



The Certification Mark for Onsite Sustainable Energy Technologies

Ground Loop Design



Creating a Sustainable Future

Customer Information

Project Reference:	12230	Date:	21/05/2015
Customer Name:	Mr & Mrs Stanley		
Site Address:	Nash Bungalow	Contact Nos.	
	Nash		
	Ash		
Post Code:	CT3 2JU	Email Address:	

Installer Information

Installers Name:	Reina Group	Email Address:	info@reinagroup.co.uk
Address:	Pavilion House	Website:	www.reinagroup.co.uk
	70 Pavilion Road	Contact No:	01303 248648
	Folkestone	Real No:	40753
	Kent	MCS No:	NAP 19153
Post Code	CT19 5RL	Gas Safe	189267





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Recommended Heat Pump:

Thermia - Diplomat Optimum G2

Ground Collector Details

Estimate of total heating energy consumption over a year for space heating and domestic hot water	21240	kWh
HP heating capacity at 0°C ground return temperature and design emitter temperature	10	kW
FLEQ run hours	2124	hrs
Estimated average ground temperature	10.2	°C
Estimated ground thermal conductivity	2	W/mK
Maximum power to be extracted per unit length of borehole, horizontal ground heat exchanger	30	W/m
Maximum power extracted from the ground	7297	W
Borehole, horizontal loop spacing	7	m
Total length of ground heat exchanger active elements	486	m
Length of header	20	m
Total length of ground heat exchanger active elements installed in the ground (including header pipes)	506	m
Number of loops	2	
Length of loop	250	m
Total length of loop(s) to be installed	500	m
Length of header to be installed	20	m

Ground Loop

Power Ground HX pump	100	W
Pipe Diameter	40	mm
Antifreeze	Tyfacor	
Antifreeze %	22	
Protected to	-10°C	
Viscosity @ 0 °C	3.50	mm ² /s
Pipe Type	PE-Xa	
Brine Pump Flow Rate	1764	l/hr
Velocity	0.294	m/s
Gravity	9.810	m/s
Pressure Drop	152	mbar
Pressure Drop Due to Bends	30	mbar
Heat Pump Head	420	mbar

Header Pipework

Power Ground HX pump	100	W
Pipe Diameter	50	mm
Antifreeze	Tyfacor	
Antifreeze %	22	
Protected to	-10°C	
Viscosity @ 0 °C	3.50	mm ² /s
Pipe Type	PE-Xa	
Brine Pump Flow Rate	1764	l/hr
Velocity	0.375	m/s
Gravity	9.810	m/s
Pressure Drop	27	mbar
Pressure Drop Due to Bends	8	mbar
Heat Pump Head	420	mbar

Total Pressure Drop

217 *pressure drop ok*

Reynolds Number (Loops)

2734 *Flow is turbulent*