DATA SHEET

EcoPart 414 Ground-to-water Heat Pump

Main Features	
Application	Space and DHW heating.
Description	The heat pump exploits the energy potential of the ground, pumps the energy obtained through deep boreholes or ground collectors to a higher temperature and transfers it to the heating water; the flow temperature can reach as much as 65 °C.
Installation[1)]	A heating system circulation pump, a ground circuit circulation pump, ground circuit buffer tank and ground circuit filling kit are included in supply; it is necessary to install the heat pump with a smart controller (for codes see the Catalogue).
Working fluid	R407C (refrigerant c.), antifreeze fluid (brine c.), water (heating system).
Certification	HP Keymark – quality label by the European Committee for Standardization (CEN).
Code	**12651**

1) In case of more heat pumps connected in a cascade, only the first heat pump shall be installed with a smart controller.

Technical Data	
Output[2)]	14.47 kW
Power input[2)]	3.19 kW
COP[2)]	4.54
Nominal current	12.2 A
Power supply	3/N/PE ~ 400V 50 Hz
Recommended circuit breaker	B16A 3f
IP rating	IPX1
Compressor	Scroll
Refrigerant	R 407C (GWP 1774)
Refrigerant quantity	2.7 kg
CO2 equivalent[3)]	4.790 t
Compressor oil	Polyoester (POE)
Refrigerant max. working pressure	31 bar
Brine system min./max. temperature	–5 °C / 20 °C
Brine system min./max. pressure	0.2 bar / 3.0 bar
Antifreeze fluid volume in heat pump	4.1 l
Brine system min. flow (Δt = 5 K)	1910 l/h
Brine system nominal flow (Δt = 3 K)	3170 l/h
Brine pump	UPMXL GEO 25-125 180 PWM
Brine circuit connection	2 x Cu 28 x 1.5
Max. heat pump flow temperature	65 °C
Max. heating water temperature in space heating system	110 °C
Max. working pressure of heating water	3 bar
Heating water volume in heat pump	3.4 l
Min. surface area of heat exchanger in tank	3 m²
Min. flow rate through heat pump (Δt = 10 K at 0/35 °C)	1220 l/h
Nom. flow rate through heat pump (Δt = 5 K at 0/35 °C)	2450 l/h
Heating system pump	UPM GEO 25-85 130
Heating system connection	2 x Cu 28 x 1.5
Weight	168 kg

2) At B0/W35 temperatures. 3) Is not covered by the annual check for leaking refrigerant (EU No 517/2014).

Parameters for distribution tariff change	
Nominal power input (required input)	4.66 kW
Heat output[4)]	14.47 kW
Steady current[4)]	5.1 A
Starting current	29.1 A
Nominal voltage / number of phases	400 V 3f

4) At B0/W35 temperatures.

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EcoPart 414 Ground-to-water Heat Pump

Energy efficiency data *(for low-temperature applications under average climatic conditions, others see the Product Fiche)*	
Seasonal Energy Efficiency	174%
Energy Efficiency Class	A++
SCOP	4.60

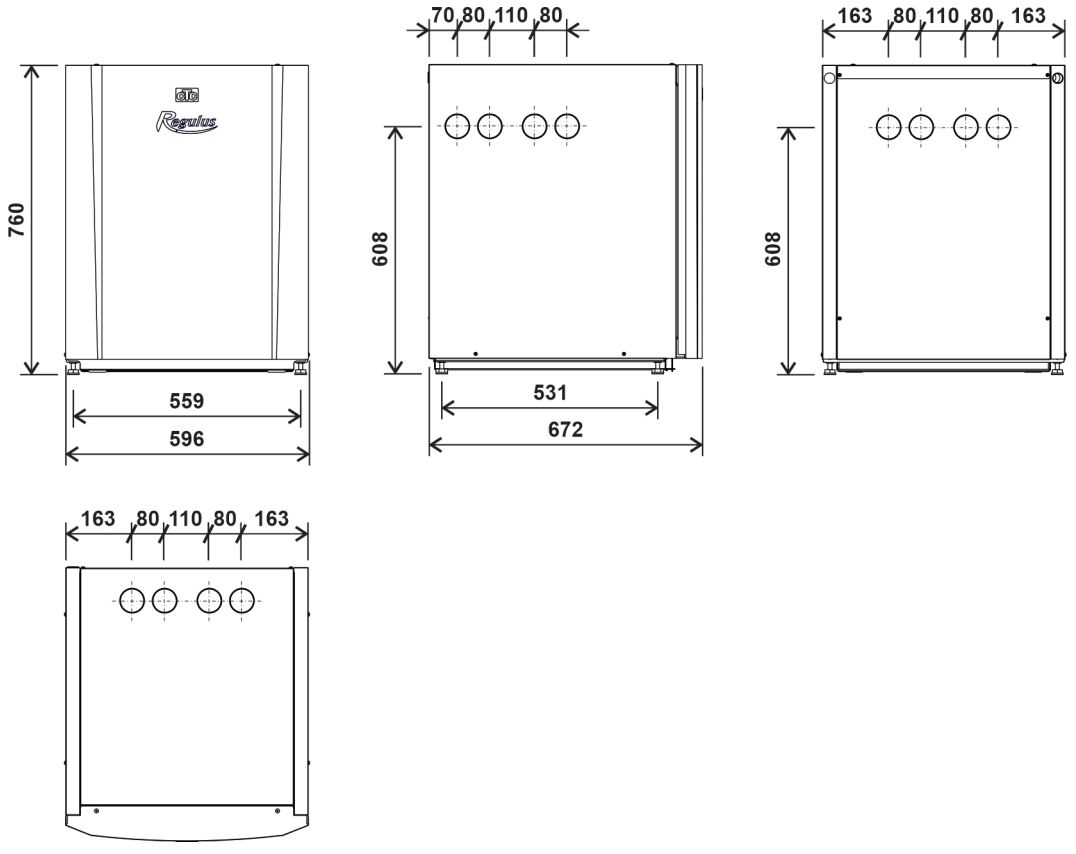
Sound data	
Sound power level by EN 12 102	53.0 dB(A)

Output parameters[5)]

Brine system temperature	Flow temperature	Output [kW]	Power input [kW]	COP [–]
5 °C	*35 °C*	16.48	3.21	5.13
	45 °C	15.98	3.89	4.11
	55 °C	15.28	4.66	3.28
0 °C	*25 °C*	14.63	2.79	5.24
	35 °C	14.47	3.19	4.54
	45 °C	13.93	3.83	3.64
	55 °C	13.40	4.54	2.95
–5 °C	*45 °C*	12.09	3.73	3.24

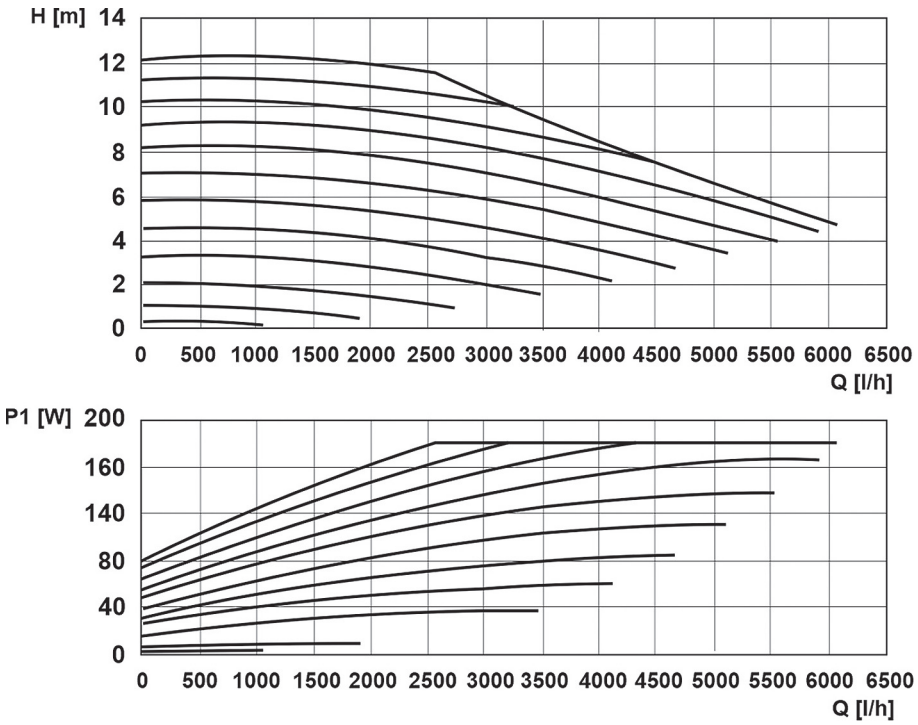
5) The values of working parameters are measured according to EN 14 511 at the manufacturer's test lab.

Dimensions

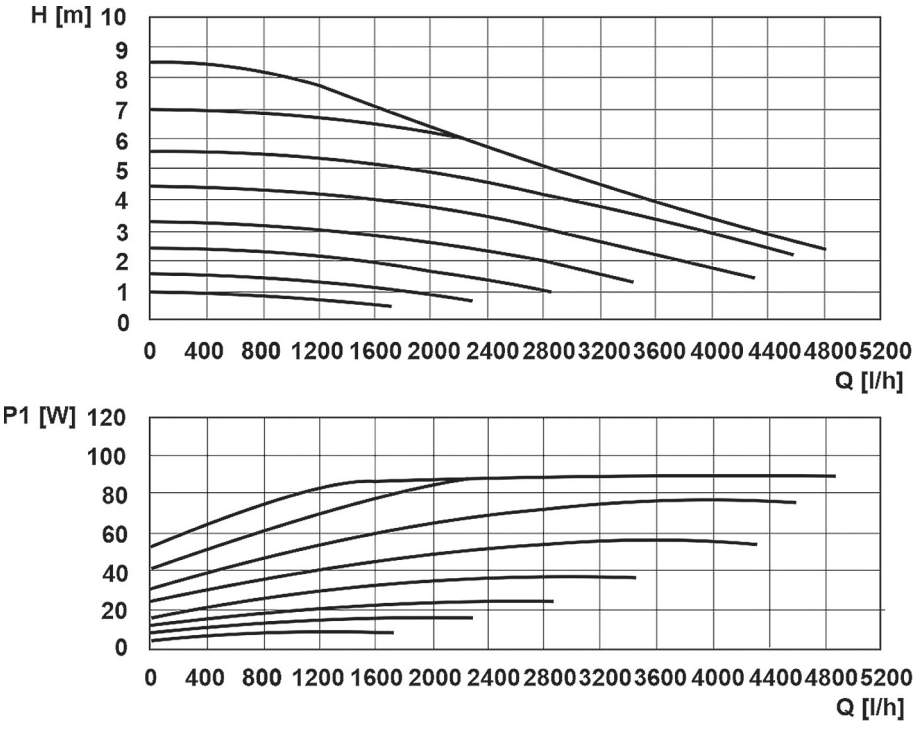


DATA SHEET
EcoPart 414 Ground-to-water Heat Pump

Brine pump performance curves



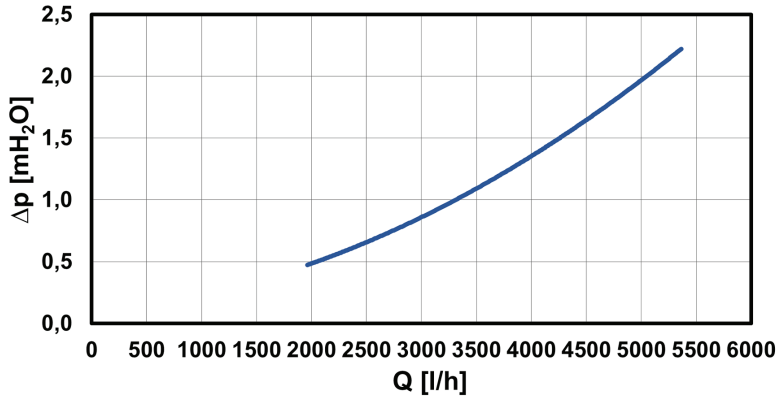
Performance curves of heating circuit pump



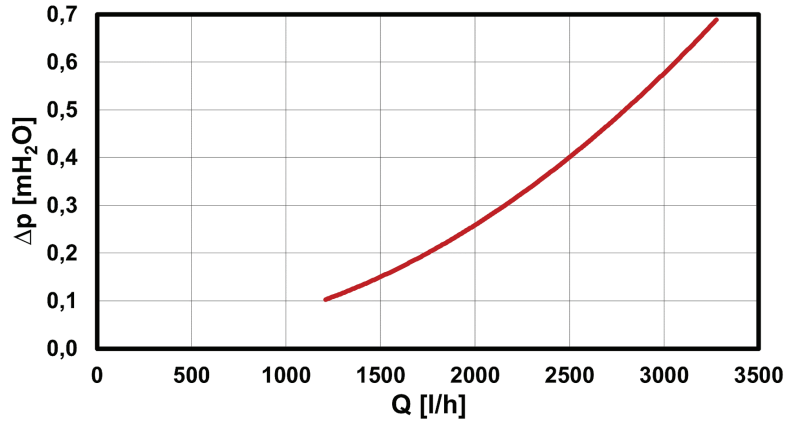
DATA SHEET
EcoPart 414 Ground-to-water Heat Pump

Heat pump pressure drop

Pressure drop on the brine side



Pressure drop on the heating system side



PRODUCT FICHE

EcoPart 414 Ground-to-water Heat Pump

Supplier's name *REGULUS spol. s. r. o.*
Supplier's model identifier *CTC EcoPart 414*

Parameter	low temperature	medium temperature
The seasonal space heating energy efficiency class	**A++**	**A++**
Average climate		
The rated heat output including any suplementary heaters	**16 kW**	**16 kW**
The seasonal space heating energy efficiency	**174 %**	**137 %**
The annual energy consumption	**7 467 kWh**	**9 128 kWh**
Cold climate		
The rated heat output including any suplementary heaters	**16 kW**	**15 kW**
The seasonal space heating energy efficiency	**176 %**	**140 %**
The annual energy consumption	**8 758 kWh**	**10 139 kWh**
Warm climate		
The rated heat output including any suplementary heaters	**16 kW**	**15 kW**
The seasonal space heating energy efficiency	**170 %**	**136 %**
The annual energy consumption	**4 702 kWh**	**5 390 kWh**
The sound power level LWA, outdoors	**53 dB**	

Any specific precautions that shall be taken when the space heater is assembled, installed or maintained are stated in the manual thar is a part of the supply.

Model:	**CTC EcoPart 414**
Air-to-water heat pump:	**no**
Water-to-water heat pump:	**no**
Brine-to-water heat pump:	**yes**
Low-temperature heat pump:	**no**
Equipped with supplementary heater:	**no**
Heat pump combination heater:	**no**

Parameters declared for medium-temperature application and average climate.

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	**16**	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj:			
Tj = –7 °C	P_{dh}	**13.60**	kW
Tj = +2 °C	P_{dh}	**13.90**	kW
Tj = +7 °C	P_{dh}	**14.20**	kW
Tj = +12 °C	P_{dh}	**14.40**	kW
Tj = bivalent temperature	P_{dh}	**13.60**	kW
Tj = operation limit temperature	P_{dh}	**–**	kW
For air-to-water heat pumps: Tj = –15 °C, pokud TOL < –20 °C	P_{dh}	**–**	kW
Bivalent temperature	T_{biv}	**–6**	°C
Cycling interval capacity for heating	P_{cyc}	**–**	kW
Degradation co-efficient (**)	C_{dh}	**0.99**	–
Power consumption in modes other than active mode:			
Off mode	P_{OFF}	**0.018**	kW
Thermostat-off mode	P_{TO}	**0.032**	kW
Standby mode	P_{SB}	**0.018**	kW
Crankcase heater mode	P_{CK}	**0.000**	kW
Other items: capacity control		**fixed**	
Sound power level, indoors / outdoors	L_{WA}	**53 / –**	dB

Item	Symbol	Value	Unit
Seasonal space heat. ener. efficiency	η_s	**137**	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj:			
Tj = –7 °C	COP_d	**3.29**	–
Tj = +2 °C	COP_d	**3.68**	–
Tj = +7 °C	COP_d	**4.03**	–
Tj = +12 °C	COP_d	**4.37**	–
Tj = bivalent temperature	COP_d	**3.34**	–
Tj = operation limit temperature	COP_d	**–**	–
For air-to-water heat pumps: Tj = –15 °C, pokud TOL < –20 °C	COP_d	**–**	–
For air-to-water heat pumps: operation limit temperature	T_{OL}	**–**	°C
Cycling interval efficiency	COP_{cyc}	**–**	–
Heating water operating limt temp.	W_{TOL}	**65.00**	°C
Supplementary heater:			
Rated heat output (*)	P_{sup}	**2.70**	kW
Type of energy input		**electric**	
For air-to-water heat pumps: rated air flow rate, outdoors		**–**	m^3/h
For water/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger		**3.00**	m^3/h

Contact details **Enertech AB, Box 309, SE-341 26 Ljungby, Sweden** **www.ctc.se**

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the capacity for heating sup(Tj).
(**) If Cdh is not determined by measurement then the default degradation is Cdh = 0,9.