



Wheeldon Trees Farm - District Heating System

The challenge

Deborah and Martin Hofman were keen to getaway from the inefficient system of electric night storage heaters and individual hot water cylinders in their holiday cottage development, by introducing a cost-effective and environmentally friendly solution.

After researching numerous technologies, they decided that a ground source heat pump would give them the answer they were looking for.

Additionally, they had identified that an individually controlled heating system for each cottage would improve guest comfort, energy efficiency and further reduce their carbon footprint.

Finding a supplier that could meet these highly specific requirements resulted in a series of discussions with specifiers, architects and a call to Retherm.



The solution

Initial discussions gave a direction to the project and an understanding of the clients' very specific requirements.

Retherm carried out a technical site survey which confirmed the client was correct in their choice of technology. The property had plenty of land and a three phase electricity supply was already available.

Since there was no 'wet heating' in place, we designed a system for each of the eight cottages, consisting of underfloor heating on the ground level and radiators upstairs, all driven by a single, powerful and very economic, NIBE heat pump.

"The system works beautifully and provides constant heating and plenty of hot water for our guests - ideal for a shower at the end of a day's walking."
Deborah Hofman

Retherm designed a unique series of valves and sensors to cope with the fluctuating demands of each cottage. The inclusion of controls in each building gives guests the pleasure of heating their accommodation exactly as they wish.

This method of 'district heating' is common in Europe but not within the UK. Retherm executed all work including a secondary return to provide each cottage with instant hot water.

The technology employed and how it was fitted had to be as discreet as possible as we helped to bring this 18th century dairy and hay loft into the 21st century.

"Retherm has helped us a great deal towards achieving our vision of running a sustainable holiday cottage business."
Martin Hofman

As with all of the other work commissioned at Wheeldon Trees, the quality of finish had to be to the highest standard and specification that the client so rightfully demanded.

We found this project to be a particularly enjoyable and testing one - the clients' satisfaction proving to be so great that we were later commissioned to extend the design to the Hofmans' own home, an adjoining holiday cottage and the on-site games room.

www.wheeldontreesfarm.co.uk

Specification

Location:
Earl Sterndale, near Buxton, Derbyshire.

Heat Pump:
NIBEFighter 1330 30kW -3 Phase

Source:
1800m MDPE ground collector

Heat distribution:
Traditional wall-mounted radiators and overlay underfloor system

Accumulator:
2 x NIBE VPA 300/450

Funding:
Low Carbon Buildings Grant

Results

Running costs prior to installation:
All-electric storage and immersion.

New installation running costs:
Phase 1 approximately £300 per month
Phase 2 approximately £130 per month

All NIBE equipment was supplied by NIBE Energy Systems Ltd, Chestfield, and manufactured by the parent company in Sweden.



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Waterton Park - Commercial Project

The challenge

Walton Hall, near Wakefield, is an elegant early 19th century property sited on a man-made island within a 26 acre lake. It is now part of the luxurious Waterton Park Hotel and is most people's idea of the perfect country residence.

The traditional qualities of the property have been complemented by the addition of a leisure complex and in 2008, the owners and management team decided it was time to update its existing, and

rather expensive oil-fired heating system with something that would save money and also assist in the hotel's desire to reduce its rather large carbon footprint. They approached Barnum Construction, who in turn called on Retherm to design an eco-friendly solution to heat the 39,000 gallon pool and associated leisure facilities.

After executing a site survey, we proposed a design to utilise the latent energy within the lake and replace the existing oil-fired system which was a major part of a £5,000 monthly heating bill.

This required the laying of eight loops of pipe beneath the lake's surface and held in place using weights at a depth that would ensure visiting anglers could not snag their hooks and lines.

The fluid circulated in the coils draws heat from the lake which is transferred to an exceptionally powerful NIBE heat pump the first of its kind to be used in the UK.

The resulting energy is then passed to a double-jacketed tank which is used to provide both heating and hot water.

As expected, this proved to be the perfect combination for the demands of the premises. An electric boiler is used in tandem with this system for times of exceptionally high energy demand.

Many of the projects we carry out deliver beyond the requirements of the brief, and this one was no exception.

The design ensured a system powerful enough to also heat meeting rooms, a lounge bar and a number of bedrooms.

Barnum Construction carried out installation of the high quality NIBE products in close consultation with Retherm, itself a NIBE accredited installer and service partner, resulting in the project being completed on time, as quoted and to a very high standard.

The original estimate was for a reduction of £22,000 in annual heating costs, and equally important to the customer, a carbon saving of around 168 tonnes per year¹.

However, these figures proved to be very conservative, as we have now been informed that the hotel's monthly oil bill has dropped from a costly £5,000 down to an astonishing £1,500* - quite a saving.

The beauty of this project is that the guests may not even realise that the lake is providing more than just a stunning view from the pool, it is now also the main heat source for the water they are relaxing in.

www.watertonparkhotel.co.uk



Specification

Location:

Wakefield, West Yorkshire.

Heat Pump:

NIBE Fighter 1330 60kW - 3 Phase

Source:

3200m MDPE ground collector

Heat distribution:

Traditional wall-mounted radiators

Accumulator:

2 x NIBE VPA 300/450

Funding:

Cabon Trust interest free loan

Results

Running costs prior to installation:

Oil costs of around £5,000 per month

New Installation running costs:

Monthly oil costs reduced by over 60%*

* at time of going to press

¹ Information provided by the Carbon Trust

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