

John Muir Trust Log Boiler and Insulation

Introduction

The John Muir Trust is a not-for-profit distributing company limited by guarantee, and a registered Scottish Charity (SC002061). Founded in 1983, the Trust is dedicated to the protection of wild land for both nature and people through promoting awareness of the value of these lands.

The Trust was keen to upgrade the boilers for heating and hot water in two of their properties where the existing system was proving inefficient and expensive. One of the properties was a residential property and the adjacent was an estate office, which also occasionally served as accommodation. The properties, which are joined, were heated by two individual kerosene oil boilers (sized as 17.5 to 23.4 kW). As there was a ready supply of logs in the area, the Trust decided to install a log gasification boiler to replace these oil boilers. Along with this, the Trust took steps to improve the energy efficiency of the building by installing solid wall insulation.

The Trust were eager to showcase this project as a demonstration project – they hoped that the educational benefits associated with this installation would encourage other biomass installations, and in turn facilitate the development of the woodfuel supply chain in an area with vast, underutilised resources.

Equipment

Log Gasification Boiler, Euro 30Kw biomass boiler with 3000 litre accumulator tank

The boiler uses logs, and requires the moisture content of the fuel to be 20% moisture or less.

The existing oil boilers were removed, and the best of these boilers was re-sited in the new boiler house along with a log boiler, and connected as a standby boiler with peak load automatic cut in capability.

The system is housed in a purpose-built extension attached to the property, and heats both properties via heat exchangers. Each property has conventional heating and water timer controls, with the addition of an indicator light to inform the householder if the boiler switches to oil.



On a daily basis, about half an hour is spent on the running of the boiler, plus time spent managing fuel and cleaning.

Cost and Grant Funding

Total project cost	£27,191.37	The remaining funding was obtained through: John Muir Trust own funds
CARES grant	£7,682	
CARES grant percentage	28.25%	

Fuel Bill Savings

From switching fuel source, it was estimated that the Trust would save approximately £2,259 per annum. Coupled with the benefits from insulation these savings may be higher.

It should also be noted that the project could benefit from RHI.

Emission Savings

Estimated kWh savings p.a.	56,259
Annual CO ₂ savings (kg)	14,514

Project Monitoring

Due to the nature of the project, monitoring will mainly take the form of noting fuel deliveries.

Local Impact

This project has provided local residents with an example of how renewable energy sources can be implemented into retrofit projects. It also strengthens the woodfuel cluster in the West Highland area and utilises a local fuel supply.

Lessons Learned

Before fitting a system such as this, a major consideration should be the availability and cost of timber. Consider the role of a back-up oil boiler as it is an essential part of the system. Proper insulation of the property is vital.

Lessons learnt from this project

Drew Love-Jones, tenant of JMT property, said:

"In conclusion I would say that this system is well designed, well executed and very efficient if used correctly. There is a certain less definable benefit to this system too, that of the feeling of self-reliance and satisfaction which it engenders."

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