
Biomass Heating *Wood-for-Warmth, Perthshire, Scotland*

Summary

Wood-for-Warmth is a wood-fuel supply business in Perthshire in Scotland. It is a private SME business and part of a farming enterprise. The owners have installed a new, sophisticated, wood-fuel boiler in their premises to provide heating to their farmhouse and adjacent offices. This installation is part of the development programme for their wood-fuel business which also includes investment in a purpose-designed wood-fuel chipping machine. The 50kW boiler can operate on wood-chips or wood-pellets. It is a Herz boiler from Austria and one of the first of its kind in Scotland. The installation provides a working example of wood-fuel heating good practice and serves as a model for other property managers, illustrating the benefits and reliability of this technology. It also demonstrates to local authorities and decision-makers how indigenous, renewable energy resources can be utilised to provide comfort and environmental benefits. The boiler installation received support from the Scottish Community & Householder Renewables Initiative.

End-user area

- ✓ **New buildings**
- ✓ **Refurbishment of buildings**

Target Audience

- ✓ **Households**
- ✓ **Property owners**
- ✓ **Decision makers**
- ✓ **Local and regional authorities**
- Utilities
- ✓ **ESCOs**
- Other

Technical

- ✓ **Heating**
- Cooling
- CHP
- District Heating
- ✓ **Biomass**

Context

This new wood-fuel heating installation is the first modern biomass boiler in this region. Its installation marks major progress in demonstrating this renewable energy technology in practice.

- A wood-fuel supply business as part of a farming enterprise at a rural setting in Perthshire, Scotland
- Displaces consumption of heating oil and achieves savings in greenhouse gas emissions
- The first modern biomass boiler to be installed in this part of Scotland
- Demonstrates wood-fuel heating good practice and offers a model for replication across this region
- Incorporated with wood-chip supplies using a purpose-designed tractor-driven mobile chipper
- Provides heating to a farmhouse and adjacent office units

Objectives

The installation has three principal objectives:

- (1) to provide heating to a range of premises comprising a farmhouse and several refurbished office units;
- (2) to demonstrate how effective and practical wood-fuel heating can be, using the best modern products;
- (3) to provide real experience for the owners which will benefit their business by supporting replication.

Wood-for-Warmth is a wood-fuel supply business and the installation is providing a clear demonstration of how operators of all types of buildings can benefit from using indigenous renewable energy to satisfy the major energy use in buildings - providing heating.

Process

Wood-for-Warmth is a member of the Perthshire Biomass Partnership and an enthusiastic proponent of wood-fuel heating. The installation is located at the farm where the business is based. The installation uses an existing farm building which has a below-ground pit, originally for receiving grain. This has been converted to become the fuel store. The 50kW Austrian Herz boiler has been chosen as it offers sophisticated performance and it demonstrates how automated wood-fuel heating can be. Heat is provided to the adjacent farmhouse, but also to a set of offices created within the refurbished farm buildings. This serves as an example of wood-fuel energy services, as heat is sold to the office tenants on an ESCo basis.

The immediate end-user targets for this project are the owners, in their farmhouse and their rural micro-business tenants who share the adjoining new office facilities - all heated by local wood-fuel. The wider target audience comprises building operators throughout the surrounding region who will be able to visit the installation and to satisfy themselves that wood-fuel heating offers a realistic new option. These are likely to be public sector and commercial sector building managers.

The Wood-for-Warmth business supplies logs to customers in the region. Expanding the scope of the business to incorporate heating with wood-chips was a logical strategic objective. To base such expansion on selling a concept would not be effective. It was necessary to demonstrate wood-chip heating operating in practice and this has been achieved. This is the first modern biomass boiler of its type in this region. Before undertaking this installation, the owner participated in various events organised through the Perthshire Biomass Partnership, including a study visit to see various wood-fuel installations in Sweden. The owner is working with another member of the Perthshire Biomass Partnership in joint-ownership of a purpose-designed wood-fuel chipping machine.

With this demonstration of heating good practice and the investment in wood-fuel production, Perthshire is ready to develop its local biomass resources and to use its indigenous biomass sources for heating.



50kW Herz wood-fuel boiler from Austria installed by Wood-for-Warmth, Perthshire, Scotland



Wood-chip store below ground at the Wood-for-Warmth boiler installation in Perthshire, Scotland.

Financial resources and partners

The boiler project has received support from the Scottish Community and Householder Renewables Initiative. The associated wood-fuel chipping machine has received support from the Forestry Commission Scotland S11 Developing Farm Woodland Energy programme. The principal source of finance for the project has been the Wood-for-Warmth enterprise.

The total cost of the wood-fuel boiler installation is 29 kEuro.

Results

The wood-fuel boiler was installed and commissioned in October 2006 and has provided reliable service to date. It represents the first of this modern type of wood-fuel boiler to be installed in this region. Other possible, local wood-fuel heating projects have been frustrated to date because of market hurdles. In this

case, the decision to install wood-fuel heating was taken as a strategic investment in the development of the wood-fuel supply business. This anticipates faster progress in future in developing a local wood-fuel marketplace and this demonstration installation will provide a basis for that business develop, with attendant environmental benefits as biomass heating is specified in preference to the continuing use of fossil fuels.



Eschlböck wood-fuel chipper from Austria operated by Wood-for-Warmth, Perthshire, Scotland.

Lessons learned and repeatability

This wood-fuel boiler installation is an example of biomass heating replication. There is only a very immature wood-fuel marketplace operating in Scotland at present. Some progress has been made in the last four years or so. However, there are only approximately 60 to 70 wood-fuel boilers operating in non-domestic premise across the country. The rate of progress is increasing, with several relatively large installations now being planned. There is much still to be achieved before wood-fuel heating is considered to be an option equal to the established and conventional oil- and natural gas-fired boilers. A new Scottish Biomass Support Scheme is now being launched to offer partial financing to encourage the use of wood-fuel boilers in non-domestic premises. This should have a major impact in promoting wood-fuel heating installations.

In Perthshire, there has only been only slow progress to date in installing wood-fuel heating. Although much has been achieved preparing for a future local wood-fuel marketplace by providing encouragement to farmers and landowners to engage in planning new wood-fuel supply businesses. These supplies are now ready. The next target is to convince energy end-users of the benefits of wood-fuel heating and to provide assurances that a competitive local marketplace is ready to provide quality-assured, reliable supplies of wood-fuel from local resources, which are not vulnerable to interruptions in supply, nor vulnerable to uncontrolled shifts in external market prices (as happens with oil and gas).

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Details of equipment used by Wood-for-Warmth are available at the following websites:

Herz biomass boilers <http://www.herz-feuerung.com/>

Eschlböck chipper <http://www.eschlböck.at/>

prepared by NIFES Consulting Group (www.nifes.co.uk) – Scottish partner in the Biomass Partnerships project