

Garvald West Linton - Log Boiler Project



Introduction

Garvald West Linton Ltd (GWL) was established in 1944 to provide residential and day services for adults with learning disabilities. The group are enthusiastic about saving energy and wanted to install a renewable energy heating system into a new residential property. The group runs residential and day care units which are located within a 76 acre estate. Within the estate there is a substantial woody biomass resource, which meant that there was a readily available supply of logs. Therefore a log boiler to supply heating and hot water for the new residential property was an ideal choice.

Equipment

80kW Vigas Log Boiler & 5000l Akvatherm accumulator

Following an energy efficiency survey GWL made a number of improvements to their current building's energy efficiency and heating systems. The survey also highlighted biomass as a good renewable energy heating option for the group. Green Energy Partners were brought in to design the new heating system, and subsequently an 80kW log boiler and a 5000l Akvatherm accumulator tank were installed. The heating is distributed through an under-floor heating network. The Vigas boiler uses the 'gasification down burning technology', is fully programmable, and has electronic controls to ensure maximum efficiency and minimum emissions. This model exceeds the best performance class EN303-5, and was installed by Andrew Innes. *N.B: there is no MCS accreditation required for biomass systems over 50kW output.*

Given that good quality fuel supply is key to their boiler working efficiently, GWL also erected a wood store which ensures that the moisture content of the logs is brought down to the 15% – 20% optimum levels.

Cost and Grant Funding

CARES funding was provided towards the cost of the log boiler, under floor heating system including, a log store and insulation costs.

Total project cost	£ 63,446	The remaining funding was obtained through: Garvald Trust, Own funds, Robertson Trust & Social Investment Scotland
CARES grant	£ 50,757	
CARES grant percentage	80%	

Fuel Bill Savings

Based on a heating oil price of 48p/litre, a boiler efficiency of 85%, and given that the fuel logs to the group are free, the annual running cost savings are estimated at £6,431. This gives a simple payback period on the log boiler of under 5 years.

Emission Savings

Estimated kWh savings p.a.	120,000
Annual CO ₂ savings (kg)	30,960
Lifetime CO ₂ savings (kg) (10 years)	309,600

Project Maintenance

The log boiler requires the following:

- Daily filling (30min)
- Ash removal weekly (30min)
- Monthly tube clean (2hrs)
- Annual service



Local Impact

This project is somewhat unique in that the group have sufficient resource to both supply and harvest the wood themselves. It has created running cost savings to the organisation of over £6400 per year which will only set to increase with the price of oil. It also has the added value of providing meaningful work and training opportunities for its user groups, therefore this project could be considered as a 'full circle' model for other communities.

Lessons Learned

- Log boilers can be a great option provided you have someone at hand who understands how they operate and can maintain the boiler on a regular (daily) basis.
- The irregular nature of logs (shape, density, moisture content) requires less of a scientific and more of an organic approach to maintaining the boiler and understanding how it operates.
- Harvesting and storage of the wood by the community teaches skills and can be fun too!

Rab Crichton, Garvald West Linton said:

"It has all gone very well. Users of the building report how cosy and comfortable the building is. Staff have become interested and skilled in the operations of the boiler. Much useful and meaningful work has been generated in processing the wood".

For further information, contact:

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