Data sheet

EcoPart 406 Ground-to-water Heat Pump

Main features	
Application	space heating and hot water heating
Description	heat pumps extract energy from ground; this energy gained from deep bores or ground collectors is then “pumped“ to a higher temperature and transferred into heating water; the flow temp. may reach up to 65 °C
Installation	installation shall be done with Pump Station Kit w. Smart Controller (codes 17357 or 17358), see Accessories
Working fluid	R407C (refrigerant), antifreeze fluid (brine circuit), water (heating circuit)
Certification	HP Keymark - European Committee for Standardization quality label
Code	**12647**

** in case of installation in series, the first heat pump in series shall be installed with Pump Station Kit w. Smart Controller, all the heat pumps following in series shall be installed with CSE TC W PWM pump station (for codes see Accessories)*

Technical data	
Nominal output	5,9 kW
Nominal power input	1,29 kW
Nominal current	5,8 A
Steady current	2,1 A
Starting current	16,6 A
Power supply	3/N/PE ~ 400/230V 50Hz
Recommended circuit breaker	B10A 3f
IP rating	IPX1
Compressor	Scroll
Refrigerant	R 407C (GWP 1774)
Refrigerant quantity	1,9 kg
CO2 equivalent *	3,370 t
Compressor oil	FV50S
Refrigerant max. working pressure	31 bar
Brine system min./max. temp.	-5 °C / 20 °C
Brine system min./max. pressure	0,2 bar / 3,0 bar
Antifreeze fluid volume in HP	2,3 l
Brine system min. flow (Δt = 5 K)	790 l/h
Brine system nom. flow (Δt = 3 K)	1330 l/h
Brine pump	UPM2K 25-70 180
Brine circuit connection	2 x Cu 28x1,5
Max. heat pump flow temp.	65 °C
Max. heating water temp. in system	110 °C
Max. working pressure of heat. water	3 bar
Heating water volume in heat pump	2,3 l
Min. surface area of heat exchanger in tank	2 m²
Min. flow rate through HP (Δt = 10 K at 0/35 °C)	500 l/h
Nom. flow rate through HP (Δt = 5 K at 0/35 °C)	1010 l/h
Heating circuit connection	2 x Cu 22x1
Weight	138 kg

** is not covered by the annual check for leaking refrigerant (EU No 517/2014)*

Energy efficiency data *(for low-temperature applications under average climatic conditions, others see the Product Fiche)*	
Seasonal Energy Efficiency	179%
Energy Efficiency Class	A+++
SCOP	4,7

Sound data	
Sound power level by EN 12 102	43,0 dB(A)

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Accessories	
CSE TC W Pump Station & IR 12 CTC Controller	code 17357
CSE TC W Pump Station & IR 12 FV3F Controller	code 17358
CSE TC W PWM Pump Station *	code 15874
In Line Heater	code 16166

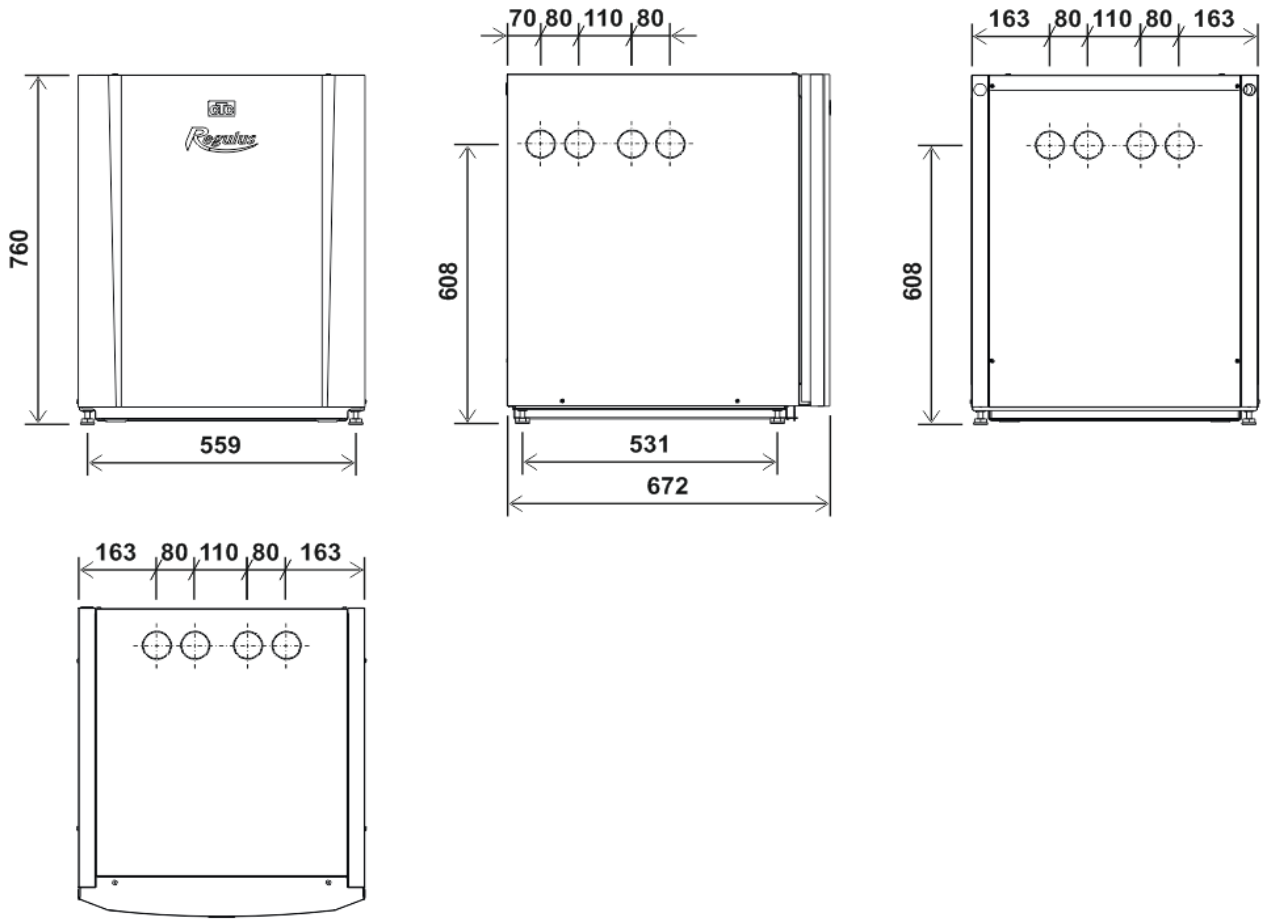
**applies only to installation in series, for heat pumps on the second and all following positions in the cascade (see Installation on Page 1)*

Output parameters **

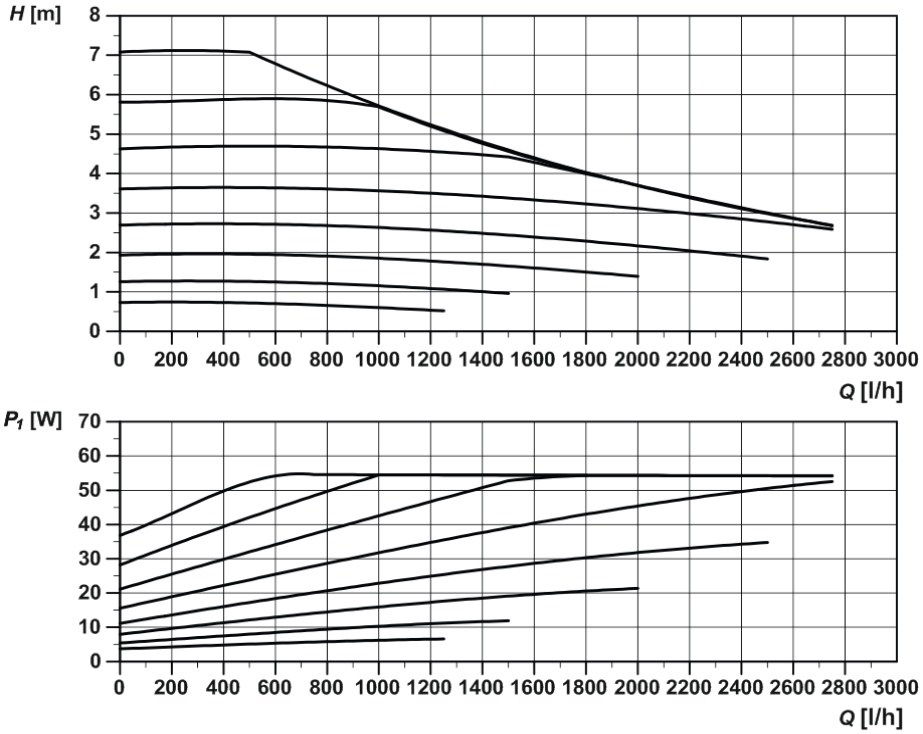
Brine system temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
5 °C	***35 °C***	*6,81*	*1,30*	*5,24*
	45 °C	*6,49*	*1,56*	*4,15*
	55 °C	*6,08*	*1,91*	*3,18*
0 °C	***25 °C***	*6,10*	*1,20*	*5,10*
	35 °C	*5,90*	*1,29*	*4,57*
	45 °C	*5,48*	*1,55*	*3,54*
	55 °C	*5,17*	*1,87*	*2,76*
-5 °C	***45 °C***	*4,68*	*1,52*	*3,09*

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

Dimensions

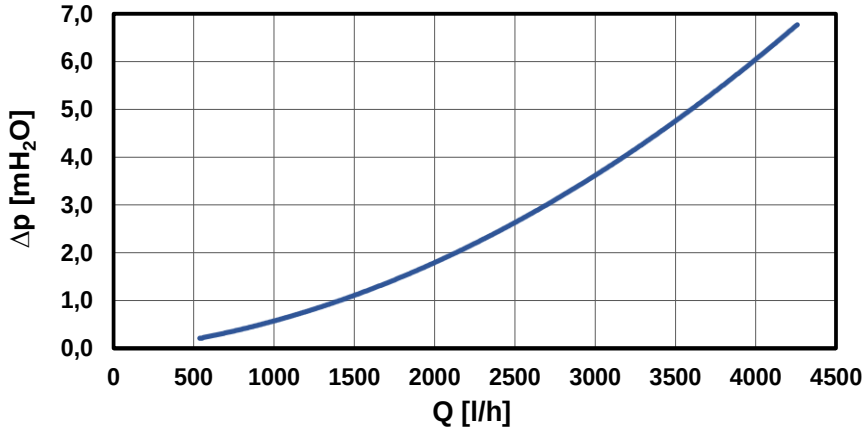


Brine pump performance curves

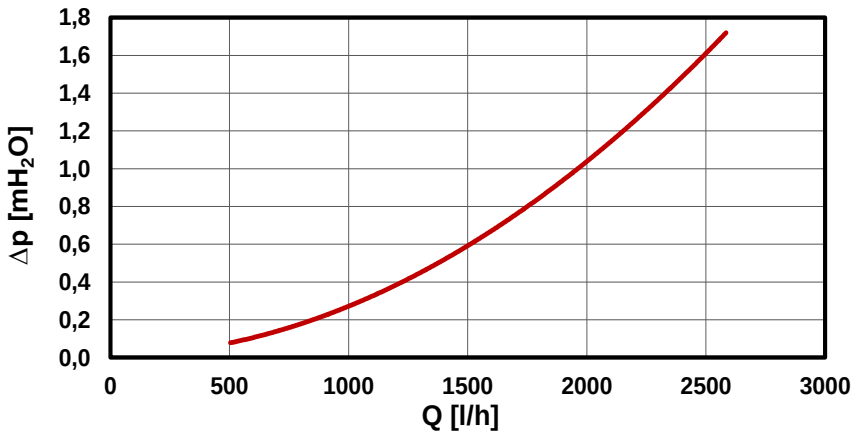


Evaporator + condenser pressure drop

Evaporator pressure drop



Condenser pressure drop



Product fiche

EcoPart 406 Ground-to-water Heat Pump

Dodavatel *R E G U L U S spol. s.r.o.*
Model *CTC EcoPart 406*

Parameter	low temperature	medium temperature
The seasonal space heating energy efficiency class	**A+++**	**A++**
Average climate		
The rated heat output including any suplementary heaters	**7 kW**	**6 kW**
The seasonal space heating energy efficiency	**179 %**	**130 %**
The annual energy consumption	**2 967 kWh**	**3 743 kWh**
Cold climate		
The rated heat output including any suplementary heaters	**6 kW**	**6 kW**
The seasonal space heating energy efficiency	**183 %**	**133 %**
The annual energy consumption	**3 332 kWh**	**4 107 kWh**
Warm climate		
The rated heat output including any suplementary heaters	**6 kW**	**6 kW**
The seasonal space heating energy efficiency	**176 %**	**128 %**
The annual energy consumption	**1 860 kWh**	**2 209 kWh**
The sound power level LWA, outdoors	**43 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 406**
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}	**6**	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj.			
Tj = - 7 °C	P_{dh}	**5,30**	kW
Tj = + 2 °C	P_{dh}	**5,50**	kW
Tj = + 7 °C	P_{dh}	**5,60**	kW
Tj = + 12 °C	P_{dh}	**5,80**	kW
Tj = bivalent temperature	P_{dh}	**5,30**	kW
Tj = operation limit temperature	P_{dh}	**-**	kW
For air-to-water heat pumps: Tj = - 15 °C (if 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}	**0,003**	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}	**43 / -**	db

Item	Symbol	Value	Unit
Seasonal space heat. ener. efficiency	η_s	**130**	%
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	**3,10**	-
Tj = + 2 °C	COP_d	**3,52**	-
Tj = + 7 °C	COP_d	**3,91**	-
Tj = + 12 °C	COP_d	**4,32**	-
Tj = bivalent temperature	COP_d	**3,16**	-
Tj = operation limit temperature	COP_d	**-**	-
For air-to-water heat pumps: Tj = - 15 °C (if 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**	°C
Supplementary heater			
Rated heat output (*)	P_{sup}	**1,10**	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		**1,50**	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.