

LEAP Case Study - Biomass

Auchengrange

nr. Lochwinnoch

c. ~1760 – 1890



- Large Country House - 450m² floor area - 3 floors, 5 bedrooms and many public rooms.
- “Hard to Heat” = Solid stone walls. Lath & Plaster interior. Poor insulation. Sash windows.
- Originally poorly designed oil boiler system that could consume 1000 litres of oil in 1 month!
- Estimated heat load 60kW on a cold winter’s day.
- A new oil boiler, although cheaper, would only have improved efficiency by 10%.

Work required:

- Insulation & draughtproofing.
- Heat loss analysis.
- Design & costings.
- Other related works.
- Installation.
- Commissioning.
- Adaptation and learning.
- Adjustment / “tweaking”.

Ongoing work:

- Fuel supply & preparation.
- Boiler stoking & cleaning.
- System maintenance.



Our story:

We had done all we could to improve the fabric, but thankfully had the space to install a large biomass system & wood store. It was expensive, but is cheaper to run because we source our own wood, is less wasteful, more reliable and protects us from oil price uncertainty.

We calculate that by sourcing the wood ourselves the payback is less than 5 years.





Auchengrange Carbon Reduction

In addition to achieving heating price security, the annual carbon reductions are incredible (see inset).

Carbon emissions comparison:

Oil: 0.314 CO₂e per kWh

Seasoned wood: 0.025 CO₂e per kWh

Wood is over 12 times better for the environment. This doesn't even include the emissions from extracting the oil.

Carbon Calcs

Before:

Oil costs p.a. £7000
18000 kWh wasted
35 tonnes CO₂e p.a.

After:

Qty wood req'd 25 tons
Cost £0 to £4800
(depending on supply)
8000 kWh wasted
3 tonnes CO₂e p.a.

Carbon savings 32 tonnes per annum!

Biomass fuel essentials:

- Must be seasoned and dry.
- Kiln dried the best, but expensive.
- Can prepare your own, but labour-intensive and hard work!
- Large, covered and well ventilated storage area needed.
- Try to source a local supplier.

Biomass boilers range from 5kW to > 100kW!

Pellet boilers operate very similarly to "normal" liquid or gas-fuelled boilers.

Pellets cheaper if bought & stored in bulk.

Government incentives:

- Renewable Heat Incentive (RHI) coming, which will pay you for producing green heat.
- Renewable Heating Premium Payment (RHPP), a grant to reduce initial capital cost.
- A variety of support for lower cost insulation.
- Extra support for priority groups.

Green Deal Assessment Required!

Biomass is the lowest-carbon way to heat your home!

LEAP helps its local communities save energy, save money and care for our environment.

We provide free impartial advice on insulation, draught proofing, heating, renewable energy, The Green Deal, grants and subsidies.

We encourage renewable energy generation (community and domestic), food cooperatives, and lift sharing.

We run the not-for-profit LEAP car club.

All our advice is free, impartial, practical and tailored to you



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