power water-to-water heat pumps
SPF: 4.1
United Kingdom

Two Ecoforest ecoGEO+ HP heat pumps provide heating and DHW to Bath Abbey, a historic building in the city of Bath (UK).

The installation captures up to 200 kW of thermal energy from the local hot springs, which maintain a constant temperature of 37 °C. These pumps heat the abbey and an adjoining office building via underfloor heating, achieving significant savings and reducing the carbon footprint.

Renovation of a castle in Hungary

Cascade of domestic water-to-water heat pumps
SPF: 4.7
Hungary

The renovation of Keglevich Castle, built in 1920, relied on Ecoforest heat pumps to provide heating, cooling and DHW without altering its historical aesthetics. The project included the installation of heat pumps in a vaulted cellar, requiring a specific 3D plan. Thirteen 100-metre boreholes were drilled to feed three ecoGEO+ pumps and two buffer tanks, achieving a seasonal performance factor (SPF) of 4.7

Single-family house in Spain with hybridisation with photovoltaic energy

Domestic water-to-water heat pump combined with an air unit
SPF: 3.8
Spain

The ecoGEO+ B4 3-12 HTR EH provides high efficiency heating, cooling and DHW for this installation. Energy is captured by the AU12 dry cooler, and the house has an 8 kW photovoltaic system and 7 kW batteries. All systems work in conjunction with the e-manager, a software integrated in the Ecoforest heat pumps that optimises the use of solar energy, allowing to take advantage of generation peaks and distribute energy efficiently throughout the day.

312 Heat pumps

Gated community- Spain

Célere Cortijo Norte, in Madrid, is a real estate development that uses heat pumps as part of its sustainability strategy. It is also the largest ground-source project in Spain with 312 ecoGEO+ C3 1-9 kW pumps and 2,176.34 kW of thermal power. The collection was carried out with 95-125 m boreholes. With energy rating A, this system reduces 618,537 kg of CO_2 per year and allows average savings of 2,100 € per year per house compared to conventional systems.

Heat pump in combination with aquathermy

High power water-to-water heat pump
SPF: 3.2
Belgium

The recent renovation of Merode Castle, a Belgian historical monument dating back to the 14th century, faced significant challenges. These included adapting a heating system to work with the existing radiators, respecting the building's aesthetics and construction materials, and heating the castle's large interior spaces.

Thanks to the aquathermy, the heat pump captures the energy from the castle's moat and provides the energy needed to power the radiator circuit in combination with a back-up boiler and photovoltaic panels. Overall, the system achieves an impressive SCOP of 3.2 points.

WE 'R' 290

Respecting and protecting the environment has become a global priority. The best heating and cooling technologies focus on increasing efficiency and reducing pollutant emissions.

Since 2019, Ecoforest has been manufacturing air-source heat pumps with R290, and in 2020, it launched its first ground-source heat pump with a natural refrigerant, further solidifying its leadership in sustainable innovation.

Our quality and environmental policy reflects our commitment to customer satisfaction and the preservation of the planet, through the design and manufacture of highly efficient climatisation systems with minimum emissions.

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WINNER Swiss Heating Expo GRAND PRIX DE L'INNOVATION

ecoGEO+ 2-10 PRO and ecoGEO+ 4-16 PRO, awarded for best innovation by the British and Swiss industry.

No CO_2 emissions


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