

Case Study - Biomass

Woodbrook Biomass

Community Heating Scheme, Belfast

The Brief:

Woodbrook is a unique 'Eco-Village' in Belfast, the first of its kind in Ireland and part of a larger urban extension of the impressive 2000 home Brokerstown Village. Built by The Carvill Group, the developer has adopted a corporate and social responsibility to implementing the principles of sustainable development with a targeted 75% reduction in CO2 emissions in all their developments. At Woodbrook, all homeowners receive a bike and even free bus pass ensuring that in this development the car does not take precedence.

Vital Energi was selected to work with the Carvill Group following extensive research to find best practice in design and supply of district energy schemes, visiting its work on the award winning biomass district heating scheme in Oban, Scotland.

Vital Energi was appointed to deliver a £2 million biomass district heating system servicing 358 homes as part of phase one of the scheme. Responsible for all elements relating to the detailed design and construction of the energy centre, the underground pipe network distributing heat and hot water to the dwellings, the heat interface units inside the homes and also a prepayment metering solution allowing residents to pre pay for heating, hot water and electricity.

Our Response:

Rather uniquely the installation features four (two duty and two stand by) 500kW wood burning boilers, with the wood chip being produced from willow currently being grown by local farmers. As the scheme is fuelled 100% on biomass, with no requirement for an oil back up facility, it was critical that a tried and tested solution was implemented.

Being commissioned at an early stage in the project Vital Energi was able to work closely with the Clients team to resolve challenging design and space issues. Throughout the contract Vital Energi demonstrated the ability to cope with difficult and often demanding parameters. In support of Carvill's ethos of providing environmentally responsible construction, particular attention had to be paid to the requirements of the local environment. One of the specific special challenges involved the tricky positioning of the energy centre. The original proposals involved locating the energy centre building on a large piece of land at the edge of the site. However as a result of a tree preservation order (TPO) enforced by the local Council, the energy centre had to be re-located. Vital Energi worked alongside the M&E consultants to re-engineer the outline designs with an innovative idea of a two storey energy centre, located on the slope of a hill and believed to be the first of it's kind in the UK. This innovative design involves the energy centre plant

The Benefits:

- 60% lower fuel bills for residents
- Instant, reliable and controllable hot water and heating
- Environmentally friendly long term solution
- Regeneration of the local economy



Client:
The Carvill Group

Timescale:
May 2007 to
September 2008

Project:
Brokerstown Eco Village

Contract Value:
£2,000,000



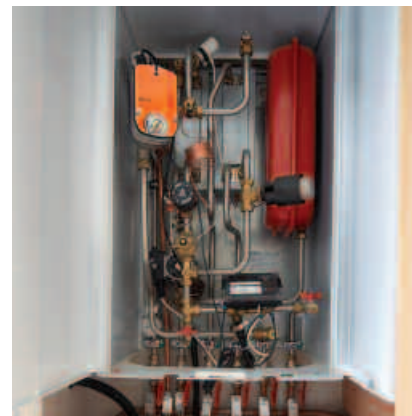
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and equipment including biomass boilers, pumps and controls on the first floor with the wood chip fuel store at basement level.

Vital Energi worked closely with The Carvill Group to ensure that planning requirements were all met satisfactorily, including attending meetings with Building Control and Environmental Officers and providing technical assistance on such matters such as emissions issues whilst at the same time ensuring the most energy efficient and economically viable solution was implemented.

The re-positioning of the energy centre brought with it a new dilemma. As space was restricted, the proposed road layout would make it virtually impossible and also dangerous for articulated lorries making deliveries of wood chips to site to manoeuvre. By applying real life examples, Vital Energi provided assistance through the planning process advising on road layouts and suggested modifying the pavement to allow sufficient room for these vehicles to access the site, make deliveries and leave without any difficulties.



Key Achievements:

Impressed with Vital Energi's work on the first phase of this ambitious project, Gerry Redmond, Technical Director of the Carvill Group comments;

"It was essential that we worked with an energy partner who can provide us with genuine experience and knowledge to deliver the most appropriate solution for the site. Working with Vital Energi, we've arrived at a solution that will not only deliver an important benchmark for the future of housebuilding, but will also boost the marketability of our properties due to the non dependence on oil or gas and also the local economy by encouraging local farmers to diversify into the production of willow to power the boilers."

Christopher Carvill, Managing Director, Carvill Group said:

"We are really proud of this development. This heating system together with the eco homes credentials will make the Woodbrook homes the some of the most cost effective new homes to run in Northern Ireland. In this time of soaring fuel prices we feel it is not enough to just sell people homes, we want to ensure quality of life and sustainable living for all who choose to live here, at affordable prices. We are currently monitoring heating use in the homes at Woodbrook and expect significant savings for everyone."

Throughout the project Vital Energi have applied a partnership approach, including working with the Client, their consultant, local Council, planning authorities, highways and grant funding administrators to develop and deliver a pioneering biomass community heating scheme where homeowners will save approximately 60% on fuel costs. Following completion of the scheme which also included commissioning of all equipment installed, Vital Energi have been appointed to undertake operation and maintenance of the entire heating system.

