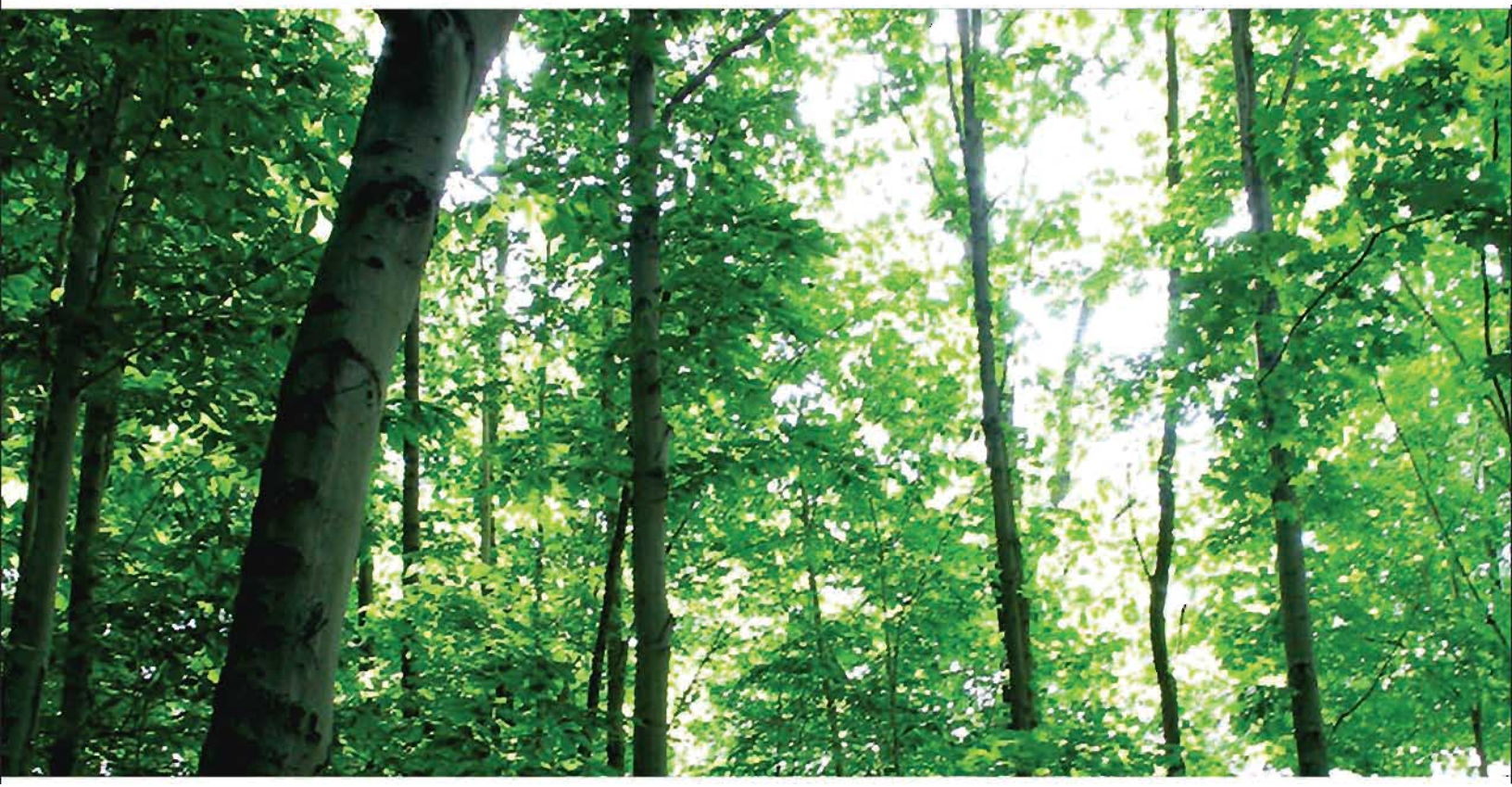
eco hometec

Tomorrow's Energy Efficient Technology Today

Heat Pump Guide



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WELCOME

The message couldn't be clearer: eco-friendly, energy-efficient heating is good for the environment – and it's good for your pocket too. It's a message endorsed by governments, local authorities and a growing number of professionals.

eco hometec was founded over ten years ago to fill the increasing demand within the construction industry for a company providing world-class heating products for both the domestic and commercial markets.

Fossil fuels are not a limitless resource and by using a combination of improved building thermal efficiencies and installing heating equipment that uses alternative sources of power, like solar power, we can not only reduce the consumption of fossil fuels but also cut harmful emissions of CO_2 at the same time.

More and more people are starting to realise that this is the direction the heating industry is taking – and we have the products, skills and resources to offer tomorrow's heating solutions today. But don't just take our word for it. The success of eco hometec's product and design performance can be judged from the consistent, often dramatic reduction in customers' energy bills – up to 50% in some cases. And our achievements as a company are reflected by our growing customer base and reputation among professionals including architects, builders and local authority planning departments.

We hope this brochure will give you a clear idea of the many advantages of our products and our commitment to the fullest customer service and support. So if reducing energy consumption and emissions are a priority – talk to eco-friendly eco hometec! We'll find the solution you're looking for.

WHAT ARE HEAT PUMPS?

The heat pump as an alternative energy source

Air, earth and water - the three most important elements in our life. In future, their significance will be even greater. They are, and very few of us know, immense sources of free renewable thermal energy.

Solar radiation from the sun heats the air, earth and water. This energy is the source of all life. It is also a source of energy we can use to heat our homes and buildings. The technology required to extract heat captured in the air, earth and water has been known for more than a hundred years. That technology is called a heat pump. As a consequence of rising energy prices and increased emissions of CO_2 the interest in heat pumps has reached record levels.

A heat pump, using electricity, is capable of removing from either the air, earth or water this otherwise non-usable heat and converting it into heat suitable for heating our homes and other applications. The whole process is clean and simple and offers the most energy efficient solution to space heating available today.

Heat pump efficiencies

The fundamental design criteria of all heat pump installations, is that the heat pump output is always higher than its electric power input. The ratio of heating output to electric power input is called coefficient of performance or COP. A typical seasonal COP value is 4. This figure means the heat pump will use 1kW of electrical energy to produce 4 kWh of thermal energy.

The thermal energy is used to heat water which in turn can be used to heat buildings and domestic hot water.

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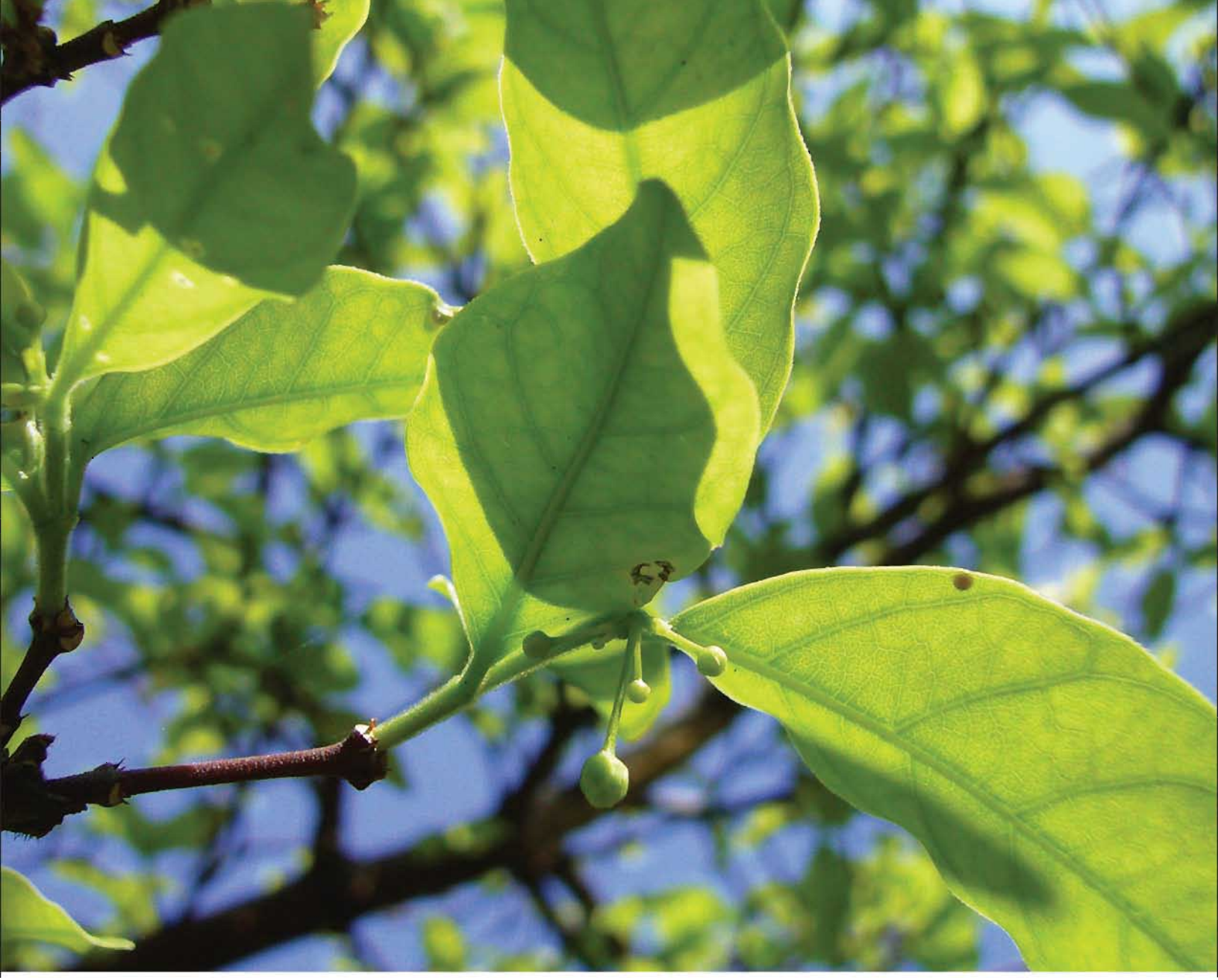
Other heating appliances e.g. gas and oil boilers fail to achieve a COP of even 1. So when compared to a COP of 4 you can imagine the energy savings a heat pump offers in comparison to more traditional heating systems.

How does a heat pump work?

A heat pump works just like your fridge. The components are very similar - an evaporator, compressor and condenser. The element that makes the whole process possible is a gas we call the refrigerant which boils at incredibly low temperatures, typically -35°C. If you place a can of beer, in your fridge to cool, the cycle begins with the refrigerant boiling and evaporating as it is circulates through the part that makes the ice cubes, technical name, the evaporator. The can of beer and other contents of the fridge provide the heat to evaporate the refrigerant. The refrigerant is then pumped, as a very cold gas, through the compressor where under compression it turns back into a very hot liquid. At the back of the fridge is the condenser and it's this that dissipates this heat to the surrounding air. The more times you complete the cycle the cooler the beer and fridge contents get as the heat is "pumped" away. Heat pumps work exactly the same way, the only difference, the heat required to evaporate the refrigerant comes from the air, earth or water and the heat generated is used to heat a building or other application. As you can see the process is very simple but in both applications very efficient.

To achieve higher efficiencies from a heat pump, output temperatures of 35°C - 45°C are best. This makes a heat pump ideal when using underfloor heating in a solid floor construction. In these situations, for every 1kW of electric power used, to run the heat pump, you can get up to 5kW of energy back (COP5). No other appliance can match a heat pump for efficiencies and low running costs.



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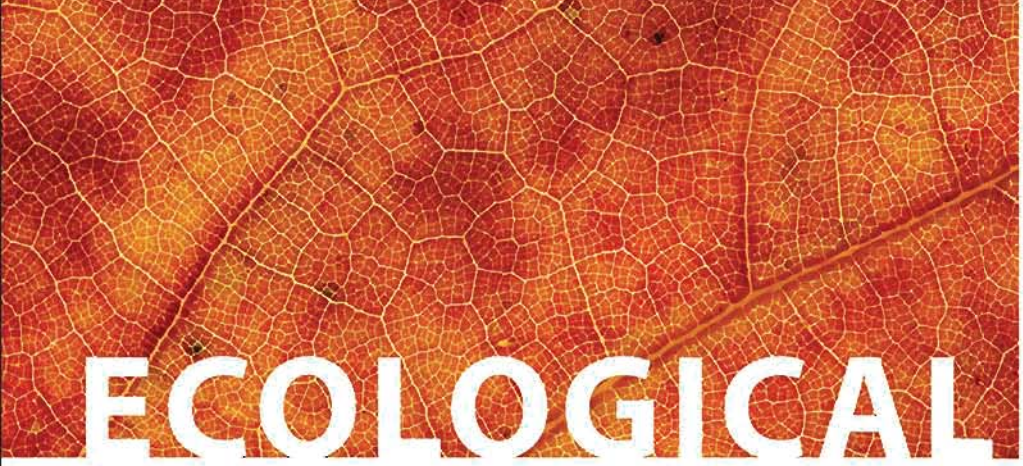


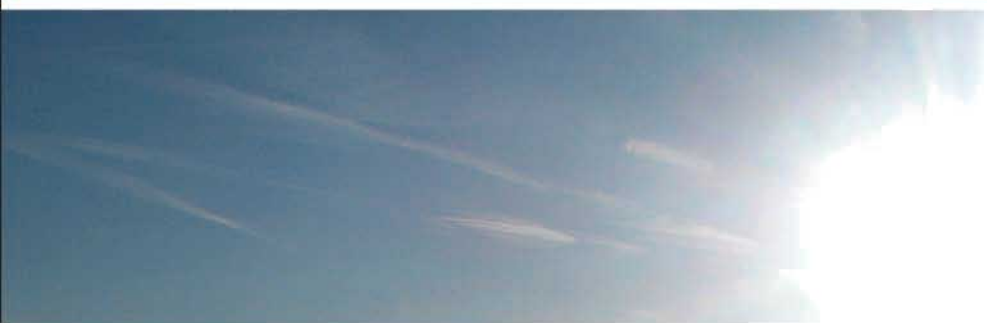
ECOLOGICAL

The heat pump is ecological and environmentally friendly

Burning dwindling stocks of coal, oil and gas coupled with environmental issues, creates hot topics for conversation. Nations and their governments worldwide agree we must reduce our dependency on fossil fuels and the emissions of Greenhouse gases released when we burn them.

The burning issue is how to reduce our dependency on fossil fuels. Heat pumps represent one of the few credible possibilities. When compared with conventional heat sources, e.g. boilers burning solid fuel, natural gas or heating oil, heat pumps save stocks of fossil energy and directly or indirectly reduce the production of harmful emissions.

Once you understand the principles and benefits of heat pumps the decision to include one not only makes sense it also guarantees long term economic and environmental advantages.



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AIR

Heat from air

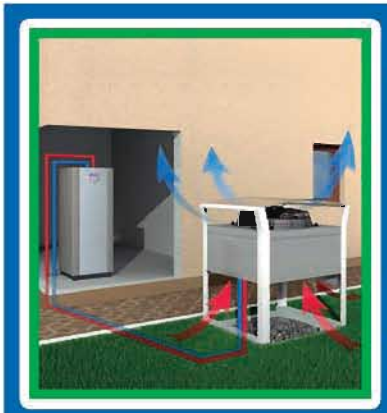
As a heat source, air is the most accessible. It is readily available and practically unlimited. From an ecological point of view, it is the most advantageous source as heat taken out from the ambient air is returned back as thermal losses through the fabric of the building.

Heat pumps taking heat from the air are called "air-water". The heat contained in the air is used directly. The heat pump evaporator is placed outside the building and the heat contained in the air boils the refrigerant, which evaporates and turns to a gas.

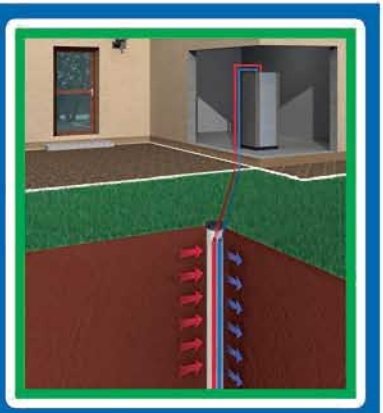
As the temperature of the outside air varies during a heating season the performance (COP) of the heat pump varies too. However in a well designed air sourced heat pump, a combination of design excellence and the fact that the refrigerant used boils at low temperatures (typically -35°C) the effect of these seasonal temperature changes is not significant. In fact during most winters the period of extremely low air temperatures is relatively short when compared to the heating season. For the purposes of assessing overall energy consumption the importance of this period can be ignored.

At the beginning and the end of the heating season air temperatures are typically +10°C and during this considerably longer "warmer" period the heat pump, with an output temperature of 40/35 °C, will be operating with COP's of 4 – 5 which more than compensates for the short colder periods.

Designed to work in Eastern Europe, where winter temperatures can reach as low as -25°C, eco hometec air sourced heat pumps will operate effectively and reliably throughout the harshest winter.



EARTH



Heat from earth

Heat contained in earth, so called geothermal heat is usually used indirectly. Heat pumps taking heat from the ground air are called "ground-water". Heat is extracted using an underground collector usually MDPE plastic pipes. A heat carrying liquid is pumped through these pipes, which in turn is connected to the heat pump evaporator. The heat carrying liquid is non-freezing and ecologically harmless.

Circulating liquid is cooled down in the heat pump evaporator and it is re-warmed in the underground collector by means of geothermal heat. In order for the heat transfer, throughout the heating period, to be even and constant it is important to make sure the location of the ground collector is suitable and the area large enough to recover the energy removed by the heat pump.

Underground collectors can be installed in two ways. Either as a horizontal collector, set in a depth of 1.5 to 2m under ground level or as a vertical one set in one or more boreholes.

Bore holes being significantly deeper than pipes in shallow trenches are less susceptible to seasonal temperature changes and the energy available to the heat pump is more even throughout the heating season.

When compared to an installation using horizontal collectors are, vertical bore holes and their collectors experience less seasonal temperature changes and earth-water heat pump can achieve higher COP's.

WATER

Heat from water

Heat contained in underground water is also known as geothermal heat and is usually used indirectly. Heat pumps taking heat from water are called "water-water".

Ground water when available should be chemically suitable, of sufficient purity and at a temperature of + 8°C at least during the whole heating season and available in sufficient quantity (e.g. a 10 kW, water-water heat pump will require a flow through quantity of about 25 l/min).

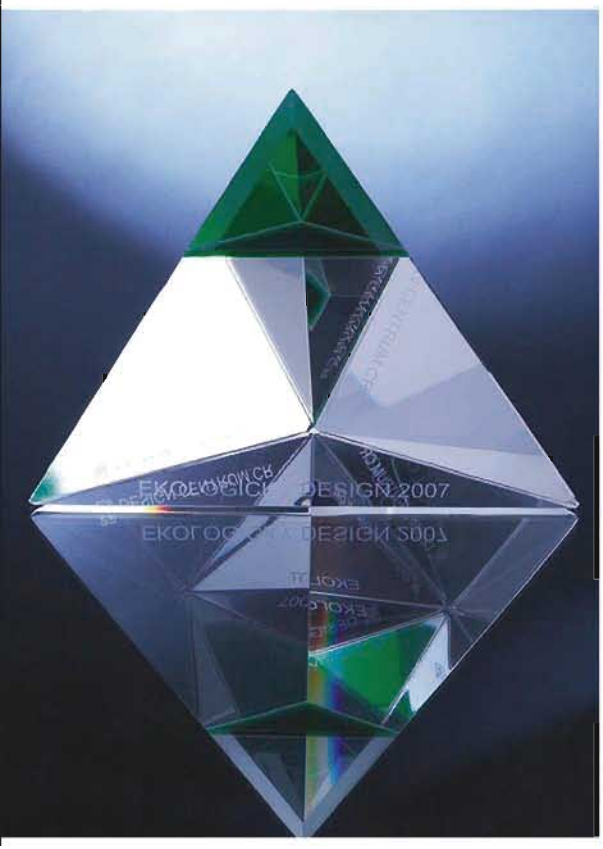
These sources are fairly un-common however when available, the water is led directly into the heat pump evaporator. During the heating season underground, when compared to the other natural sources of heat, water has the highest temperature and the COP's of water-water heat pump is often the best

Heat is extracted from underground water by pumping the water from a well into the heat pump evaporator. There the heat is extracted and the cooled water is returned underground via a drain well.

The drain well must be located far enough away from the pump well and situated so as the returning water flows underground from the drain well towards the pump well. As the water flows between these two wells, the distance must be great enough to allow the water to be re-warmed in the earth.

In certain situations sea water and water from rivers may also be suitable sources of natural energy.

QUALITY



Top performance thanks to utilisation of latest technologies
In the course of their development, the highest value was placed upon achieving the best efficiency ratings, expressed as the COP, by the available natural energy source. To achieve high efficiencies requires good heating performance and a low consumption of electricity. eco hometec heat pumps achieved this utilising the latest technologies. Using only the highest quality components and workmanship ensures their reliability and long life. eco hometec heat pumps are well constructed, efficient, attractive and compact.

eco hometec heat pumps use SCROLL spiral compressors. When compared to conventional piston compressors, the advantage is almost one hundred-percent volumetric efficiency, lower noise levels and up to three times longer life expectancy. eco hometec heat pumps make use of highly efficient plate heat exchangers manufactured from corrosion-resistant materials.

eco hometec heat pumps use ultra-silent, efficient fans coupled to microprocessors and computer technology.

A combination of top-quality components from leading world producers and unique engineering solutions covered by patents result in the high technical performance and quality which is found within eco hometec heat pumps.

For their unique engineering solutions the heat pumps supplied by eco hometec have gained a number of important and prestigious awards at international exhibitions.

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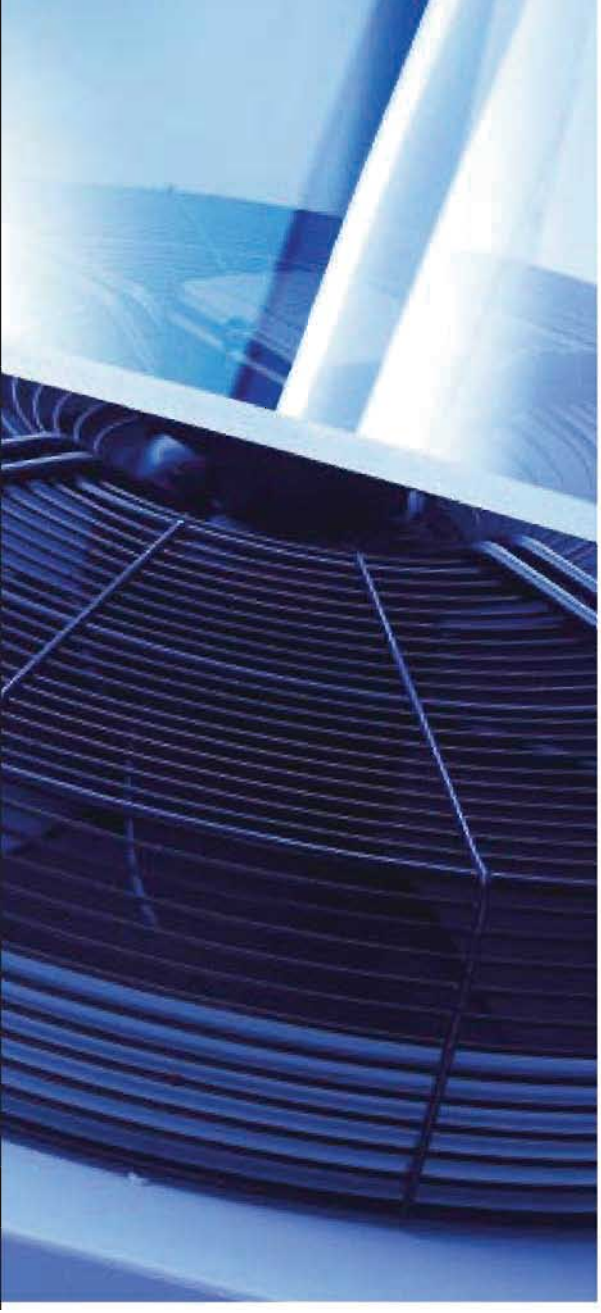
MARTIN
TVARŮŽEK
DESIGN

DESIGN 2007



High quality is worthwhile
The design of eco hometec heat pumps complies with all current European legislation governing the construction of household appliances and equipment. The manufacture has been certified and carried out in compliance with quality management system according to European standards ISO 9001:2000 and ISO 14001:2004.

Ecological properties
All eco hometec heat pumps operate with ecologically harmless refrigerant. This refrigerant is the cooling agent and it complies with all current European legislation governing ecological, safety and hygienic requirements.

All the materials used to manufacture eco hometec heat pumps are sourced to ensure a high degree of environmental protection starting with production, through operation, up to the end of life when the components are designed to be recycled.

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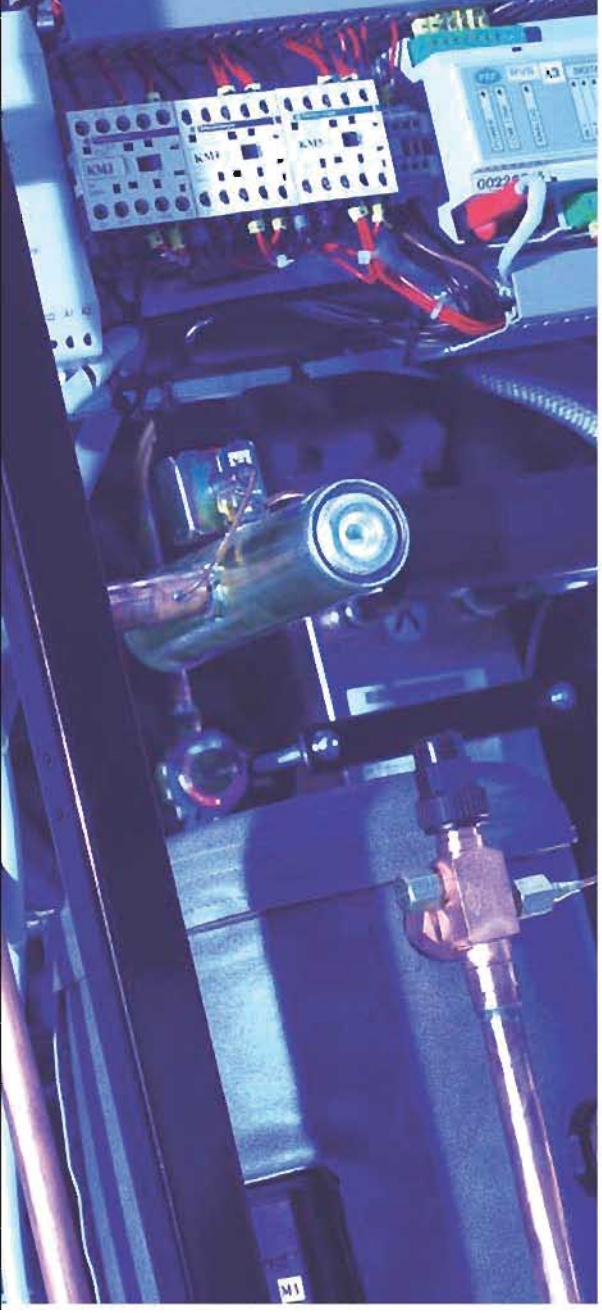
All under automatic control

Digital control electronics - one of the reasons eco hometec heat pumps return such high operating efficiencies. The "MicroTC" microprocessor control system was developed especially for eco hometec. It offers reliable and fully automatic operation. Through its functions it constantly monitors all sensor parameters vital for the efficient operation of the heat pump. Wholly independent of external conditions, the "MicroTC" control system provides for reliable and optimised operation of all components which in turn extends their operating life.

High user comfort

An important part of each eco hometec heat pump is the digital control panel. This panel provides an interface between the user and the many advanced heat pump functions. On its display screen with blue backlighting, all important operating conditions and function settings are clearly displayed in a user-friendly format. By pressing logically arranged buttons, current information on e.g. temperatures and unit operating conditions may be displayed or changed. The controller represents perfect design functionality and makes operating the heat pump child's play.



AIR – WATER HEAT PUMPS

Split systems

Air-water heat pumps represent the most cost effective solution and we recommend it to all those interested in heating by means of a heat pump.

Heat pumps utilising ambient air as the source of energy are among the most technically advanced supplied by eco hometec. Competitively priced they can be characterised by their ease of installation and performance. They can be used not only for heating and hot water production but are equally suitable for heating swimming pools.

The HPAW split system heat pump with its outdoor evaporator unit can be used in all types of domestic and commercial applications and is suitable for radiator, floor or wall heating. The HPAW heat pumps consist of two parts which, on site, are connected to each other. The internal part (comprising of compressor, condenser, water heater, control system, control panel and other heat pump components) should be situated in a suitable internal space, for example a utility room, garage, or plant room. The internal part is fitted with the necessary fittings to enable connection to the external part of the heating system. All the components are housed in an acoustically insulated casing.

The external part – the heat pump evaporator, should be positioned outside the building in a convenient location not to far way from the internal unit. The location must ensure a free flow of air through the evaporator and be able to drain the water freezing on the evaporator that melts away during and ice de-frosting cycle. Air flow through the evaporator is maintained using high capacity two stage ultra-silent fans. The external parts are made of corrosion resistant materials and require no further protection from the weather.

Model SB – especially suitable for connection to an existing gas or oil boiler

Although this model is essentially the same as the HPAW heat pump, it is as equipped with a weather compensated controller and an option to control independently up to three heating circuits. The 06 SB to 18 SB types are furthermore equipped with a circulation pump as a standard. Due to its simple but smart control it is possible, for example, to connect an existing gas or oil boiler to the heat pump. In this configuration the heat pump operates as the main heat source and the boiler becomes a supplementary or backup heat source.

Model SC – enables connection of an external electric boiler

As well as the SP model features, the SC model of the HBAW heat pump range enables the direct connection of electric immersion heaters that can be fitted in either a hot water cylinder or buffer tank. The heat pump control system can be enabled to provide automatic three stage control of the external immersion heaters. Moreover, the SC model is equipped with special functions for hot water preparation, connection to combined heating systems and the like.

Model SE – a compact heat pump for easy installation

The SE model offers maximum connection options and comfort. As well as the equipment of the SB and SC models, it comes complete with its own electric boiler which can be used as a supplementary heat source. A three way divertor valve for heating/hot water production is also supplied as standard. The use of this function enables the production of domestic hot water in special cylinders. With its compact design, and factory fitted components, considerable labour and material savings are possible when type SE appliances are specified.

Light-grey model (offered as standard)

Dark-green model (offered as standard)

Stainless steel model (optional)

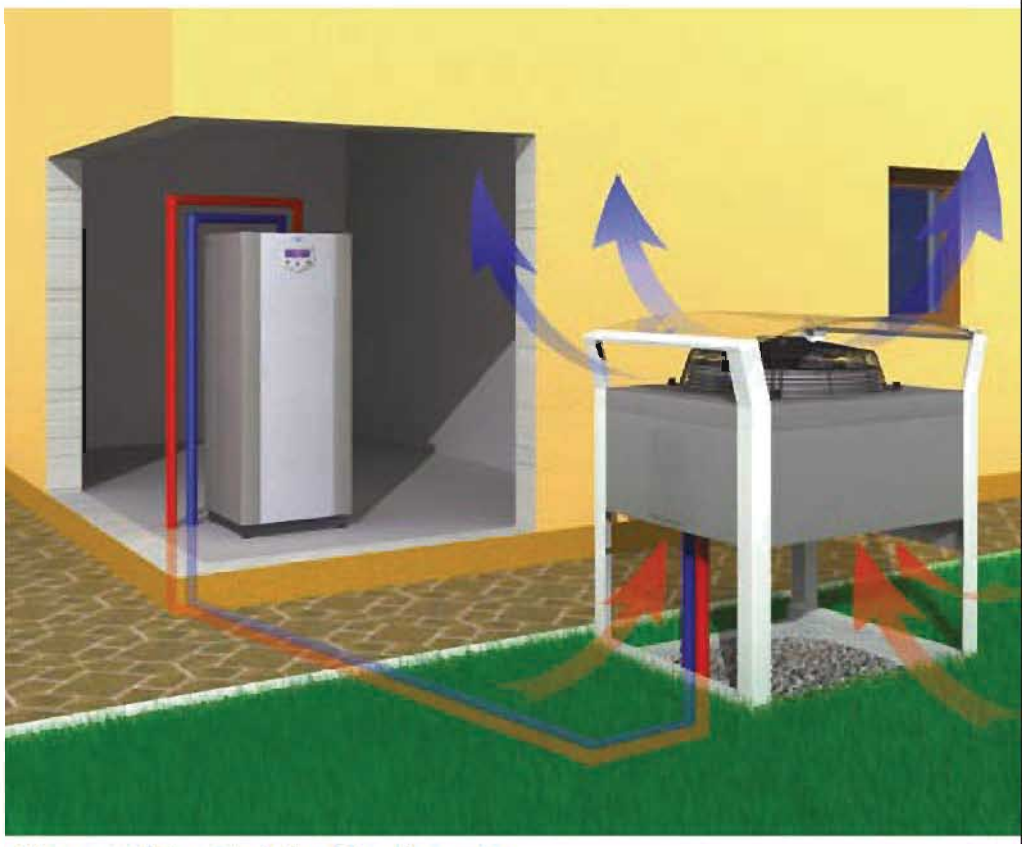


Diagram of the principle of the air - water heat pump of the Split system

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Technical parameters

AIR-WATER HEAT PUMPS (SPLIT SYSTEMS)														
Type			Single phase HP1AW			Three phase HP3AW								
			06 SE	10 SE	16 SE	06 SE	08 SE	10 SE	12 SE	14 SE	18 SE	22 SB	30 SB	36 SB
Energetic parameters A7/W35*	Heating output [kW]		6.7	10.3	17.8	7.1	9.3	11.1	13.2	16.4	19.6	24.1	33.6	40.8
	Effective input [kW]		1.6	2.6	4.4	1.9	2.5	3.0	3.5	4.3	5.1	6.4	8.7	10.4
	Performance factor (COP)		4.1	3.9	4.0	3.7	3.8	3.8	3.8	3.9	3.9	3.8	3.9	3.9
Energetic parameters A2/W35*	Heating output [kW]		5.9	8.9	15.9	6.2	8.3	9.8	11.8	14.6	17.5	21.5	29.9	36.4
	Effective input [kW]		1.6	2.6	4.4	1.8	2.4	2.9	3.4	4.1	4.9	6.2	8.4	10.0
	Performance factor (COP)		3.6	3.4	3.6	3.4	3.5	3.4	3.5	3.6	3.6	3.5	3.6	3.6
Energetic parameters A-7/W35*	Heating output [kW]		4.6	6.8	12.8	4.8	6.6	7.8	9.4	11.7	14.0	17.1	23.9	29.0
	Effective input [kW]		1.6	2.6	4.4	1.7	2.2	2.7	3.2	3.9	4.6	5.8	7.8	9.3
	Performance factor (COP)		2.8	2.6	2.9	2.9	3.0	3.0	3.0	3.0	3.1	3.0	3.0	3.1
Energetic parameters A7/W50*	Heating output [kW]		6.1	9.2	16.6	6.3	8.4	10.3	11.9	14.8	17.7	21.7	30.3	36.9
	Effective input [kW]		2.1	3.5	6.0	2.3	3.0	3.7	4.3	5.2	6.2	7.8	10.7	12.7
	Performance factor (COP)		2.8	2.6	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Energetic parameters A2/W50*	Heating output [kW]		5.3	8.1	14.8	5.6	7.5	9.2	10.7	13.3	15.8	19.4	27.1	33.0
	Effective input [kW]		2.1	3.5	6.0	2.2	2.9	3.5	4.1	5.1	6.0	7.6	10.4	12.3
	Performance factor (COP)		2.5	2.3	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7
Energetic parameters A-7/W50*	Heating output [kW]		4.2	6.4	11.9	4.3	6.0	7.4	8.6	10.7	12.7	15.6	21.8	26.5
	Effective input [kW]		2.1	3.6	6.1	2.1	2.7	3.3	3.9	4.7	5.6	7.1	9.7	11.5
	Performance factor (COP)		2.0	1.8	2.0	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3
Energetic parameters Electro-boiler	Standard installed [kW]		6	8	14	8	8	10	10	14	14	-	-	-
	Maximal possible output [kW]		14	14	14	14	14	14	14	14	14	-	-	-
Electric parameters	Feeding voltage [V/Hz]		1×230/50			3×400/50								
Noise of external part	mode	distance												
	Standard fan speed** [dB(A)]	3 m	38	41	41	41	45	45	44	44	47	44	44	47
		5 m	34	37	37	36	40	40	39	39	43	39	39	43
		10 m	28	31	31	30	34	34	33	37	33	33	33	37
	Reduced fan speed** [dB(A)]	3 m	-	-	-	34	40	40	37	37	43	37	37	43
		5 m	-	-	-	29	36	36	33	33	38	33	33	38
		10 m	-	-	-	23	30	30	27	27	32	27	27	32
Compressor			Scroll											
Refrigerant (ecologically harmless)			R 404A											
Range of the primary heat source (air) [°C]			–25 to +35											
Maximal outlet temperature*** [°C]			52											
Size and weight of inside part	Width [mm]		580			580						700		
	Depth [mm]		600			600						750		
	Height [mm]		1,500			1,500						1,500		
	Weight [kg]		150	160	175	150	155	160	175	175	180	265	275	290
Size and weight of Outside part	Number of pieces		1	1	1	1			1	1		2	2	
	Width [mm]		950	800	950	950			800	950		800	950	
	Depth [mm]		1,236	1,842	2,140	1,236			1,842	2,140		1,842	2,140	
	Height [mm]		1,260	1,295	1,295	1,260			1,295	1,295		1,295	1,295	
	Weight [kg]		120	150	180	110	120	120	150	180	205	150	180	205

* E.g. A2/W50 means: inlet temperature of the primary heat source (air) of +2 °C, heating water outlet temperature of +50 °C.

** The value of acoustic pressure equivalent level L_{Aeq1} of the external part – the evaporator. The data apply to one evaporator. The data are valid under the condition of sound propagation in free space without any reflecting surfaces.

*** Maximum outlet temperature of heating water of +52 °C at inlet temperature of the primary heat source (air) of –15 °C (A-15/W52).

Covering grids for the air duct outlet

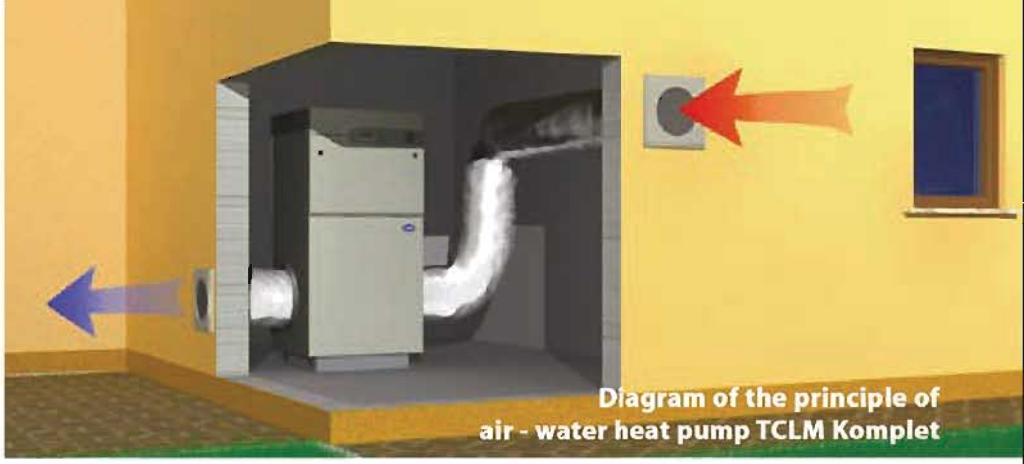

Diagram of the principle of air - water heat pump TCLM Komplet

Air - water heat pump TCLM Komplet

Compact models for internal installation

The TCLM Komplet heat pumps are intended for modern well insulated family houses where the thermal losses do not exceed 12kW. Their advantage is that they are delivered in a single unit consisting of a compact air-water heat pump including a supplementary heat source – an electric boiler, a heating water circulation pump, functions for hot water preparation and the like.

The TCLM Komplet range is a comprehensively packaged heat pump solution that requires no specialist installation skills or materials. When compared to normal heat pump installations, installation time and costs are reduced considerably making it a very attractive proposition.

The TCLM Komplet heat pump should be installed inside the building. Insulated both thermally and acoustically two flexible air ducts are extended from the heat pump to air grills set into the building's external walls. The air ducts and grills are delivered as standard accessories of the heat pump. Their unobtrusive design and low noise levels enable the air grills to be located close to living spaces. When the heat pump is connected to the heating system, the air ducts, electricity supply and a waste outlet the heat pump is ready for immediate operation.

The TCLM Komplet 5.3 and 7.1 universal heat pumps are suitable for both radiator systems and floor or wall heating. As well as the standard versions, they can be delivered without the option of electric heaters. These models are useful for applications when connected to new or existing systems, that incorporate a traditional heat source, e.g. a gas, oil or electric boiler.

Technical parameters

COMPACT AIR-WATER HEAT PUMPS					
Type		Single phase TCLM Komplet		Three phase TCLM Komplet	
		5.3/1F	7.1/1F	5.3	7.1
Energetic parameters A7/W50*	Heating output [kW]	5.5	8.4	6.0	8.1
	Effective input [kW]	2.1	3.3	2.1	2.8
	Performance factor (COP)	2.6	2.5	2.9	2.9
Energetic parameters A2/W50*	Heating output [kW]	5.0	7.6	5.4	7.2
	Effective input [kW]	2.1	3.3	2.0	2.7
	Performance factor (COP)	2.4	2.3	2.7	2.6
Energetic parameters A-7/W50*	Heating output [kW]	4.1	6.3	4.3	5.8
	Effective input [kW]	2.1	3.3	1.9	2.6
	Performance factor (COP)	2.0	1.9	2.3	2.3
Energetic parameters A7/W35*	Heating output [kW]	5.9	8.9	6.5	8.7
	Effective input [kW]	1.6	2.4	1.7	2.3
	Performance factor (COP)	3.8	3.7	3.9	3.9
Energetic parameters A2/W35*	Heating output [kW]	5.3	8.0	5.8	7.8
	Effective input [kW]	1.6	2.4	1.6	2.2
	Performance factor (COP)	3.4	3.3	3.6	3.6
Energetic parameters Electro-boiler	Standard installed [kW]	6	7,2	6	6
	Maximal possible output [kW]	13.5	13.5	13.5	13.5
Electric parameters	Feeding voltage [V/Hz]	1×230/50		3×400/50	
Compressor		Scroll			
Refrigerant (ecologically harmless)		R 404A			
Range of the primary heat source (air) [°C]		–25 to +35			
Maximal outlet temperature** [°C]		52			
Size and weight	Width [mm]	870	870	870	870
	Depth [mm]	775	775	775	775
	Height [mm]	1,710	1,860	1,710	1,860
	Weight [kg]	250	260	250	260

* E.g. A2/W50 means: inlet temperature of the primary heat source (air) of +2 °C, heating water outlet temperature of +50 °C.

** Maximum outlet temperature of heating water of +52 °C at inlet temperature of the primary heat source (air) of –15 °C (A-15/W52).

AIR – AIR HEAT PUMPS

Split systems for hot-air heating
The HPAA air-air heat pumps represent a unique range.

These devices draw natural heat from the ambient air and the produced heat is transferred by means of ducted air circulation to the required location.

They are primarily suitable for industrial applications in large-volume spaces and halls with high ceilings where the costs to heat them with gas or electric heating can be very expensive.

For that reason, particularly large production halls, industrial plants, warehouses, sports halls and supermarkets are nowadays heated by air-air hot-air systems.

The HPAA heat pumps consist of three interconnected parts.

The external part – the heat pump evaporator, should be positioned outside the building in a convenient location not too far away from the internal unit.

The location must ensure a free flow of air through the evaporator and be able to drain the water freezing on the evaporator that melts away during an ice de-frosting cycle.

Air flow through the evaporator is maintained using high capacity two stage ultra-silent fans.

The external parts are made of corrosion resistant materials and require no further protection from the weather.

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The internal part of the HPAA heat pump should be situated in a suitable place inside the building. It contains the filters, electric motors and fans.

The whole internal part is built inside a frame constructed from aluminium sections in which panels that provide thermal and acoustic insulation are fixed.

In order to make the inlet air filter easily accessible, the respective panel is equipped with a handle and secured by quick release clamps. Only one side – the front, is removed for service access.

The box containing the control panel and control system should be installed in a suitable place easily accessible for the end user.

It provides fully automatic operation of the HPAA heat pump, monitors its important parameters and operating conditions and displays them on the screen.

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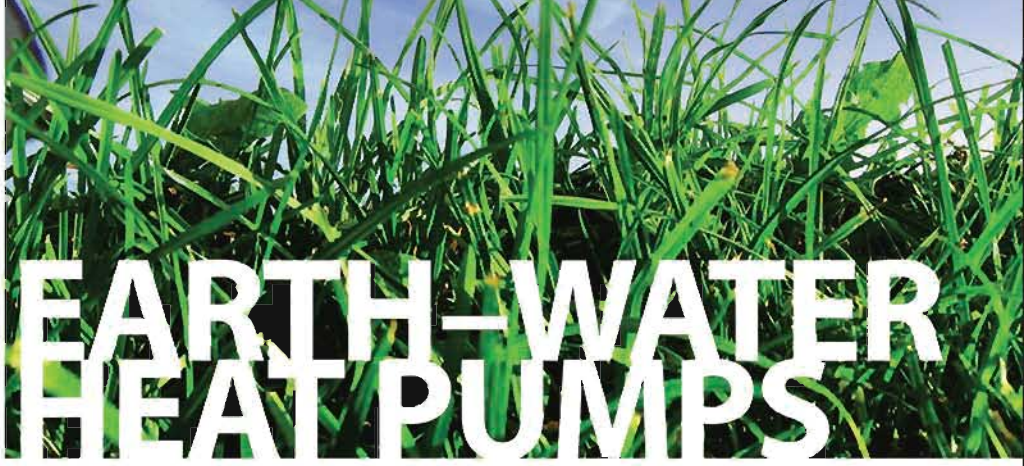
Technical parameters

COMPACT AIR-AIR HEAT PUMPS			
Type		**Three phase HP3AA**	
		16	**36**
Energetic parameters A7 / A20*	Heating output [kW]	20.8	41.5
	Effective input [kW]	5.6	11.1
	Performance factor (COP)	3.7	3.7
Energetic parameters A2 / A20*	Heating output [kW]	18.8	37.6
	Effective input [kW]	5.4	10.9
	Performance factor (COP)	3.5	3.5
Energetic parameters A-7 / A20*	Heating output [kW]	14.6	29.2
	Effective input [kW]	5.2	10.4
	Performance factor (COP)	2.8	2.8
Energetic parameters A-15 / A20*	Heating output [kW]	11.9	23.8
	Effective input [kW]	5.0	9.9
	Performance factor (COP)	2.4	2.4
Parameters of secondary circuit	Air-flow rate [m³/h]	2,400	5,000
	Disspensable pressure [Pa]	100	130
	Class of filtration	EU 4	EU 4
Electric parameters	Feeding voltage [V/Hz]	3×400/50	
Other parameters	Number of compressor [piece]	1	1
	Total number of the fans [piece]	3	5
Noise of Outside part	Standard fan speed** [dB(A)]	57	57
	Reduced fan speed** [dB(A)]	52	52
Compressor		Scroll	
Refrigerant (ecologically harmless)		R 404A	
Range of the primary heat source (air) [°C]		−25 to +35	
Maximal outlet temperature* [°C]**		50	
Size and weight of inside part	Width [mm]	800	970
	Depth [mm]	1,800	2,000
	Height [mm]	800	1,200
	Weight [kg]	190	370
Size and weight of Outside part	Number of pieces	1	2
	Width [mm]	1,135	950
	Depth [mm]	1,972	2,140
	Height [mm]	1,295	1,295
	Weight [kg]	210	205

* E.g. A2/A20 means: Inlet temperature of the primary heat source (air) of +2 °C, Internal air temperature of +20 °C.

** The value of acoustic pressure equivalent level L_{pA1} measured at a distance of 1 m from the external part – the evaporator. The data apply to one evaporator. The data are valid under the condition of sound propagation in free space without any reflecting surfaces.

*** Maximum outlet temperature of heating air of +50 °C at inlet temperature of the primary heat source (air) of −15 °C (A-15/A50).



EARTH–WATER HEAT PUMPS

Compact models for internal installation

For geothermal energy utilisation we can offer you eco hometec compact heat pumps for both radiator systems and floor or wall heating. Installation of these heat pumps is recommended in places where air-water heat pumps cannot be installed e.g. due to lack of space or suitable location for evaporator. The eco hometec heat pumps should be installed in a building's internal space. When their primary circuit, the heating system and electric supply lines are connected, the pump is ready for immediate operation.

Model G – suitable for mono-energetic operation or to an existing boiler.

This basic model of the HPBW heat pump is equipped as standard with weather compensated controller and the possibility to control independently up to three heating circuits. In the 05 to 15 performance types their standard equipment comprises a circulation pump for heating water. Their ingenious regulation enables the HPBW heat pump to operate either independently in mono-energetic operation, or to connect to an existing gas or oil boiler. The heat pump always operates as the main heat source and the existing boiler becomes a supplementary or backup heat source.

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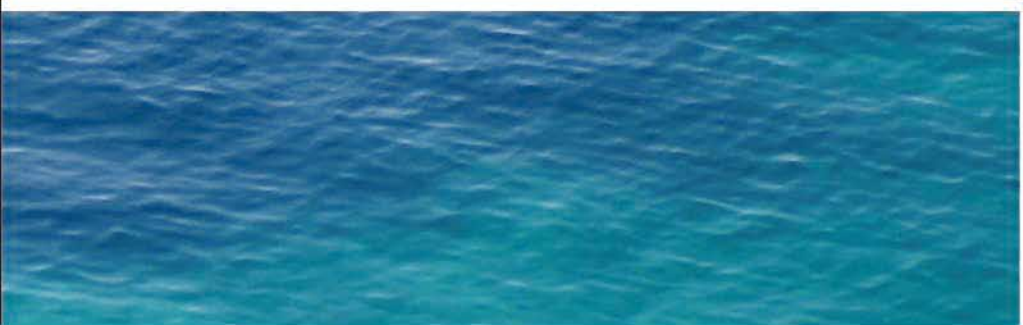
Model C – enables external connection of direct-heating electric elements

As well as the G model features, the C model of the HPBW heat pump range enables the direct connection of electric immersion heaters that can be fitted in either a hot water cylinder or buffer tank. The heat pump control system can be enabled to provide automatic three stage control of the external immersion heaters. Moreover, the C model is equipped with special functions for hot water preparation, connection to combined heating systems and the like.

Model E – a compact heat pump for easy installation

The E model offers maximum connection options and comfort. As well as the equipment of the G and C models, it comes complete with its own electric boiler which can be used as a supplementary heat source. A three way divertor valve for heating/hot water production is also supplied as standard. The use of this function enables the production of domestic hot water in special cylinders. With its compact design, and factory fitted components considerable labour and material savings are possible when type E appliances are specified.



1: White - silver metallic model
2: Silver metalic - graphite grey model

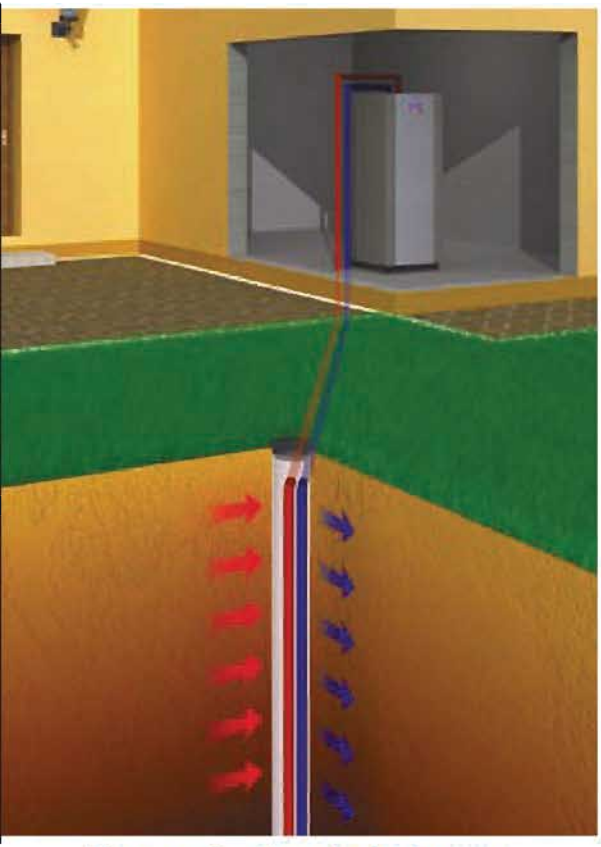


Diagram of earth-water heat pump principle, a bore hole

Diagram of earth-water heat pump principle, a horizontal ground collector

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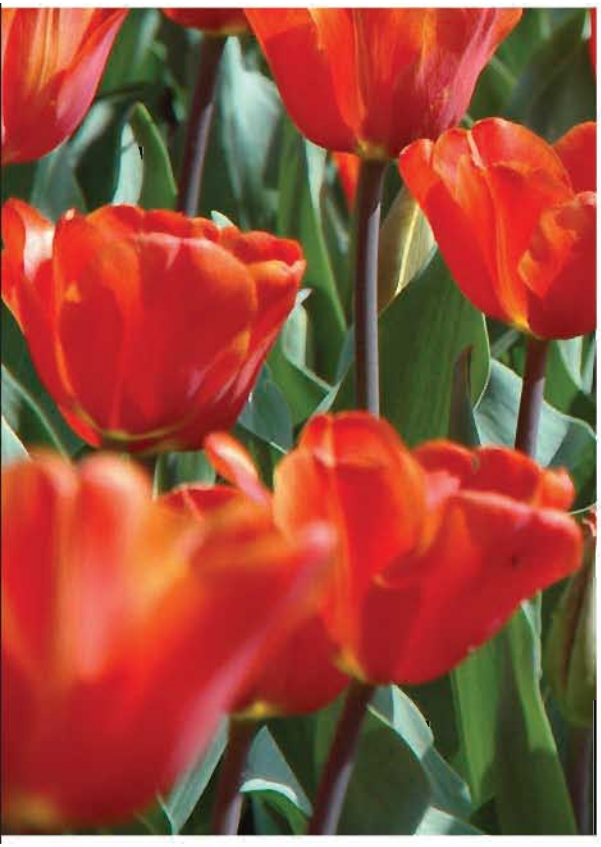
Technical parameters

EARTH-WATER HEAT PUMPS																
Type		Single phase HP1BW			Three phase HP3BW											
		07 E	11 E	15 E	05 E	07 E	09 E	11 E	13 E	15 E	19 G	23 G	27 G	33 G	41 G
Energetic parameters B0/W50*	Heating output [kW]	7.0	10.4	14.5	5.2	7.1	8.9	10.4	13.0	15.2	19.2	23.2	27.2	33.5	40.5
	Effective input [kW]	2.3	3.4	4.9	1.7	2.2	2.7	3.3	4.0	4.6	6.0	7.4	8.0	10.0	12.2
	Performance factor (COP)	3.1	3.1	3.0	3.0	3.2	3.3	3.2	3.2	3.3	3.2	3.1	3.4	3.4	3.3
Energetic parameters B0/W35*	Heating output [kW]	7.4	10.9	14.8	5.3	7.3	9.1	10.5	13.1	15.4	19.7	23.3	27.8	34.0	41.5
	Effective input [kW]	1.7	2.6	3.4	1.3	1.7	2.1	2.4	3.0	3.5	4.8	5.5	6.4	7.9	9.6
	Performance factor (COP)	4.2	4.3	4.3	4.1	4.2	4.3	4.4	4.4	4.4	4.1	4.2	4.4	4.3	4.3
Energetic parameters Electro-boiler	Standard installed [kW]	6	8	10	6	10	10	10	14	14	-	-	-	-	-
	Maximal possible output [kW]	14	14	14	14	14	14	14	14	14	-	-	-	-	-
Electric parameters	Feeding voltage [V/Hz]	1×230/50			3×400/50										
Compressor		Scroll													
Refrigerant		R 407C													
Range of the primary heat source (air) [°C]		Anti-freeze –10 to +10													
Maximal outlet temperature** [°C]		55													
Size and weight	Width [mm]	580			580						700				
	Depth [mm]	600			600						750				
	Height [mm]	1,500			1,500						1,500				
	Weight [kg]	165	180	195	155	165	170	180	190	195	270	280	290	320	340

* E.g. B0/W35 means: inlet temperature of primary side medium (anti-freezer) of +0 °C, heating water outlet temperature of +35 °C.

** Maximum outlet temperature of heating water of +55 °C at inlet temperature of primary side medium (non-freezing liquid) of –5 °C (B-5/W55).

WATER – WATER HEAT PUMPS



Compact models for internal installation
For the utilisation of geothermal underground water heat we can offer you the HPWW compact heat pumps.

These heat pumps yield very high conversion of available energy and ensure an outstanding ratio of purchase price to performance.

Application of the HPWW heat pumps may be also useful when they can be incorporated as part of an industrial process where the waste product is hot water.

The HPBW heat pumps should be installed inside buildings.

When the primary circuit, the heating system and electricity supply are connected, the pump is ready for operation.

In the technical respect and particularly from the point of view of functionality and inclusive equipment, the HPWW range of heat pumps, are the same as the HPBW heat pumps.

However, as a consequence of the primary energy source's higher temperature, the COP's will be higher.

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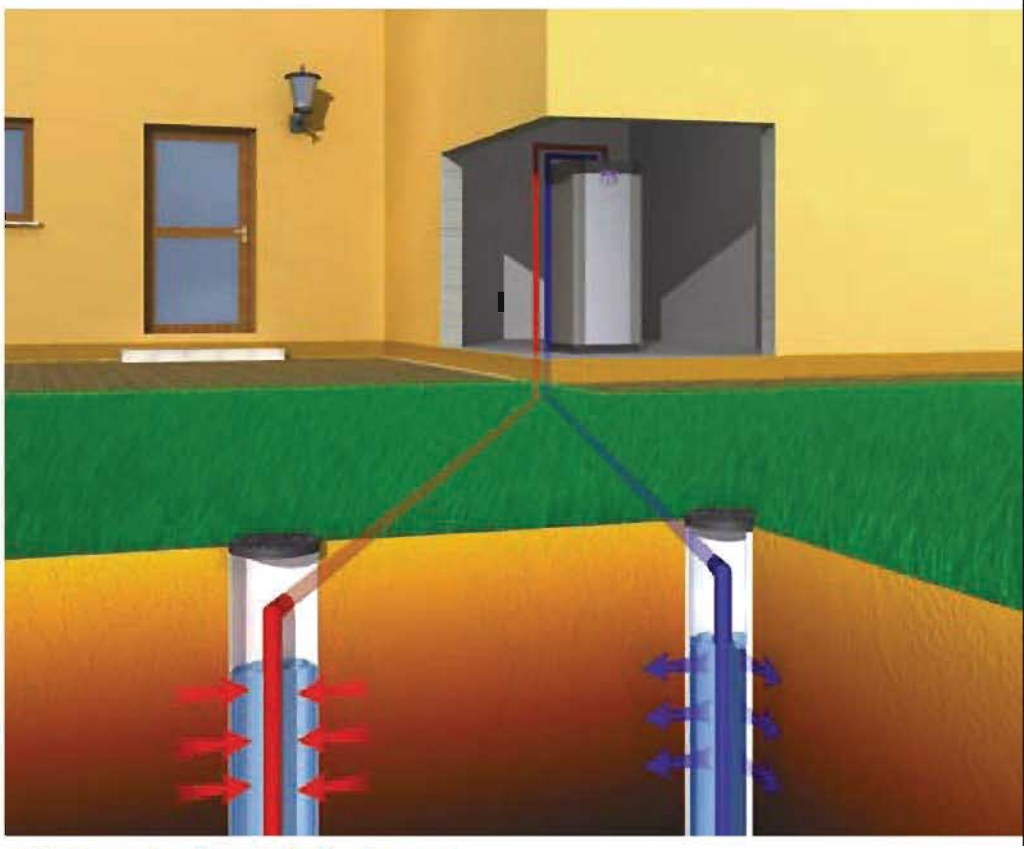

Diagram of water - water heat pump principle.

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Technical parameters

HEAT PUMPS WATER-WATER															
Type		Single phase HP1WW			Three phase HP3WW										
		10 E	14 E	20 E	08 E	10 E	12 E	14 E	18 G	22 G	26 G	32 G	36 G	44 G	54 G
Energetic parameters W10/W50*	Heating output [kW]	9.0	13.2	18.1	6.7	9.0	11.3	13.1	16.3	19.0	23.8	28.8	33.3	40.9	50.0
	Effective input [kW]	2.6	3.8	5.2	1.9	2.4	3.0	3.5	4.3	5.0	6.5	7.7	8.8	11.0	13.2
	Performance factor (COP)	3.5	3.5	3.5	3.6	3.7	3.8	3.8	3.8	3.8	3.7	3.7	3.8	3.7	3.8
Energetic parameters W10/W35*	Heating output [kW]	9.9	14.4	19.4	7.3	9.9	12.4	14.3	17.8	20.8	25.8	31.1	35.8	44.4	53.8
	Effective input [kW]	2.0	2.9	3.6	1.5	1.9	2.3	2.6	3.3	3.9	4.5	5.5	6.2	7.8	9.3
	Performance factor (COP)	5.0	5.0	5.4	5.0	5.3	5.3	5.5	5.5	5.4	5.7	5.7	5.8	5.7	5.8
Energetic parameters Electro-boiler	Standard installed [kW]	8	10	8	8	10	14	14	-	-	-	-	-	-	-
	Maximal possible output [kW]	14	14	14	14	14	14	14	-	-	-	-	-	-	-
Electric parameters	Feeding voltage [V/Hz]	1×230/50			3×400/50										
Compressor		Scroll													
Refrigerant		R 407C													
Range of the primary heat source (air) [°C]		water +8 to +20													
Maximal outlet temperature [°C]		55													
Size and weight	Width [mm]	580		700	580				700						
	Depth [mm]	600		750	600				750						
	Height [mm]	1,500		1,500	1,500				1,500						
	Weight [kg]	165	175	205	150	160	165	175	205	210	270	290	300	330	355

* E.g. W10/W50 means: inlet temperature of primary side medium (water) of +10 °C, heating water outlet temperature of +50 °C.

SYSTEM TECHNOLOGY

eco hometec system solutions guarantee perfect functionality, reliability and operating safety of the whole heating system starting with the heat pump, through regulation, buffer tanks, cylinders for hot water preparation and storage, up to heating systems and their distribution lines.

We install only system components with the same high quality as used in all eco hometec heat pumps.

This guarantees you 100% functionality and efficiency when operating the heating system with an eco hometec heat pump.

To designers, fitters and service specialists it brings further advantages in designing, project management, installation and maintenance of your device.

When designing or selecting individual components, we lay equal importance not only on functionality but also on design and overall aesthetic value of the installation.

We offer for example buffer tanks designed to look similar to and compliment the heat pump. The overall impression is one of a fully integrated system that looks and works well.

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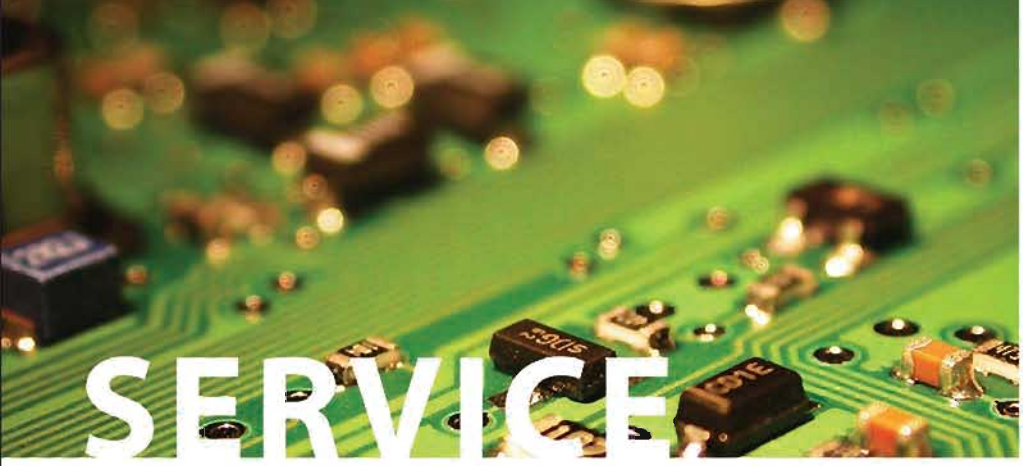

SERVICE

To our customers and business partners, we offer service attendance over and above the scope of equipment maintenance and product guarantees.

For example we can provide competent advisory services to customers, excellent on-line service, presence at professional training and seminars and the like.

Designing, project management, installation and final commissioning are all easier when there is competent technical support.

Engineering representatives in our sales offices and partner firms are available to provide technical support for your project, installation or commissioning at all stages.

Servicing is provided by our service technicians or through a network of authorised firms.

The service technicians are professionally trained; they are provided with specialist measuring and testing instruments and know how to help you in the event of a problem as soon as possible. To satisfy you perfectly, there is also the option and recommendation of regular service facilities.

eco hometec

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