HEATING SYSTEMS

GEYSIR VARIO SERIES
Ground source heat pump digital

YHGD 11 to 30

Johnson Controls

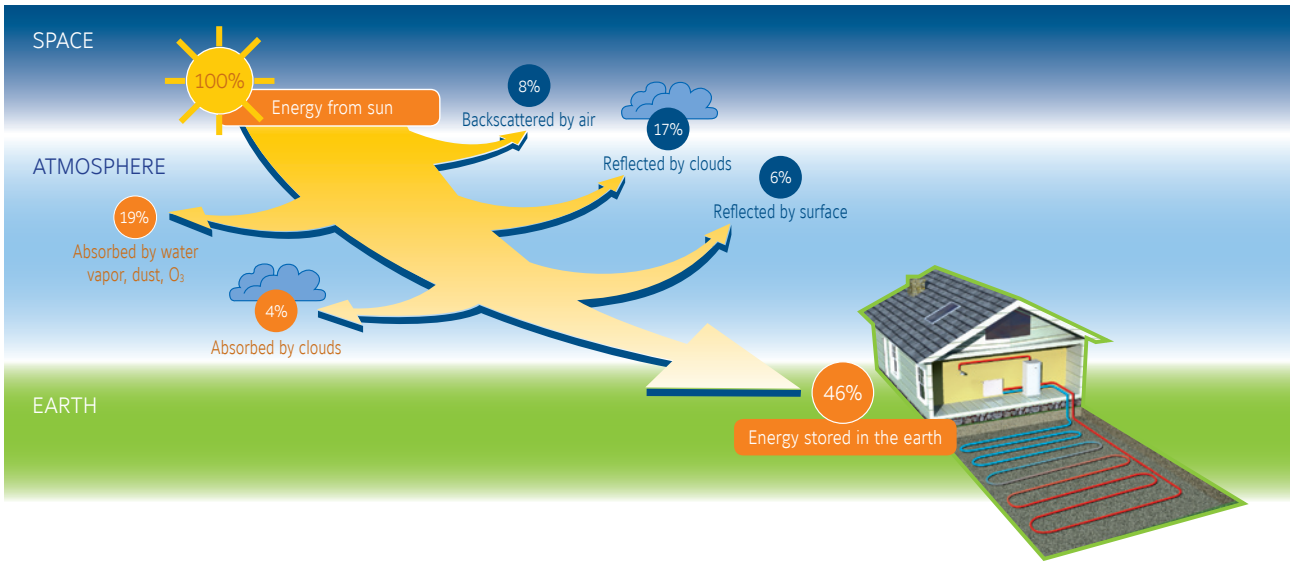
DID YOU KNOW THAT...

- Almost half of the sun's energy is stored in the earth? (Fig.1)
- A heat pump can be more than 4 times more efficient than a conventional gas boiler? (Fig.2)
- A heat pump requires 3 circuits to retrieve, store and transmit the free energy in the environment into hot sanitary water and heating for the home? (Fig.3)
- Heat pumps are classified depending on their environmental energy source? (Fig.4)

Learn more about heat pump technology...

HOW IS THE SUN'S ENERGY ABSORBED BY THE EARTH?

Fig. 1



WHY A HEAT PUMP IS MORE EFFICIENT?

Fig. 2

The earth is heated by the sun and stores a lot of energy. Heat pumps take advantage of this inexhaustible energy that can be stored in the air, in the rock, in the ground and in the water in such an efficient way that you can save up to 50% of your heating costs compared to a traditional gas boilers. That's why these systems are considered as a renewable energy source by governments.

HOW DOES A HEAT PUMP WORK?

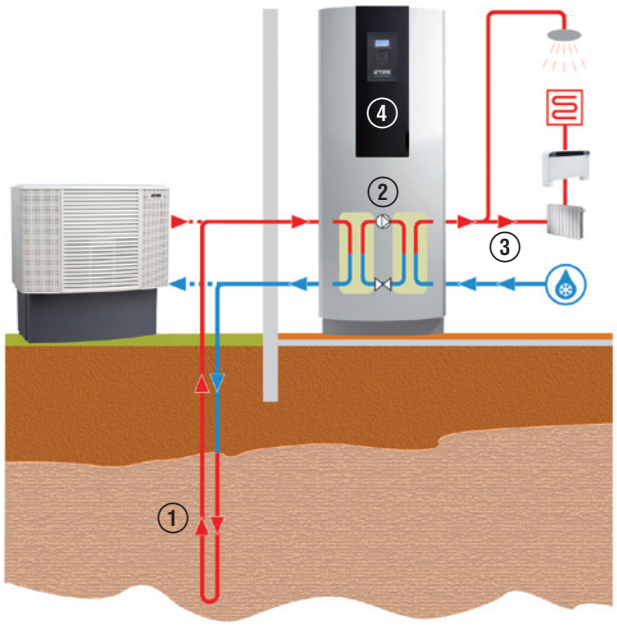
Fig. 3

A heat pump is an electrically powered system that uses mechanical compression technology to absorb the free energy from the environment to produce hot sanitary water and heating (cooling as an option).

It is composed of 3 circuits:

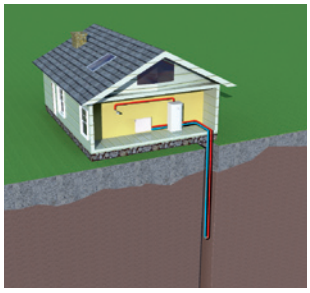
- Brine circuit ①: Collector loop responsible for the absorbtion and storage of the free energy from the air or ground.
- Refrigeration circuit ②: Incorporates all the necessary components (compressor, valves and heat exchangers) to convert the energy stored in the brine circuit into hot water. The hot water is stored in a water tank and it is available for further use.
- Tap/heating circuit ③: Brings the hot water stored in the tank to hot sanitary water or heating purposes.

Finally, a complex electronic control ④ manages the full system to make sure that the process always runs in the most efficient way.



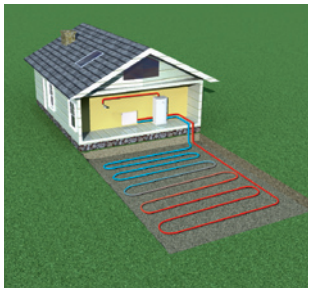
WHAT KIND OF HEAT PUMP INSTALLATIONS ARE AVAILABLE?

Fig. 4



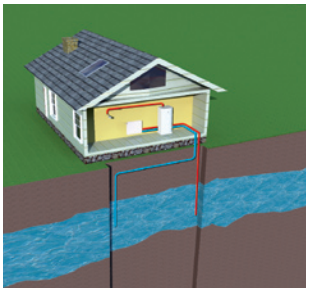
GSHP Bedrock source

By means of setting a pipe in a drilled bore hole, a bedrock heat pump absorbs the heat stored in the rock. The depth of the borehole depends on the heating demand but can be drilled down to 130m. These systems take advantage from the fact that at a certain depth (~15m) the temperature of the rock remains constant at any period of the year and therefore performance is almost unaffected by the outdoor temperature.



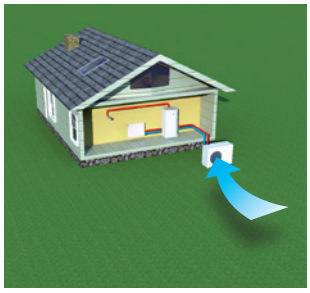
GSHP Ground source

A long hose is buried in loops in the ground around 1m depth and retrieves the energy in the same way as a bedrock heat pump. The surface buried is about 1.5 times the surface of the area to be heated and has no influence on the surrounding vegetation. It is suitable where rock shelf is deep, as there is no need for drilling (low investment costs).



WSHP Ground Water source

Retrieving energy from groundwater is the most efficient way since it retains the advantages as bedrock and ground heat pumps, but it requires less hose length for the same heating needs. However, the WSHP systems working with open loops require special equipment to stop particles in the pumped water from damaging components.



ASHP Air source

Unlike the previous systems, air source heat pumps absorb the heat in the surrounding air through an additional outdoor terminal. Not as efficient as the systems retrieving the energy from the ground, and with a performance more sensitive by outdoor temperatures, these kind of installations require much lower investment costs and they are still up to 3 times more efficient than current conventional gas boilers.

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System Components

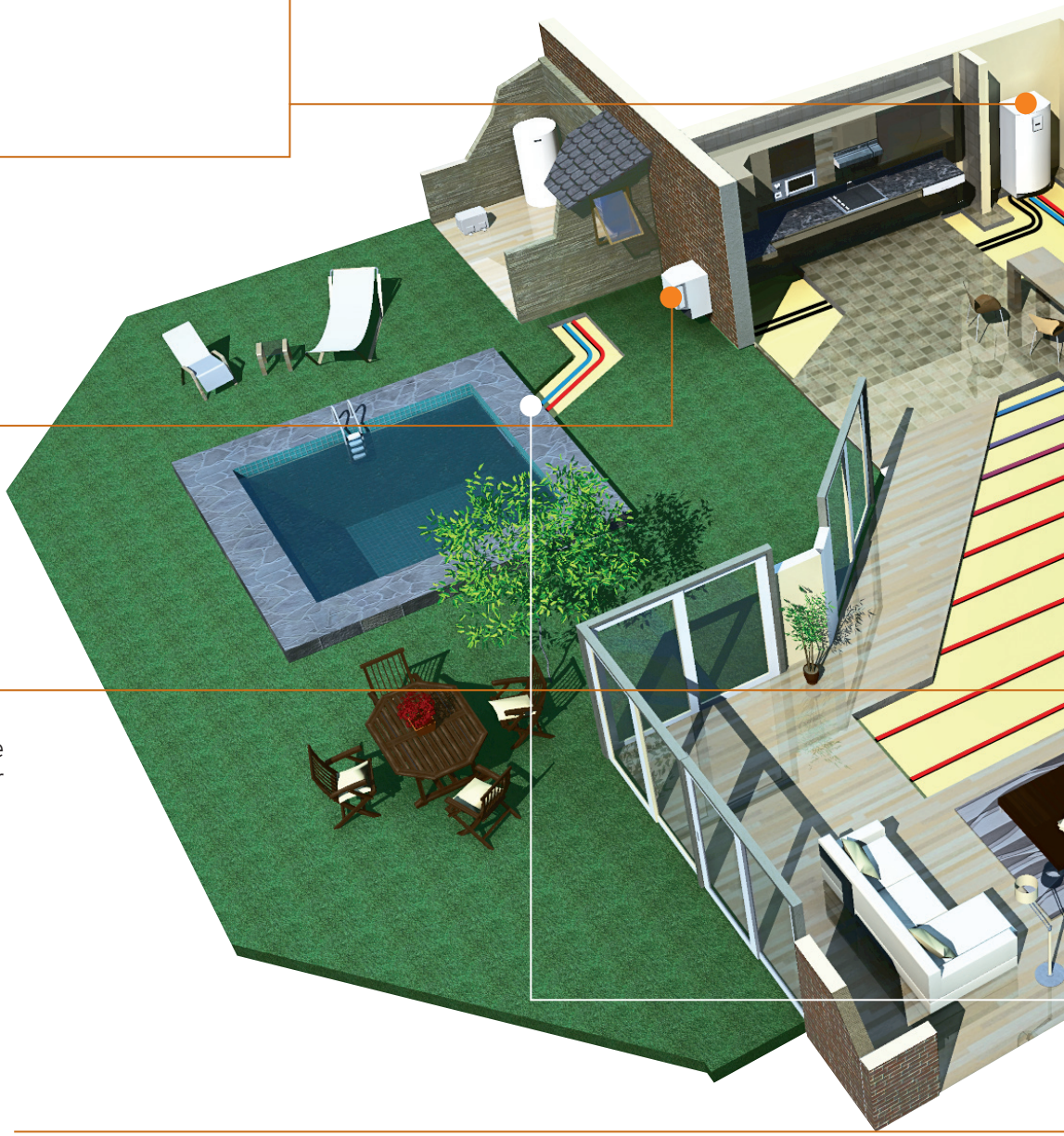
Heat pump
The "brain" of the system, controls all the components to supply heating & water as per user demand whilst optimizing the efficiency.

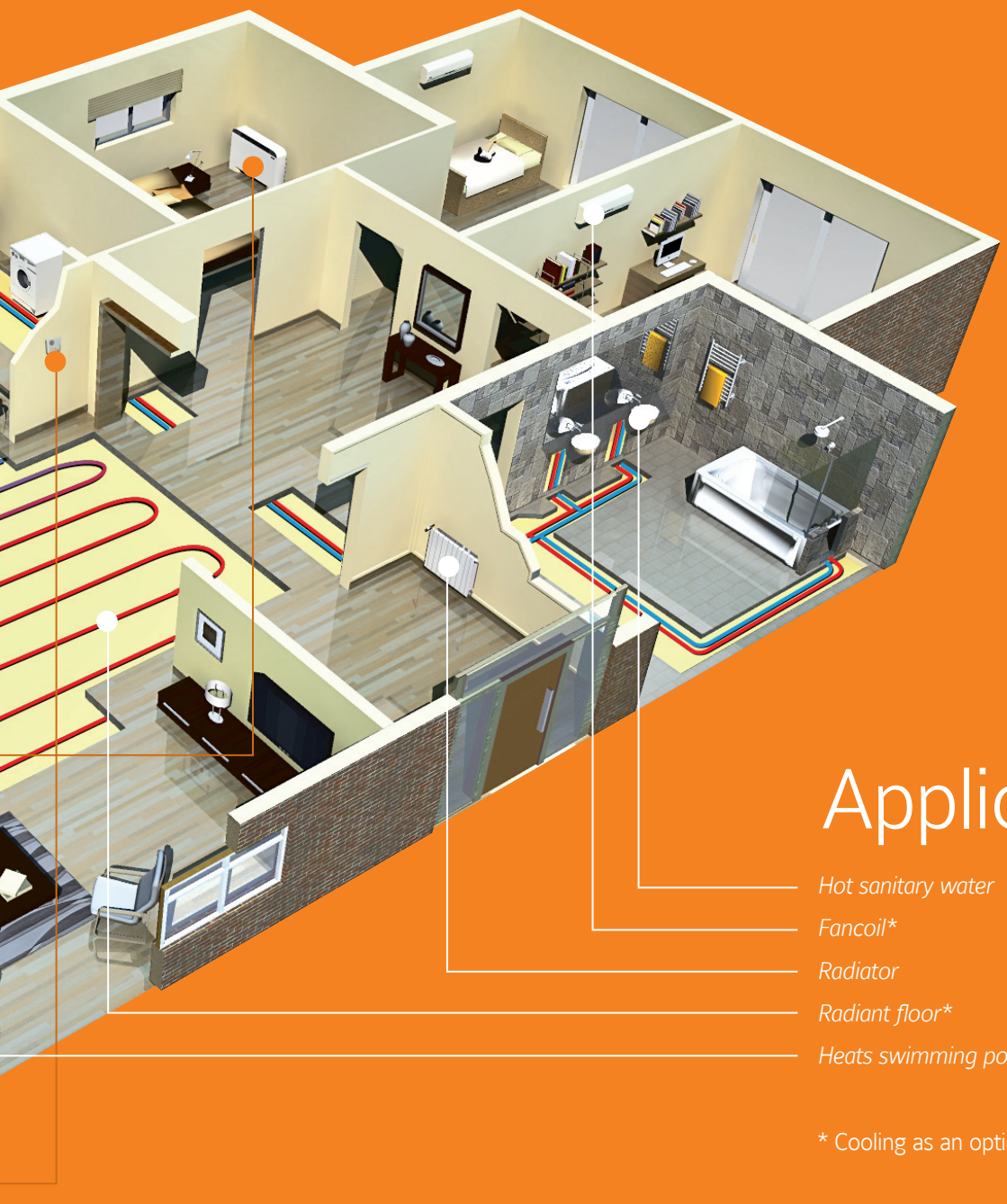
Water tank
Can be either integrated in the heat pump or aside, stores the hot sanitary water for heating systems or sanitary water purposes.

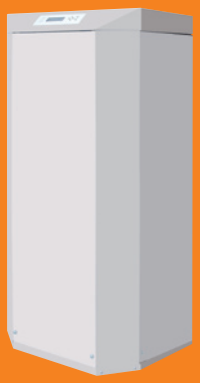
Outdoor unit
Absorbs, stores and transmits the heat available in the air to the heat pump for further use (for ASHP only).

Indoor unit
Responsible for the supply of heat to the room, can be radiant floor, fan coil unit or radiator.

Room temperature control
Allows the user to set the parameters of comfort, it also measures room temperature and sends the information to the heat pump.







Heat pump unit

Applications

Hot sanitary water

*Fancoil**

Radiator

*Radiant floor**

Heats swimming pools

* Cooling as an option

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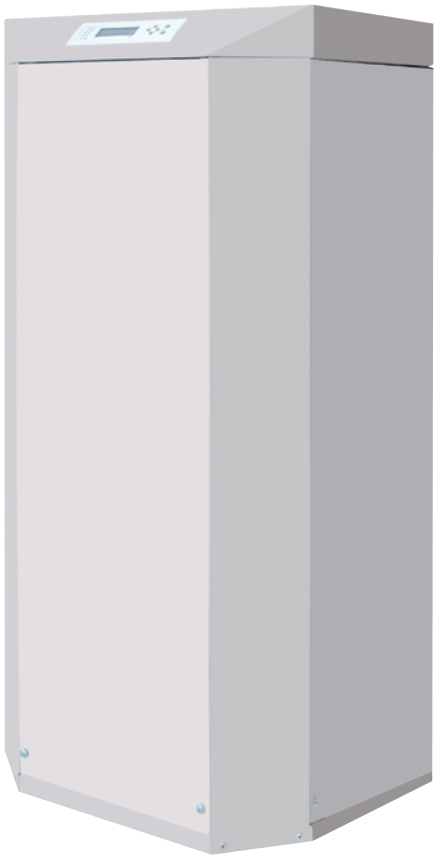
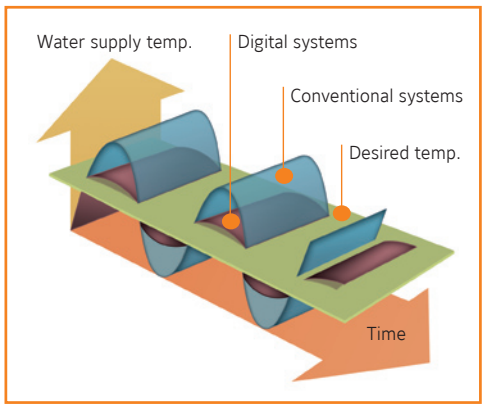
A complete range from 11.7 kW to 30.5 kW





Variable capacity compressor

By changing the capacity of the compressor, Digital Systems provide a more stable water temperature, energy saving and increase the lifetime of the unit.

Varying the capacity until the top of comfort

Following the impact of inverter technology on the residential air conditioning market, the variable capacity compressor has reached the heat pump market bringing the same benefits such as improved efficiency and increased lifetime of the unit.

Features

- Variable capacity compressor
- Constant leaving water temperature
- Passive/Active cooling as an option
- Water tank optional (160 or 300l)
- Compact unit
- Up to 30 kW heating capacity

GEYSIR VARIO SERIES

YHGD 11 to 30

Technical features

Set reference			YHGD					
Models		Sizes	**11 G1TA**	**14 G1TA**	**17 G1TA**	**19 G1TA**	**23 G1TA**	**30 G1TA**
Heating capacity (*)		kW	11.7	14.3	17.1	19.2	23.5	30.5
COP (*)			4.5	4.5	4.5	4.6	4.6	4.6
Power supply		V/ph/Hz	400 / 3 / 50					
Power input		kW	2.9	3.5	4.2	4.7	5.7	7.3
Number of compressors			1					
Type of compressors			Digital Scroll					
Starting current		A	48	63	69	95	95	110
Max leaving water temperature		°C	61°C					
Number of heating circuits			2					
Working range brine circuit		°C	-10°C / +20°C					
Working range heating circuit		°C	0°C / +45°C					
Type of refrigerant			R407C					
Quantity of refrigerant		kg	2.4	3.0	3.5	4.0	4.3	4.8
External available pressure (heating)		kPa	42	45	39	35	70	47
Nominal flow (heating circuit)		l/h	2 010	2 460	2 940	3 300	4 040	5 200
Sound pressure at 1m		dB(A)	46	47	47	48	49	49
Dimensions (W x H x D)		mm	590 x 1 200 x 700			790 x 1 200 x 800		
Net weight		kg	150	162	170	200	226	249
Hot sanitary water tank		l	Optional (160 / 300 l)				Optional (300 l)	
Water connections	heating and brine	inches	1 1/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
	service water	inches	3/4"	3/4"	1"	1"	1"	1"
Cooling module (Passive / Active)			Optional / Optional					
Cooling capacity		kW	12.1	15.0	18.0	20.1	24.5	32.3
Working range cooling circuit		°C	+7°C / +20°C					

(*) Tested as per EN 255, 0/35°C

Options / Accessories

Models	Codes	11 G1TA	14 G1TA	17 G1TA	19 G1TA	23 G1TA	30 G1TA
3Way valve for circuit 2 - Kvs 4	**YHACCCV4**	•	•	•	•	•	•
3Way valve for circuit 2 - Kvs 10	**YHACCCV10**	•	•	•	•	•	•
Flow switch (factory fitted)	**YHACCFS1**	•	•	•	•	•	•
Plate heat exchanger for ground water	**YHACCGWWT11**	•					
	YHACCGWWT14		•				
	YHACCGWWT17			•			
	YHACCGWWT19				•		
	YHACCGWWT23					•	
	YHACCGWWT30						•
Temperature sensor circuit 2	**YHACCA99**	•	•	•	•	•	•
Reference-room controller	**YHACCLPNRM**	•	•	•	•	•	•
Adjustable feet-set	**YHACCAVMDS1**	•	•	•	•	•	•
Expansion vessel for brine-circuit 8l	**YHACCEV8**	•	•	•	•	•	•
Soft starter	**YHACCSSKDS1117**	•	•	•			
	YHACCSSKDS1930				•	•	•
Water filter 2"	**YHACCWF1123**	•	•	•	•	•	
Water filter 2 ½"	**YHACCWF30**						•
Electric heater for Water tank 3 kW	**YHACCEH3**	•	•	•	•		
Electric heater for Water tank 5 kW	**YHACCEH5**					•	•
Water tank 160l	**YHACCSWB160**	•	•	•	•		
Water tank 300l	**YHACCSWB300**				•	•	•

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