



- Building heating
- Building cooling
- Process cooling
- Concrete core activation
- Hot water provision

www.waterkotte.de

WATERKOTTE Compact Heat Pumps
Unit Powers from 3 to 500 kW



Why use renewable energy?

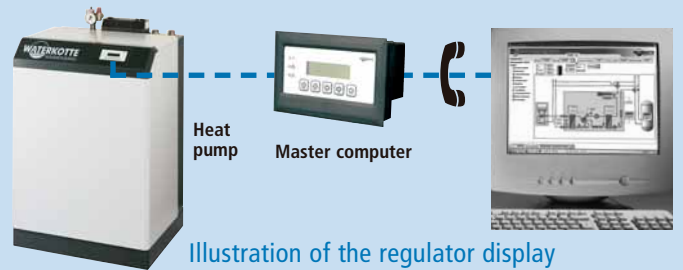
- Nowhere is renewable energy more economical than in building services.
- The total costs of our solution are significantly lower than those of remote heating or of any other fuel – including gas and oil.
- Its advantages include the high reliability of the service, and decoupling from the continuously rising prices of every fuel.
- Your personal living space is freed from the pollutants generated by your own heating.
- ... and in summer you return energy to the source, which means that you can cool your house for almost no cost.

Use our experience

Together with our system partners (installers) we have both the widest and the longest experience in this field. This goes back to the pioneering achievements of the founder of our company, Klemens Oskar Waterkotte, who has powered his house exclusively with renewable energy since as early as 1970.

The WATERKOTTE heat pump range

The heat pump performs the central task in obtaining and using renewable energy. The WATERKOTTE range includes a wide variety of devices. The lower end of the range is represented by heat pump heating centres; greater powers are provided by compact heat pumps with cladding, while the large end of the range includes the compact heat pumps without cladding.



Regulation

All devices are fitted with an integrated central regulation unit. All the regulators can be cascaded (when there is more than one heat pump), and incorporate an integrated bus protocol, so that communication with a more comprehensive controller program is possible. These extended features include room heating systems and the control of probe fields (parallel operation of multiple ground energy probes). All regulators communicate with the WATERKOTTE building control equipment.

The regulators can, optionally, be fitted with plug-in telephone modems. This opens up the option of remote control technology, including display and visualisation at the highest level of technology.

Technological leadership

Today, the WATERKOTTE group of companies is the only one able to supply this technology from a single source, making it superior to any other solution for heating, hot water and cooling – both from the economic point of view (lowest total costs) and ecologically (minimum environmental pollution, maximum preservation of resources). This is true both for individual residences and for larger properties.

No gaps in the range

- Building management technology
- Ground energy probes, probe fields
- Regulation for automatic probe field optimisation
- Heat source supply technology
- Ready-to-connect heat pump heating units
- Compact heat pumps – unit power up to 500 kW
- Heat transfer via ENEX-Floor, ENEX-Ceiling
- Ventilation with heat recovery
- Hot water supply, central or distributed
- Room temperature regulation
- Heating regulation with and without remote control
- Equipment for thermal supply to enclosed baths



1. DS 5023 series

Power range: up to 18.3 kW (at B0/W35)
up to 25.2 kW (at W10/W35)

Compressor : Scroll
Resumat CD4 controller
Compact device in a soundproof housing, ready-to-connect with hermetic scroll compressors

Temporary electrical heater 3 x 2 kW with control and safety thermostat (as start-up aid for first operation)

Including all the heating equipment:
Expansion vessel, internal pressure monitor, safety valve, air divertor, housing for the heating circulation pump coated with plastic on the inside

Metal cladding can be removed without undoing the pipe connections
Insulation of structure-born noise through double chassis construction

W=700, D=552, H=1000



Performance data for Type DS5023.3 (R407C)

Rated value		5006.3	5008.3	5009.3	5011.3	5014.3	5017.3	5020.3	5023.3
Power consumption/delivery W10/W35	kW	1,2/7,1	1,5/9,1	1,8/10,8	2,1/12,7	2,6/15,6	3,3/19,4	3,8/23,0	4,4/25,2
Heat pump power consumption	W	90	90	95	100	100	210	220	220
Groundwater flow-rate (W10/W35) (1)	m ³ /h	1,7 (1,3)	2,2 (1,7)	2,6 (2,0)	3,0 (2,3)	3,7 (2,8)	4,6 (3,5)	5,5 (4,1)	6,0 (4,5)
Groundwater flow-rate, min. (W10/W35)	m ³ /h	0,9	1,1	1,3	1,5	1,9	2,3	2,8	3,0
Heating water flow-rate (W10/W35) (2)	m ³ /h	0,6 (1,2)	0,8 (1,6)	0,9 (1,8)	1,1 (2,2)	1,3 (2,6)	1,7 (3,4)	2,0 (4,0)	2,2 (4,4)
Power consumption/delivery B0/W35	kW	1,2/5,2	1,5/6,8	1,8/8,0	2,1/9,4	2,6/11,8	3,1/14,2	3,6/17,1	4,1/18,3
Heating pump power consumption	W	85	90	90	90	95	200	200	210
Water-glycol flow-rate (B0/W35) (1)	m ³ /h	1,3 (1,0)	1,7 (1,3)	2,0 (1,5)	2,3 (1,7)	2,9 (2,2)	3,5 (2,6)	4,3 (3,2)	4,5 (3,4)
Heating water flow-rate (B0/W35) (2)	m ³ /h	0,5 (1,0)	0,6 (1,2)	0,7 (1,4)	0,8 (1,6)	1,0 (2,0)	1,2 (2,4)	1,5 (3,0)	1,6 (3,2)
Number of withdrawal circuits (75m 20x2 HDPE)		5	7	8	9	12	14	17	18
Application limit		B-15/W40 bzw. W5/W55							
Compressor	Type	Scroll compressor							



- 1) Heat source flow for 3K temperature span
- 2) Heating flow for 10K temperature span

Performance data for Type DS 5023.4 (R134a)

Rated value		5006.4	5008.4	5009.4	5011.4	5014.4	5017.4	5020.4	5023.4
Power consumption/delivery W10/W35	kW	0,8/4,3	1,0/5,7	1,2/6,6	1,4/7,7	1,7/9,3	2,1/11,8	2,4/14,1	2,7/15,7
Heat pump power consumption	W	90	90	90	100	100	100	220	220
Groundwater flow-rate (W10/W35) (1)	m ³ /h	0,8	1,0	1,2	1,4	1,6	2,1	2,5	2,8
Groundwater flow-rate, min. (W10/W35)	m ³ /h	0,5	0,7	0,8	0,9	1,4	1,4	1,7	1,9
Heating water flow-rate (W10/W35) (2)	m ³ /h	0,8	1,0	1,2	1,3	1,6	2,0	2,4	2,7
Power consumption/delivery B0/W35	kW	0,8/3,2	1,1/4,1	1,3/4,9	1,4/5,6	1,7/6,9	2,0/8,7	2,4/10,3	2,7/11,6
Heating pump power consumption	W	85	90	90	90	95	200	200	210
Water-glycol flow-rate (B0/W35)(1)	m ³ /h	0,6	0,8	0,9	1,1	1,3	1,7	2,0	2,2
Heating water flow-rate (B0/W35) (2)	m ³ /h	0,6	0,7	0,9	1,0	1,2	1,5	1,8	2,0
Number of withdrawal circuits EA-75S	No. off	5	6	7	8	10	12	14	16
Application limit		B-10/W45; B0/W65; W5/W70							
Compressor	Type	Scroll compressor							

- 1) Heat source flow for 4K temperature span
- 2) Heating flow for 5K temperature span

Tolerances in accordance with EN 12900 apply to the performance figures given above

2. 2. DS 5051 series

Power range: up to 39.8 kW (at B0/W35)
up to 53.3 kW (at W10/W35)

Compressor : Scroll
Resumat CD4 controller
Compact device in a soundproof housing,
ready-to-connect with hermetic scroll compressors
Metal cladding can be removed without undoing
the pipe connections,
insulation of structure-born noise through double chassis
construction

W=700, D=552, H=1000



Performance data for Type DS 5051.3 (R407C)

Rated value		5025.3	5030.3	5034.3	5043.3	5051.3
Power consumption/delivery W10/W35	kW	5,0 / 25,9	5,9 / 31,2	6,8 / 36,1	8,5 / 44,8	9,9 / 53,3
Groundwater flow-rate (W10/W35)	m³/h	4,5	5,4	6,3	7,7	9,3
Groundwater flow-rate, minimum	m³/h	3	3,6	4,2	5,1	6,2
Heating water flow-rate (W10/W35)	m³/h	4,5	5,4	6,3	7,7	9,3
Power consumption/delivery	kW	5,0 / 19,6	5,9 / 23,5	6,8 / 27,1	8,4 / 33,6	9,9 / 39,8
Water-glycol flow-rate (B0/W35)	m³/h	3,3	4	4,7	5,8	7,1
Heating water flow-rate (B0/W35)	m³/h	3,3	4	4,7	5,8	7,1
Number of withdrawal circuits EA-75S	No. off	20	24	26	34	40
Application limit		B-15/W40 bzw. W5/W55				
Compressor	Type	Scroll compressor				

Performance data for Type DS 5051.4 (R134a)

Rated value		5025.4	5030.4	5034.4	5043.4	5051.4
Power consumption/delivery W10/W35	kW	3,2 / 17,2	3,9 / 21,2	4,5 / 24,5	5,5 / 30,1	7,2 / 36,6
Groundwater flow-rate (W10/W35)	m³/h	3,0	3,7	4,3	5,3	6,3
Groundwater flow-rate, minimum (W10/W35)	m³/h	2,0	2,5	2,9	3,5	4,2
Groundwater flow-rate, minimum (W10/W35)	m³/h	3,0	3,7	4,2	5,2	6,3
Power consumption/delivery B0/W35	kW	3,2 / 12,9	3,8 / 15,6	4,4 / 18,0	5,4 / 22,1	7,1 / 27,1
Water-glycol flow-rate (B0/W35)	m³/h	2,4	3,0	3,4	4,2	5,0
Heating water flow-rate (B0/W35)	m³/h	2,2	2,7	3,1	3,8	4,7
Number of withdrawal circuits EA-75S	Stck.	20	24	26	34	40
Application limit		B-10/W40; B0/W55; W5/W65				
Compressor	Type	Scroll compressor				





3. DS 5110 series

Power range: up to 80.4 kW (at B0/W35)
up to 109.2 kW (at W10/W35)

Compact device in sound-proof housing, ready-to-connect
Compressor: two hermetic scroll compressors

Power regulation: 50/100%

Metal cladding can be removed without undoing the pipe connections

Insulation of structure-borne noise through double chassis construction

W=1100, D=850, H=1300



Performance data for Type DS 5110.3 mit Tandem-Scroll (R407C)

Rated value		5062.3	5072.3	5089.3	5109.3
Power consumption/delivery W10/W35,	kW	12,1/62,1	13,9/71,8	17,2/88,9	21,2/109,2
Groundwater flow-rate, (W10/W35)	m³/h	10,8	12,5	15,4	18,9
Groundwater flow-rate, minimum (W10/W35)	m³/h	7,2	8,3	10,3	12,6
Heating water flow-rate, (W10/W35)	m³/h	10,7	12,4	15,3	18,8
Power consumption/delivery B0/W35	kW	11,9/45,6	13,7/52,7	16,5/65,1	21,1/80,4
Water-glycol flow-rate, (B0/W35)	m³/h	8,4	9,8	12,2	14,8
Heating water flow-rate, (B0/W35)	m³/h	7,9	9,1	11,2	13,8
Application limit		B-15/W40 bzw. W5/W55			
Compressor	Type	Tandem-Scroll			

Performance data for Type DS 5110.4 mit Tandem-Scroll (R134a)

Rated value		5062.4	5072.4	5089.4	5109.4
Power consumption/delivery W10/W35	kW	7,8/42,4	8,9/49,0	11,0/60,2	14,3/73,1
Groundwater flow-rate, (W10/W35)	m³/h	7,4	8,6	10,4	12,7
Groundwater flow-rate, minimum (W10/W35)	m³/h	5,0	5,8	6,9	8,4
Heating water flow-rate, (W10/W35)	m³/h	7,3	8,4	10,2	12,6
Power consumption/delivery (B0/W35)	kW	7,6/31,2	8,8/36,1	10,7/44,3	14,2/54,2
Water-glycol flow-rate, (B0/W35)	m³/h	5,9	6,8	8,4	10,0
Heating water flow-rate, (B0/W35)	m³/h	5,4	6,2	7,6	9,3
Application limit		B-10/W40; B0/W55; W5/W65			
Compressor	Type	Tandem-Scroll			

4. DS 5240 series

Power range: up to 162.6 kW (at B0/W35)
up to 194.0 kW (at W10/W35)



Compact device in sound-proof housing, ready-to-connect

Compressor optionally available as:

- semi-hermetic piston compressor
- worm compressor

Power regulation:

- 66/100% or 75/100% with piston compressor
- 66/100% or 75/100% with piston compressor
- 75/100% with screw compressor

Metal cladding can be removed without undoing the pipe connections

Insulation of structure-borne noise through double chassis construction

W=1400, D=850, H=1565

Performance data for Type DS 5240.3 (R407C)

Rated value		5118.3	5136.3	5162.3	5193.3	5231.3	5161.3	5194.3
Power consumption/delivery W10/W35, kW		23,9/118,0	28,1/135,5	34,0/162,3	40,1/193,2	48,3/231,2	31,5/160,9	38,2/194,0
Groundwater flow-rate, (W10/W35)	m ³ /h	20,3	23,1	27,6	33	39,4	27,8	33,5
Pressure drop in evaporator	mWS	2,8	2,9	2,9	2,8	3,9	3	2,9
Groundwater flow-rate, minimum (W10/W35)	m ³ /h	13,5	15,4	18,4	22	26,4	18,6	22,4
Heating water flow-rate, (W10/W35)	m ³ /h	20,3	23,3	28	33,3	39,8	27,7	33,4
Pressure drop in condenser	mWS	1,8	2,0	2,0	2,5	3,2	2,0	2,5
Power consumption/delivery kW	kW	21,3/83,5	24,8/95,3	30,0/115,1	34,3/133,1	41,9/162,6	31,8/122,1	38,1/148,2
Water-glycol flow-rate, (B0/W35)	m ³ /h	14,4	16,3	19,6	22,8	27,9	20,8	25,4
Pressure drop in evaporator	mWS	1,6	1,7	1,7	1,5	2,2	2,0	1,9
Heating water flow-rate, (B0/W35)	m ³ /h	14,4	16,4	19,8	22,9	28	21	25,5
Pressure drop in condenser	mWS	0,9	1,0	1,0	1,1	1,5	1,1	1,4
Application limit (at 100% power)		B-15/W45 bzw. W10/W55					B-5/W45 bzw. W5/W55	
Compressor	Type	Piston Semi-hermetic					Worm compressor	



Performance data for Type DS 5240.4 (R134a)

Rated value		5118.4	5136.4	5162.4	5161.4	5194.4
Power consumption/delivery W10/W35, kW		15,1/81,5	18,2/93,7	21,7/110,7	19,4/110,6	23,6/134,0
Groundwater flow-rate, (W10/W35)	m ³ /h	14,3	16,3	19,2	19,6	23,8
Pressure drop in evaporator	mWS	1,4	1,5	1,5	1,5	1,5
Groundwater flow-rate, minimum (W10/W35)	m ³ /h	9,5	10,8	12,8	13,1	15,8
Heating water flow-rate, (W10/W35)	m ³ /h	14	16,1	19,1	19,1	23,1
Pressure drop in condenser	mWS	0,9	1,0	1,0	1,0	1,1
Power consumption/delivery B0/W35, kW		12,7/54,9	15,4/63,5	18,3/75,1	19,0/82,1	22,5/99,1
Water-glycol flow-rate, (B0/W35)	m ³ /h	9,7	11,1	13,1	14,6	17,7
Pressure drop in evaporator	mWS	1,0	1,0	1,0	1,1	1,1
Heating water flow-rate, (B0/W35)	m ³ /h	9,5	10,9	12,9	14,1	17,1
Pressure drop in condenser	mWS	0,5	0,5	0,5	0,6	0,7
Application limit (at 100% power)		B-15/W65 bzw. B-10/W70			B-8/W55 bzw. W5/W65	
Compressor	Type	Piston Semi-hermetic			Worm compressor	

5. DS 6500 series

Power range: up to 371.6 kW (at B0/W35)
up to 485.1 kW (at W10/W35)



Compact device with open construction,
ready-to-connect
ready-to-connect

Compressor
Semi-hermetic worm compressor

Power regulation 75/100%

Electronic motor protection
with thermal monitoring by
PTC sensors

W=2300, D=955, H=1800

Application limit for R407C:

B-15/W50 or W5/W55
(with 75% power regulation, the application limit
is lowered by approx. 10°C)

limit for R134a:

B-8/W55 or W5/W65
(with 75% power regulation, the application limit
is lowered by approx. 10°C)

Performance data for Type DS 6500 with Worm compressor (R407C)

Rated value	6237.3	6271.3	6299.3	6388.3	6438.3	6485.3
Power consumption/delivery W10/W35 kW	44,9/237,1	52,5/270,8	58,0/298,9	70,9/387,8	82,0/438,1	90,8/485,1
Groundwater flow-rate, (W10/W35) m³/h	41,4	47	51,9	68,3	76,7	84,8
Pressure drop in evaporator mWS	4,5	4,1	4,9	4,9	5,5	5
Groundwater flow-rate, minimum (W10/W35) m³/h	27,6	31,3	34,6	45,5	51,1	56,6
Heating water flow-rate, (W10/W35) m³/h	40,8	46,6	51,5	66,8	74,4	83,6
Pressure drop in condenser mWS	3,5	3,9	4,7	4,5	5,1	4,7
Application limit (at 100% power)	B-5/W45 bzw. W15/W55					
Compressor Type	Worm compressor					

Performance data for Type DS 6500 with Worm compressor (R134a)

Rated value	6237.4	6271.4	6299.4	6388.4	6438.4	6485.4
Power consumption/delivery W10/W35 kW	27,9/164,4	32,3/186,7	35,8/207,3	44,6/269,3	51,1/302,7	56,5/340,6
Groundwater flow-rate, (W10/W35) m³/h	29,4	33,2	36,9	48,4	54,2	61,1
Pressure drop in evaporator mWS	2	2,1	2,6	2,6	2,8	2,7
Groundwater flow-rate, minimum (W10/W35) m³/h	19,6	22,2	24,6	32,3	36,1	40,8
Heating water flow-rate, (W10/W35) m³/h	28,3	32,2	35,7	46,4	52,1	58,7
Pressure drop in condenser mWS	1,8	1,9	2,3	2,3	2,5	2,4
Application limit (at 100% power)	B-8/W55 bzw. W5/W65					
Compressor Type	Worm compressor					

Greater powers by request.

Possible uses for WATERKOTTE heat pumps:

- Building heating
- Hot water provision
- Concrete core activation
- Process cooling
- Building cooling

The advantages of WATERKOTTE heat pumps on large projects:

- one device to provide both heating and cooling
- possibility of passive exploitation of "cold" from the ground (on ground probe installations)
- very good performance figure when actively cooling by means of the heat pump, since the heat of condensation can be dissipated through the ground, making a significantly lower temperature level available than in the case of conventional dry coolers
- optimised installation hydraulics are designed for each project (if desired)
- the comprehensive regulation tasks can be handled by the WATERKOTTE regulation system
- 2-stage adaptation of the power generated by the heat pumps is possible (depending on the series: 50/100%, 66/100% or 75/100%)
- remote visualisation and display is possible with all heat pumps
- very low servicing costs
- no chimney, no gas connection, no oil tank required
- CO2 reduction potential is around 60 or 70% in comparison with a gas or oil boiler associated with a standard cooling installation
- low amortisation time
- independent of oil and gas prices
- more than 30 years experience

Ask for a comparative economic study for your project!

Regulation

RESÜMAT CD 4 controller

Bus operation possible

Communication connections:

PC connection

RS 232 interface

RS 485 interface

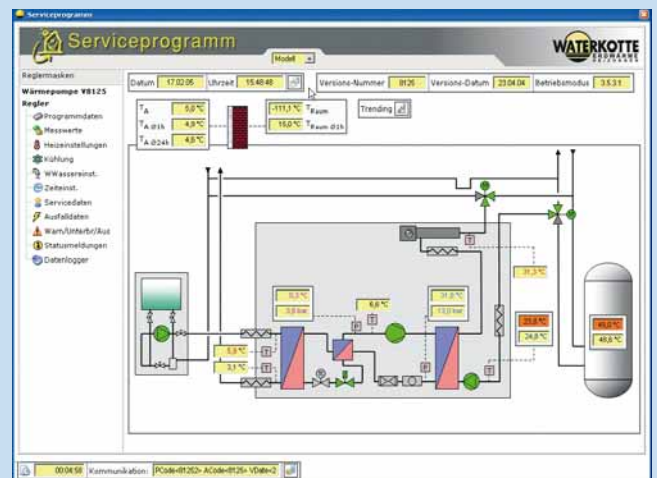
Plug-in modem for remote control visualisation and display

Simple operation through:

5 - button operation

Self-explanatory, simple menu structure.

All settings can be optionally be made via a PC or notebook.



Further information:



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