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# **GEOSMART** **NETZERO**

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Variable Speed  
Hydronic Heat  
Pumps



GeoSmart NetZero heat pumps stand out from the competition due to their holistic control management system and physical characteristics that provide performance levels unmatched by any other hydronic geothermal product in North America.

## outdoor reset temperature control

Possibility to operate according to the outdoor temperature. The possibility to switch between WINTER/SUMMER modes manually or automatically. The option of switching between the HEAT/COLD operating modes automatically by reading the accumulated outdoor temperature (this setting can be changed). The option of generating HEAT and/or COLD in both summer and winter, thanks to the COMBINED mode.

## control

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

## metering

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

## simplicity

The wide modulation range makes it possible to avoid having to install the typical buffer storage tanks in many applications.

## 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 NetZero 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.

## modulation

GeoSmart can provide a wide range of products to cover from 3 kW to 600 kW. In each model, the range of modulation starts as low as 25%. SEE CHART 2.

## software

Another significant advantage of the NetZero heat pumps by GeoSmart 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.

## information

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

## management

Control of 4 outlet groups (3 shunts groups and 1 direct) in domestic NetZero installations and up to 30 groups in high-power commercial 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. Essentially the NetZero can draw energy from the ground loop heat exchanger, or from an optional outdoor air to water heat exchanger.  
NetZero software can also be used to manage both.

## simultaneity

Some installations require simultaneous production of COOL+HEAT. The high power commercial NetZero 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.

## design

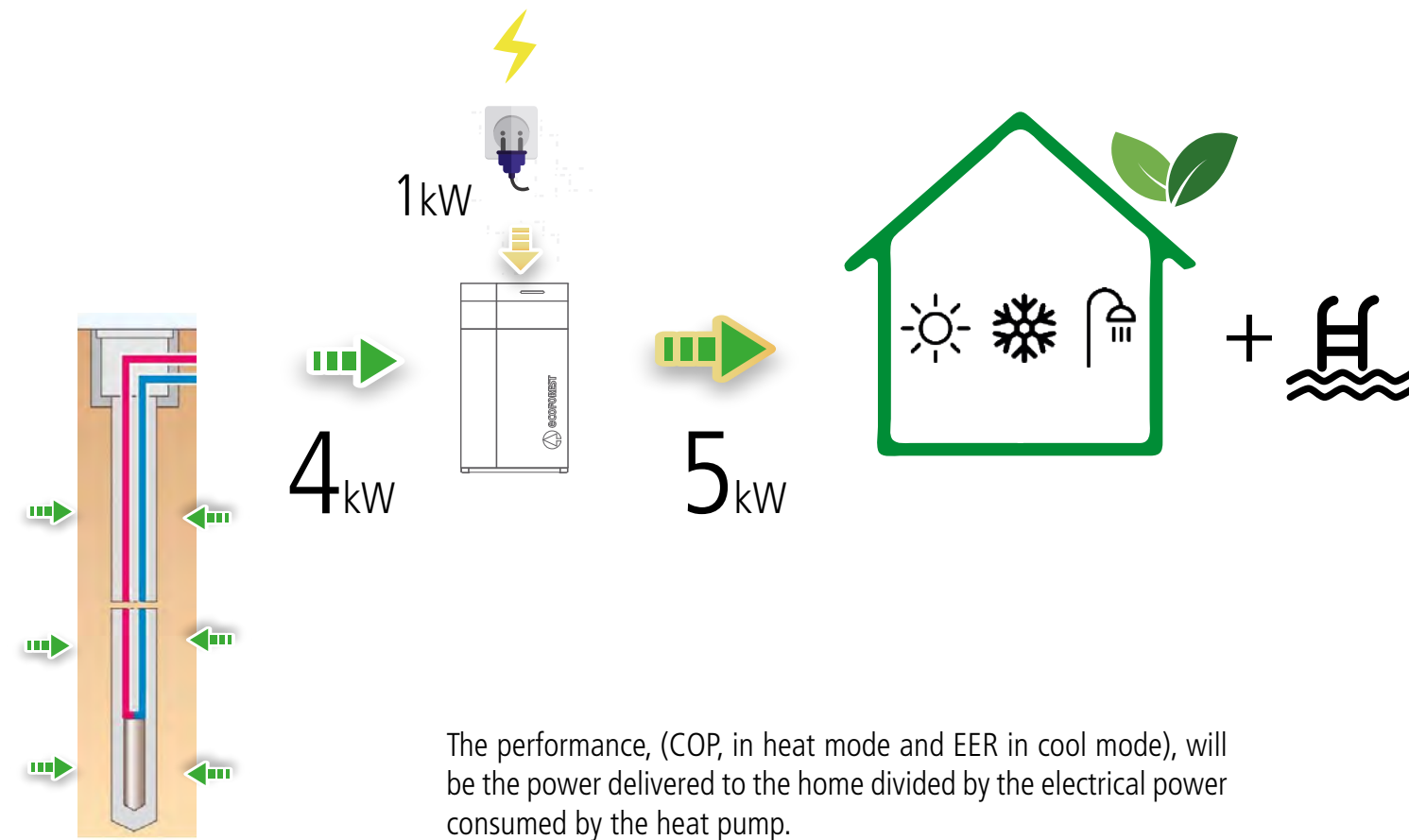
The option of placing intakes at the top or rear of the equipment (residential product range).  
Condensate drain pans.  
A hydraulic system that is easy to access (residential and HP commercial product range).  
The option of using the desuperheater in the residential product range. **HTR** system.  
Improved acoustic insulation.  
Large pipe diameter, lower load losses.  
DIN rail mounted electrical terminals that are easy to connect.  
The residential product range is completely equipped with internal variable speed circulator pumps, load and source expansion vessels, etc.

## DHW management

Control of DHW recirculation.  
Simultaneous production of: COOL + 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 commercial range, several heat pumps placed in "parallel" can be managed by the Supervisor control; 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 residential product range can use 3 heat pumps in cascade without a supervisor.



The performance, (COP, in heat mode and EER in cool mode), will be the power delivered to the home divided by the electrical power consumed by the heat pump.

$$COP = \frac{POWER\ DELIVERED}{POWER\ CONSUMED} = \frac{5\ kW}{1\ kW} = 5$$

CHART 1

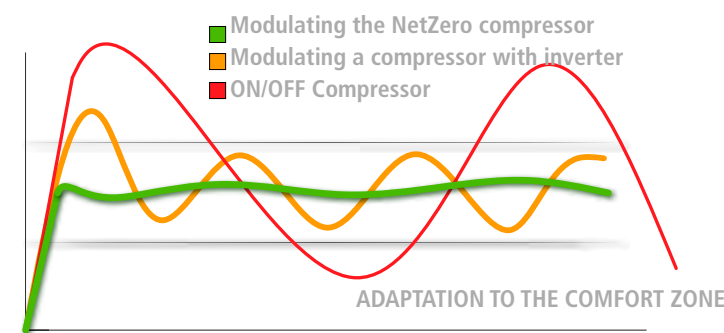
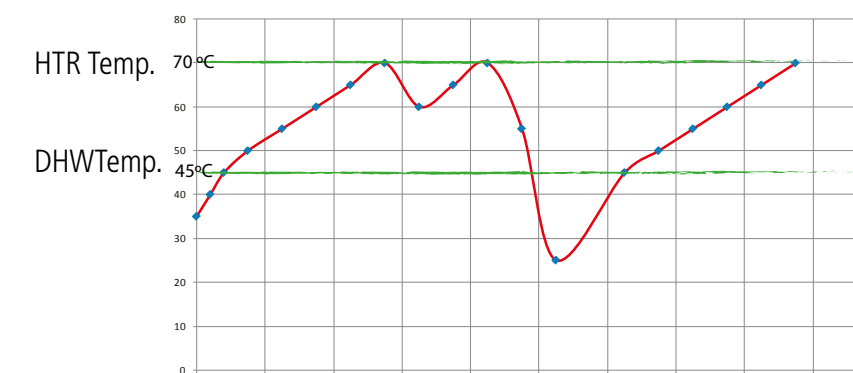


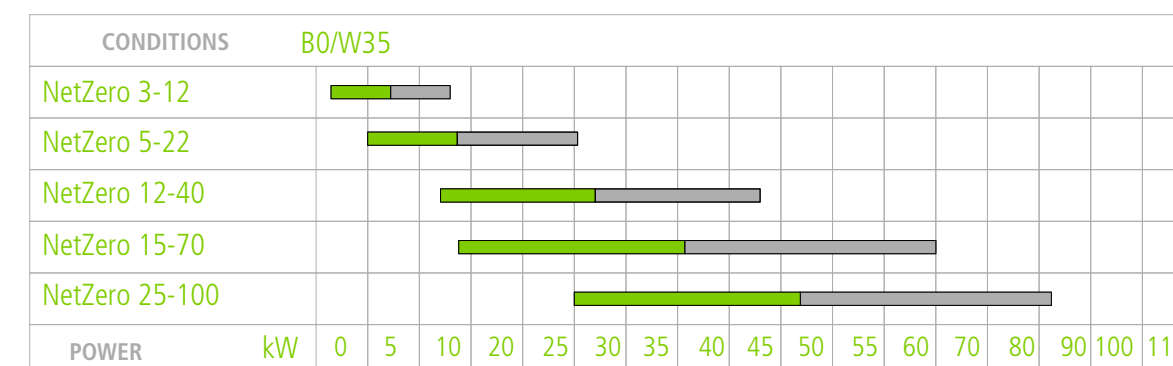
CHART 3

Heating and Maintenance with the GeoSmart NetZero HTR System, in Heating or Cooling



Fast condenser driven heating

CHART 2



# NetZero BASIC



## Technical characteristics

**Power:** 3- 12/5- 22 kW

**COP:** 4.6 / 4.9

**Refrigerant:** R410A

**Power supply:** 230V-60 Hz

**Weight:** 185-193 Kg

**Noise level:** 35 to 46 dB

**Applications:** Heating, DHW, Active and Passive Cooling, Pool/Spa Heating

## Features

Copeland inverter technology

Copeland scroll compressor

Electronic expansion valve

Integrated variable speed circulator pumps

Alfal Laval asymmetrical plate hx

pCOOEM+ Carel control

Active heating and cooling

Passive cooling, and Pool/Spa heating

3-way valve for heat/DHW generation

DHW via patented HTR technology

Built-in noise insulation kit

WiFi option available

Built-in energy meters

# NetZero COMPACT



## Technical characteristics

**Power:** 3- 12/5- 22 kW

**COP:** 4,6 / 4,9

**Refrigerant:** R410A

**Power supply:** 230V-60 Hz

**Weight:** 247-255 Kg

**Noise level:** 35 to 46 dB

**Applications:** Heating, DHW, Active and Passive Cooling, Pool/Spa Heating

## Features

All NetZero BASIC features plus:

Built-in 165-litre DHW stainless steel tank with integrated corrugated and flexible stainless steel helical coil indirect heat exchanger

**GEOSMART**  
**NETZERO**

More information available at:  
[www.geosmartenergy.com](http://www.geosmartenergy.com)