INNOVATION 2012

WATERKOTTE

Ai1 QE

Geothermal heat pump

Efficiency
MADE IN GERMANY

- available in 5 power levels: 6 to 17 kW

+ **Refrigerant R410A - for maximum efficiency**
+ **Top value: COP 4.9**
+ Reduced sound emission - ultra-quiet operation
+ New control with WEB interface (option)
  - designed for intuitive use
+ Fully equipped for heat source and heating

* In relation to COP values of current BAFA list dated 24. 05. 2012 in brine/ water segment.

www.waterkotte.de

Feel-good climate and wellness, with a clear conscience - more cost-effective than ever before!

Ai1 QE
- the new heat pump generation

The sophisticated system solution for production and use of renewable energy.

The central unit, fully equipped:

+ Provides heat for thermal comfort and indirect domestic water heating.
+ Including 250 l domestic hot water tank (only 0.5 m² space requirement).
+ Standard equipped with COP counter, integrated in energy saving control.
+ Economical natural cooling in the summer. The equipment for natural cooling uses only the heating and heat source circulation pumps.
+

The components:

+ Complete system solution to connect the heat source, consisting of: Air separator, air diverter, circulation pump (and, in case a system separation is required, an additional filling pressure gauge and safety valve).
+ Complete system solution for energy recovery, consisting of: Air separator, air diverter, filling pressure gauge, safety valve, heating circulation pump and expansion vessel (stainless steel) for operation in integrated systems.
+ All system parts for indirect domestic water heating include: Three-way motor ball valve, indirect domestic water heating via a hot water / drinking water heat exchanger with charge pump in bronze design.
+ Installation and service-friendly design of device.
+ Robust, high quality components for long, efficient use of the device.

Heating	Cooling function (natural cooling)	Domestic water tank	Efficiency class A pumps	COP counter	Electric auxiliary heating	Anti-legionella function	Solar energy recovery
yes	yes	250 l	yes	standard	6 kW	yes	ready for use, including control

Free energy, simply from the ground!

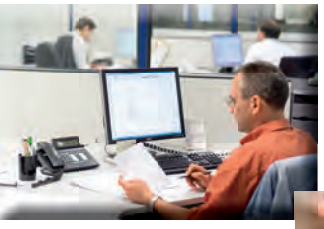
Ai1 QE
Use of geothermal energy - safe and reliable

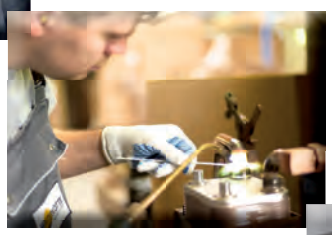
What is a heat pump?
A heat pump produces 100 % heat output from 75 % environmental energy and 25% drive energy. For this purpose, heat is extracted from the environment (ground or groundwater). In the heat pump, this thermal energy is raised to a higher temperature level, and can thus be used for space heating and domestic water heating.

What constitutes a heat pump heating system?
It consists primarily of the following:

+ the heat source system,
+ the heat pump control unit,
+ and the heat recovery equipment.

Is the use of such a system complicated?
The heat pump controller controls the entire operation of the equipment. Once set, it works fully automatically and the use of geothermal energy for heating, cooling or domestic water heating is adapted to your individual requirements.





Developed, produced and tested - the WATERKOTTE quality
From concept to series production - a path WATERKOTTE has been familiar with for many years. Our goal, to combine maximum quality and highest performance results, is achieved through application of latest components, production methods and employee training in regular intervals. This allows us to ensure the high quality standards, and guarantee certified product quality.

Ai1 QE photovoltaic package - the complete solution for your home!

A Ai1 QE photovoltaic package contains:

Heat pump Ai1 QE 5007.5
+ Complete heating system:
  Heating, cooling, and domestic water heating
  - Heat source Ground
  - Heat output: 7.2 kW
  - Refrigerant: R410A
  - incl. DHW tank (250 l)
  - incl. connection accessories
  - WWPR controller, incl. COP counter
  - Power consumption: 1.5 kW

Photovoltaic system:
+ 9 x Quality photovoltaic modules*):
  - Output: 2.160 kWp
+ Quality mounting system for pitched roofs (Alu / V2A)
+ Quality inverter (SMA)
+ Supply management (data logger for inverter)
+ Quality wiring material for connecting the modules to the inverter

The complete package is suitable for single and multi-family homes with uninterrupted pitched roof surface (upright mounting).
For pitched roofs with interrupted surface (roof windows, chimneys, dormers, etc.), or other roof types (trapezoidal sheet metal, flat roof, etc.), special forms and special mounting sets are possible.

*) The structure of the roof must be designed for a respective load carrying capacity.

Cosy warmth or refreshing coolness?
With Ai1 QE ready for each season!

Ai1 QE
- with potentially the longest experience!

Technical data Ai1 QE with R410A		Ai1 QE 5006.5	Ai1 QE 5007.5	Ai1 QE 5009.5	Ai1 QE 5010.5[5]	Ai1 QE 5013.5
Heat source groundwater						
Power input/ output W10/W35	kW [2]	1.3/8.0	1.5/9.7	1.8/12.3	2.1/13.6	2.6/17.5
Performance factor (COP) for W10/W35[4]		**6.4**	**6.5**	**6.6**	**6.7**	**6.0**
Groundwater flow rate	m³/h (Δt=3K)	1.9	2.4	3.0	3.4	4.3
Groundwater flow rate, minimum	m³/h [1]	1.0	1.2	1.5	1.7	2.2
Heating water flow rate	m³/h (Δt=5K)	1.4	1.7	2.1	2.4	3.0
Heat source ground						
Power input/ output B0/W35	kW [2]	1.2/5.9	1.5/7.2	1.9/9.2	2.1/10.2	2.7/13.1
Performance factor (COP) for B0/W35[2]		**4.7**	**4.8**	**4.8**	**4.9**	**4.8**
Heat source flow rate[3],	m³/h (Δt=3K)	1.5	1.8	2.3	2.6	3.3
Heating water flow rate	m³/h (Δt=5K)	1.0	1.2	1.6	1.8	2.3
Max. power input heat source pump	W			70		
Max. power input heat pump	W			70		
Operating limit			B-5/W50 B0/W55 B10/W60 W10/W63			
Compressor				Hermetically sealed scroll		
Sound output	dB(A)	46.5	47.0	48.0	48.0	48.0

Electrical data for motor execution 400 V / 3 AC / 50 Hz (execution 1x 230 V, 50 Hz)						
Starting current (unreduced)	A	26 *(58)*	38 *(67)*	46 (98)	43 *(128)*	51.5 *(115.5)*
Starting current soft start (option)[6]	A	13 (45)	19 (45)	23 (45)	22 (45)	26 (45)
Max. operating current	A	5.5 *(16.0)*	6.0 *(16.0)*	7.0 (22.0)	8.0 *(26.0)*	10.3*(31.0)*
Customer-supplied main fuse, compressor	A	C16A (C20A)	C16A (C20A)	C16A (C25A)	C16A (C32A)	C16A (C32A)
Max. operating current (electrical heating element)	A			8.7 (26.1)		
Customer-supplied main fuse (electrical heating element)	A			B16A (B32A)		
Customer-supplied control fuse	A	B10A	B10A	B10A	B10A	B10A
Electrical heating element	kW			6		

Filling capacities, dimension, weights, connections						
Weight of device, without tank	kg	145	138	147	150	154
Weight of tank	kg			80		
Connections : Heat source / use				flat-sealing R 1¼ "a / R 1¼ "a		
Dimensions W x H x D	mm			701 x 1890 x 733		
Domestic hot water tank	l			250		

[1] At W10/W35 and Δt=6K. [2] Tolerances as per EN 12900 and EN 14511 apply to the performance data listed above. [3] Fluid (70 % water + 30 % ethylene glycol). [4] COP as per EN14511
[5] Tested byTÜV (TÜV Rheinland) [6] standard at series 230 V

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