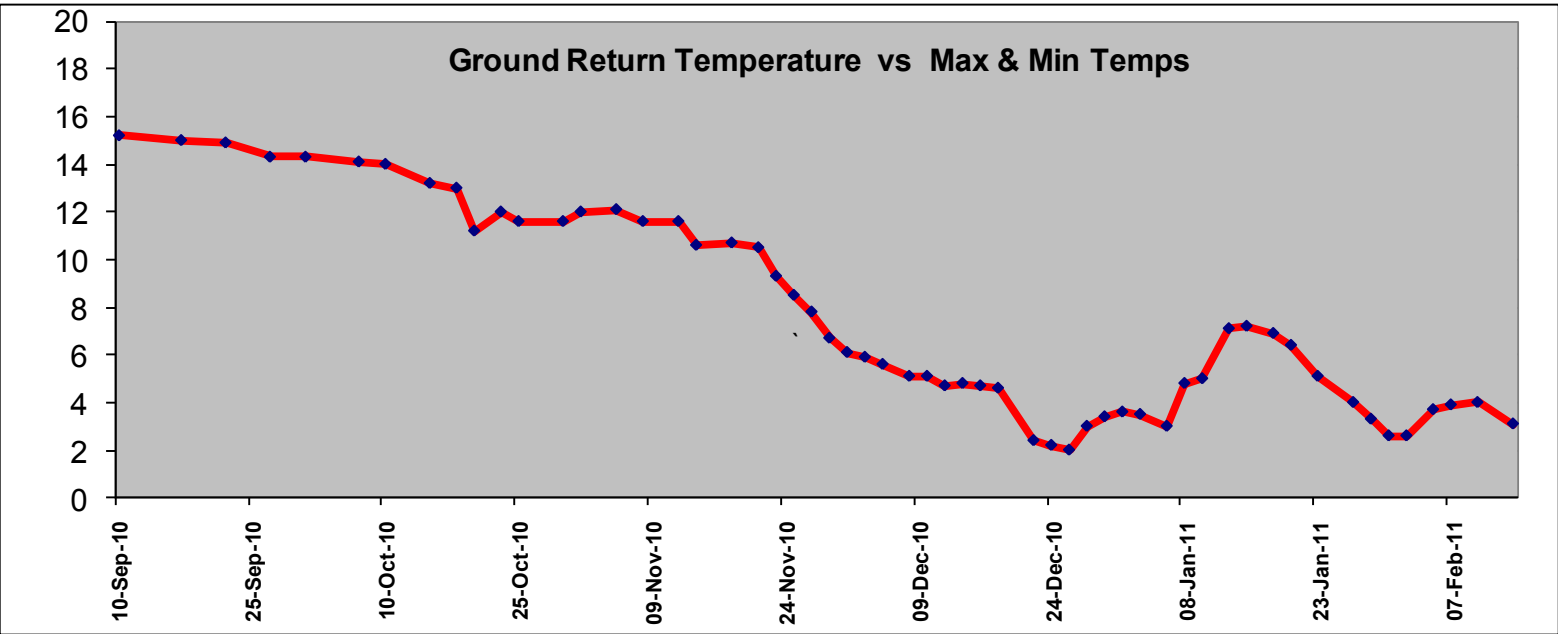


# Case Study - Performance Details of a Kensa Heat Pump



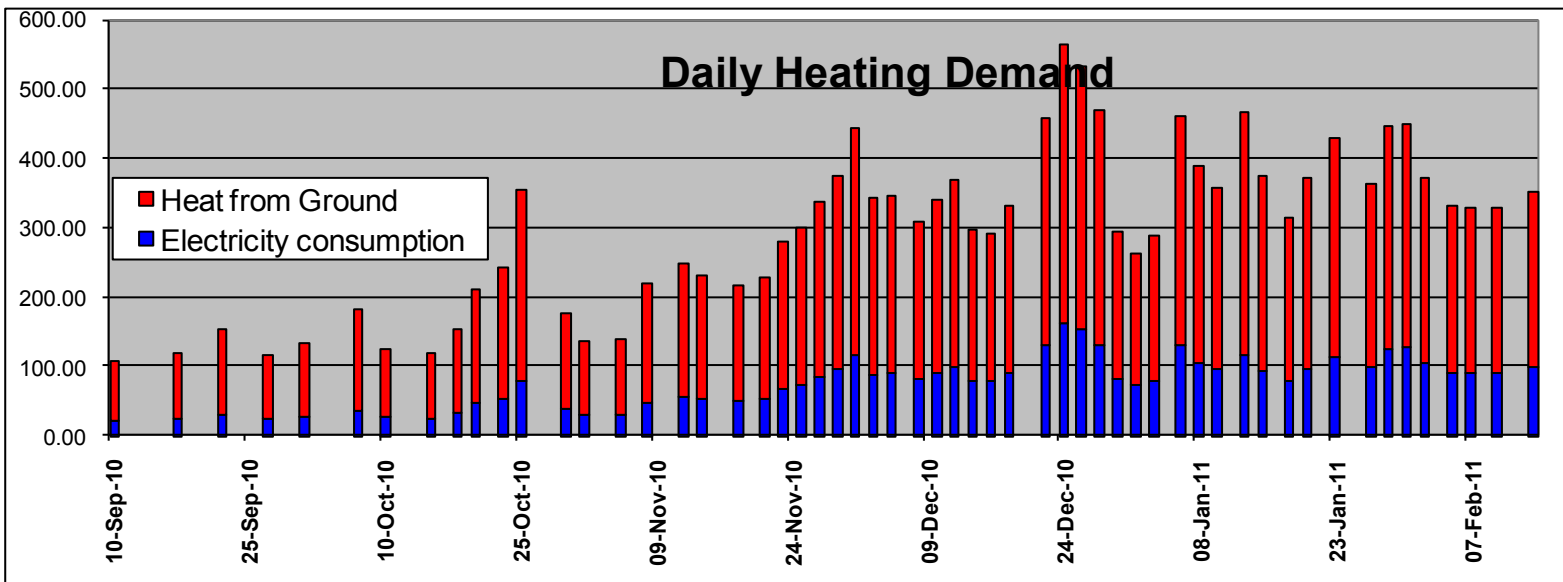
In February 2010, Kensa supplied a 20kW, single phase, twin compressor heat pump to this 5 bedroom refurbished Georgian property in Wales, which is now being used as a [B&B and holiday cottages](#). The ground source heat pump was commissioned in May 2010 and heats the house and two cottages. The Old Bathhouse has a generously sized radiator system, and the Bakehouse has under-floor heating. Both were restored and insulated to current building regulation standards. Since the installation the customer has been measuring the performance of the system and has kindly provided a summary of his independent findings.



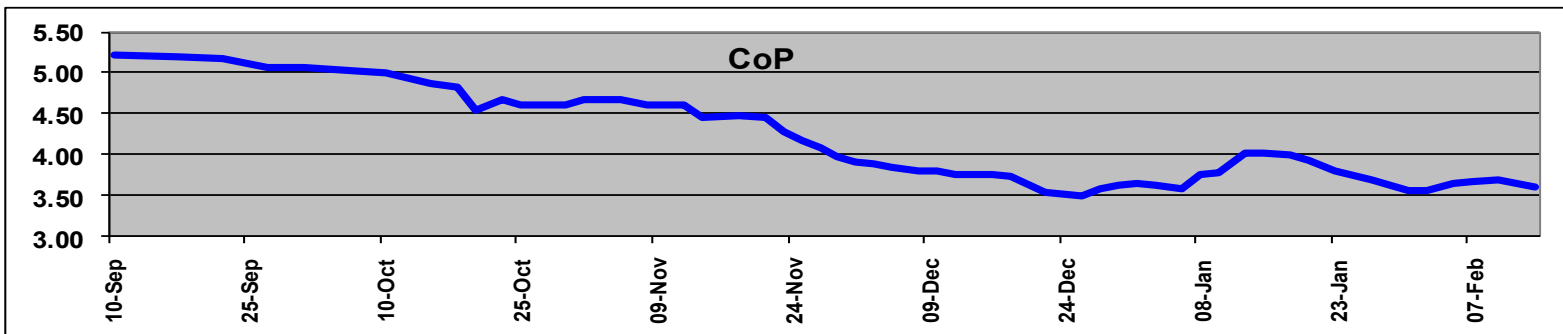
The above Graph shows the return temperature from the 4 x 50m slinkies which make up the ground array, as we would expect the ground array temperature falls through the heating season as heat is extracted from the ground, dipping to a low of 2°C during the prolonged cold snap over Christmas. During the coldest period of the winter the heat pump ran 24/7 and the wood burning stove provided occasional additional heating. The client commented "The temperature during the winter inside the cottages and the house was very comfortable". You can also see how quickly the ground recovers following the wet weather in January.

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The second Graph shows the daily heating demand of the building, and the proportion of the heat delivered from the electricity to drive the compressor and the energy supplied via the ground array, this information is used to derive the COP, the ratio of electrical energy in, to heat out.



In this application we can see the heat pump has achieved a COP of between 4.5 and 4 throughout November, and even through the coldest period of the winter with external temperatures down to -5° the COP was still maintained above 3.5, as shown in Graph 3.



The customer has been delighted with the performance of the system, and the reduction in running cost compared to the original oil fired boiler system. The customer will also be eligible for the forthcoming [Renewable Heat Incentive Payments](#) which will commence in July 2011. The cost of electricity consumed is £1,147 while the estimated cost of heating oil NOT consumed is £2,760 at a mean winter price of 51P / litre – giving an energy cost saving of £1,613. Kensa’s client comments “By the end of the winter I will have covered my annual investment costs and made a tidy profit”. For further information visit, [www.kensaengineering.com](http://www.kensaengineering.com).

