

Dol Llys Hall, Llanidloes, Powys
Using wood pellet to heat a Grade II* listed Georgian Mansion



“First Class Heating for Grade II* Home”



Dol Llys Housing is a small housing co-operative based within Dol Llys Hall, a converted, period mansion. The main building comprises two large function rooms, and seven individual one and two bedroom apartments. The function rooms are used for a host of community activities, including weddings and fair trade events.

A pair of 1950s oil boilers, which were increasingly costly and inefficient to operate, had heated the house. These have been replaced by a 60 kW woodpellet/chip boiler sited in a dedicated boiler house, with a highly insulated heat main running to the main house. The selection of the system was dictated by the need for low maintenance and automatic ignition, to ensure optimum efficiency and individual control for the seven flats.

Due to the physical limitations of the existing boiler room in the main house, the decision was made to house the new woodfuel boiler in a dedicated boiler house. Given the Grade II* listing status, the new boiler house had to be sensitively located and sympathetically designed, and the planning officer insisted that it should accordingly be located 140 metres from the main house. A pre-insulated pipe is used to carry the heat to the cellar boiler room, with distribution internally thereafter. A 45kW back-up oil boiler is located in the existing boiler house in the cellar.

“High-efficiency heat main solution ensures warm feeling for residents and Planners”

The new boiler house incorporates an integral fuel store that holds in the region of 23m³ capacity. This accommodates up to 15 tonnes of wood pellets, or about 7 tonnes of woodchip. The system has been commissioned on wood pellets, though in the long term the residents wish to use woodchip to reduce operational cost. It is anticipated that the residents will use in the region of 30 tonnes of wood pellets throughout the year and about 55-60 tonnes of chip when the transition is made.

Flexible, Controllable Heat

The heating requirement reflects that of a conventional domestic dwelling, with spatial heat demand concentrated

between 6.30am and 9.30am and then 5.00pm to 10.00pm (longer at weekends) throughout the October to April heating season. Hot water demand is concentrated in similar time pockets, but throughout the year.

To meet the intermittent heat demand of each of the separate dwelling zones, a 1200 litre accumulator tank is used as a buffer tank to store heat and even out the intermittency of demand on the boiler. The woodfuel boiler features automatic ignition so that it can be fired on demand when the temperature within the accumulator tank falls below a pre-specified level.

It is anticipated that the dual fuel wood boiler will deliver at least 110MWh of heat per annum - this is 94% of the overall energy consumption expected (117MWh), and make significant savings on previous fuel costs.

According to Dol Llys resident, Hayley Myles, “All the residents needed to agree about installing the new woodfuel system. But as we’re all concerned about our environment, it wasn’t a hard decision to make - even leaving aside the spiraling cost of heating oil! Concerns that we did have about how much work would be involved in running the system, and about ensuring we had heat available on demand, have proved groundless. We’re looking forward both to the ongoing benefits in terms of home comforts and cost savings”

The installation

KWB, model USV, 60kW system

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|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application | The co-operative consists of seven individual dwellings, which are housed in the main building along with 2 large function rooms. The building was previously heated by oil. |
| Date commissioned | February 2005 |
| Installers / suppliers | Dulas Ltd |

Fuel

Self supply wood chip

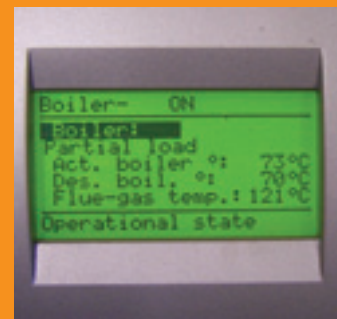
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| Fuel volume | The new woodfuel boiler house also houses an integral 27m ³ fuel store that can accommodate in the region of 15 tonnes of wood pellets. |
| Delivery frequency during heating season | 3 deliveries of pellets per annum |
| Fuel specification | 6mm pellets or G30 woodchip |
| Annual fuel use | Approx 28 tonnes of pellet |
| Annual fuel cost (2006 Q1 market prices) | £4,160 (estimate, depending on source) |

Estimated Savings

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|---------------------------|---------------------------------|
| Cost savings vs Oil | £440 per annum (2006 Q1 prices) |
| CO ₂ Emissions | Woodfuel 4.68 tonnes |
| | Oil 32.76 tonnes |
| | SAVING 28.08 tonnes |



The boiler room is positioned 140 meters from the house.



Convenient fully automated control.

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