

TERRA MAGNA 150

GREEN ENERGY SYSTEMS

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ANTEK®

TERRA MAGNA 150 Geothermal heat pumps for heating, cooling and domestic water

With the TERRA MAGNA 150 geothermal heat pump you can use the environmental energy, which is freely available in your own garden. Compared with conventional heating systems, fed with fossil fuels, you can save up to 75% of your heating costs. Therefore the TERRA MAGNA 150 has not only ecological but also economical advantages. With our system it is possible to heat and cool your house independently, environment-friendly and cost-effectively.

Operation mode of the heat pump - heating with energy, gathered from environment

Generally speaking the heat pump can be described as an aggregate. The thermal energy is picked up at a low temperature, and with the help of the operating energy (electrical energy) it is utilized at a higher temperature. The thermal energy that is gathered from the ground is around the temperature of -5°C to $+10^{\circ}\text{C}$, and it gets into the heating circle approximately at 35°C to 65°C . The lower the rise of the temperature, the less the need of operating energy, and the better the energy efficiency. In every household there can be found an apparatus that operates like the heat pump: a refrigerator. The heat pump also can be built in such a way, to heat during winter and to cool during summer.

Operating principle

The refrigerant (like the R407C type gas, which is FCKW, so doesn't deplete the ozone layer) evaporates by heat transfer at a low boiling point, then it densifies in the compressor, thus raises its temperature. The refrigerant transmits the heat in the condenser and meanwhile condenses. The liquid that comes through the expansion valve, volatilizes with distracting heat from the environment, and gets into the condenser through the compressor where it is cooling down and the process starts from the beginning. Predominantly the compressor of the heat pump is driven by an electrical engine.

Performance figures

The performance figures of modern electrical heat pumps are constantly raised in the past few years. This of course was helped by the new type of refrigerants, the improved compressors, etc. The efficiency of the electrical heat pumps can be measured with the annual work-output, which shows the relationship between the effective work and the used electrical energy. With this number we can demonstrate the effectiveness of the heat pumps.

Integration into heating systems

Mostly the heat pumps are used in family houses. Till the beginning of the 80's it was common that in these houses they used heat pumps with 20kW (or more) output. Nowadays this output is less than 12kW. The gradual improvement of the thermal isolation (low-energy building, passive house) caused a strong decrease of the heat demand.

Conclusion

The heat pump system developments of the last few years - new refrigerants and progressive compressor designs - have been generating a significant increase of the performance figures at the same operating conditions.



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Control unit - integrated display

The device is shipped with a comfortable control unit. With the help of this unit, which responds to the different weather conditions, the owner clearly and easily can read all values. And, if necessary, the house owner can modify the device for new conditions.



Quality - high operating reliability and long service life

The usage of high-quality materials within the ANTEK heat pumps ensures a high operating reliability and a long service life. As a result of the constant tests and developments the ANTEK heat pumps belong to the most efficient aggregates.

Characteristics of the TERRA MAGNA 150

The TERRA MAGNA 150 contains a circulation pump for the attached heating system (radiators or underfloor heating), a brine pump for the primary side, a 3-way-valve for the domestic water and an internal control unit for a comfortable controlling. The TERRA MAGNA 150 is a compact central device, provides domestic hot water and heating. Used it with ventilator-convector units or through the underfloor- or wall heating pipes it is possible to cool the house during summer. Passiv cooling belongs to the standard version of these heat pumps, but active cooling could be built too. A single device has a heating performance between 8 kW and 60 kW. But in serial connection up to 3600 kW heating performance can be achieved.

Technical datas:

HEAT PUMPS	TYPE	TM150-6	TM150-8	TM150-10	TM150-12
HEATING					
Heating capacity	kW	5,5	8,0	10,0	12,0
Power input	kW	1,3	1,8	2,2	2,7
Performance figure	B0/W35	4,2	4,3	4,4	4,4
COMPRESSOR					
Type of compressor		Rotor	Rotor	Scroll	Scroll
Number of compressor	pcs	1	1	1	1
Refrigerant		R407C			
WORKING FLUID					
Heating-side	m³/h	0,88	1,1	1,4	1,7
Brine-side	m³/h	2,1	2,6	3,4	4,1
GENERAL CONNECTIONS					
Voltage		230	230	400	400
Pipe-connections		1"	1"	1"	1"
DIMENSION					
Dimension H/B/T	mm	1780x600x650			
COLLEKTORSIZE					
Horizontal collector	m	320–450	320–450	400–600	560–780
ANTEK compactabsorber	m²	96	96	128	144
Vertical borehole	m	130	160	210	240
Trench collector	m	25/2,6	25/3	33/3	33/3
WEIGHT					
Weight	kg	245	247	250	278

Capacity of the heat pump:

Brine-inlet temperature 0°C, Heating temperature 35°C