

Paddock House Farm

Short Rotation Coppice (SRC) (Willow) to heat 'Green' office development



Sicklinghall, North Yorkshire is home to an innovative biomass heating project, completed in 2001. Paddock House Farm installed a 150Kw Talbot's wood fuelled heating system to heat a range of office buildings and several on-site houses. The decision to install a wood fuelled system was made during the early planning stages when a 'sustainable' office development was proposed. Wood fuel was deemed more favourable and cost-effective over other renewable sources. The farm is on 'heavy' land (Grade III) so 30 acres of SRC willow are grown and chipped on site for the installation, with the owner joining the local producer group, ReGro.

objectives

- To improve the economic footing of the farm by providing an additional revenue stream and diversification enterprise.
- To reduce reliance on fossil fuels - coal, gas and oil – and thereby reduce emission of carbon dioxide which contribute to the greenhouse gas effect for the development.
- To utilise the farm's land resource to provide 'green' fuel for the installation.

actions

- To create a development which was a successful 'green' diversification project. The collective approach of the SRC Producer Group, coupled with the cost savings for the owner and tenants fitted the ethos of the project.
- Sourcing the boiler - this was 'what was available' in the UK at that time. It needed the capacity to take a variable feedstock until the SRC fuel supply was established.
- A Talbot's B3, inclined grate boiler was installed. The system requires manual de-ashing once a week and cleaning of the heat-exchanger once every two months.
- The installation had to be 'totally normal' to assist the build getting planning permission, and the presence of a 'green' heating system was thought to be instrumental in gaining this.

achievements

For Business:

- Diversification has had a positive effect on farming business, increasing economic viability and owners ability to invest further.
- As an early adopter of this technology the proprietor now fulfils a role as an ambassador for biomass and conducts advocacy work for ReGro, the SRC producer group in the region.

For the region:

- The units have the flexibility to accommodate up to 7 businesses, in the order of 50 staff, with associated support to the local facilities that this brings.
- Paddock House Farm provided one of the first close loop heating systems within the Yorkshire and Humber region. It has also provided one of the first exemplar installations using SRC in this way, it aims to serve as a model which can now be replicated nationally.

background

- The installation heats a total area of 1,250m², comprising 700m² of office space and 550m² of on-site housing. The surplus heat which is generated is also utilised to power a wood chip dryer on-site.
- Chip is stored in a converted grain store, with a storage capacity of 500 dry tonnes, and is fed into the hopper once or twice per week with a mechanical loader.
- Optimum moisture content of the fuel is 25%; however fuel of up to 50% moisture content is accepted. The system is also quite versatile, accepting variable chip sizes up to 50mm.
- The cost of the boiler was around £20,000, the cost of pipework, heat meters etc totalled an additional £8,000. Unfortunately due to the timing of the installation no grant aid was available; however the system was eligible for enhanced capital allowance as it works at over 80% efficiency.
- Payback on the capital cost was complete within five years, ongoing costs are kept to a minimum as all maintenance and existing staff conducts repairs. Heat meters monitor the offices and houses, on the network and the heat is sold to occupants.
- Heat is charged at a flat rate (currently 4p/kwh), this allows tenants to factor in a standard cost into business plans and accounts.
- The development is multi-award winning; 2001 Harrogate and District Award for Environmental Excellence, 2002 RIBA White Rose Award, 2002 CLA Farm and Country Buildings Award, and 2004 Yorkshire Agricultural Society Farm Enterprise Award.

quotes

"Because we tender and deliver training for public and blue chip companies, it is essential that we comply to a robust Environmental Policy. Our Carbon Neutral offices at Carlshead Farms have given us the edge over some of our competitors."

Red Sky Learning, Business Tenant.

"This is the way of the future. We want to preserve the countryside and its traditions, but it does have to change. You are a pioneer and the government is right behind you."

Michael Meacher, Environment Minister 2003:

partners

Carlshead Farms Ltd
Carlshead Ltd

Talbott's Ltd – Boiler Supplier
ReGro – SRC Producer Group



lessons learnt

- When running any boiler it is better (and more efficient) to operate at a maximum capacity consistently, rather than at huge peaks and troughs (an oil mentality). Specifying the boiler size is crucial and use of time clocks has assisted in management of the system at Paddock House Farm.
- When considering any district heating system, always use the best quality materials available for pipe works and fitments.