



Renewable Energy (Solar Power and Biomass) Kemnay Golf Club

THE CHALLENGE

The population of Aberdeenshire village, Kemnay, has grown from around 2500 to 4000 in the past 30 years, a result of the North Sea oil and gas industry and general pressure on housing locally.

Kemnay Golf Club has made the most of its position as one of the village's few leisure facilities. Deliberately keeping its membership fees low it has engaged with the community and become a hub for leisure in the village, growing large golf and social memberships.

When Kemnay's clubhouse was built in 2000, few had anticipated how energy costs would spiral over the coming decade. Like most clubhouse developments at the time Kemnay's was powered by electricity. The large open plan first floor, with extensive windows, was modern, bright and attractive but provided poor insulation and energy efficiency.

THE SOLUTION

In 2008, to commemorate its centenary year, the club looked at a range of options. All involved agreed to invest in two key areas: the quality of the course and making its clubhouse more economical for the long-term.

David Fyffe, House Representative on the club's committee said: "We decided to do something which would deliver a long-term benefit for the club and the members. We felt the best thing we could do at a time when costs were rising was to make a major inroad into our cost base."

Energy efficiency audit

The club's first step was to bring in experts (public and private to cover all angles), to run an energy efficiency audit for both its building design and material efficiency and its existing heating and lighting systems.

As a result the club replaced its old-fashioned, inefficient lighting with the most efficient low energy alternative. This installation work was carried out by a club member.

The extensive roof void was identified as being under-insulated and housed a redundant smoke-extraction ventilation system that contributed to unnecessary draughts in cold and windy weather. Another club member, a specialist in ventilation and air circulation systems, will replace this outdated system before the club brings its loft insulation up to 2011 standards later this year.

Solar panels

The club's next step in March 2010 was to install a Solar Thermal hot water heating system to deliver hot water for the kitchen and showers. It contracted local company Solar Scotia to fit 22m² of solar panels on the club's south west facing kitchen roof and a 1000 litre Calorifier. The panels were manufactured by AES in Forres and the calorifier by MacDonald Engineers in Glenrothes so the project also supported local Scottish businesses.



Solar panels on clubhouse roof

Biomass energy

To make a larger impact on its electricity costs the club sought a further renewable energy solution.

The club put the project out to tender and, with free advice from the Energy Savings Trust and support from Aberdeenshire Council, which has considerable experience having embraced biomass energy, appointed Highland Wood Energy based in Fort William. In October 2010 they installed the wood pellet burner linked to a large, new hot water holding tank. The biomass system tops up the temperature of the hot water already supplied by the solar energy system, as well as exclusively servicing the central heating system. The only, minor, downside is a green 30 foot container sitting outside the clubhouse. This will eventually be screened but in the meantime club members appreciate it is there for a good reason.



Biomass boiler and container

It was decided that wood pellets were the most appropriate energy source, on the grounds of convenience of supply and maintenance. A lorry delivers them approximately every four months and sacks of pellets provide a backup.

The club had initially considered wood chip as the preferred option because of its abundance locally, but it was discounted after concerns about consistency of product size, humidity and the possibility of jams. Unlike the smaller wood pellets, chips would need robust machinery to move. In addition the clubhouse had a small to medium energy requirement, not on an “industrial” scale, which would be more suited to woodchip fuel.



Wood pellets

THE OUTCOMES

The Solar Thermal Water System is expected to deliver 2781 kWh of heat energy equating to 1.6 tonnes of CO₂ saved annually and £334 at current prices.

The switch to biomass energy has saved the club more than £8500 on electricity costs in the first year equating to approx 43 tonnes of CO₂ saved compared to conventional fossil fuel generation. This is equivalent of taking 179,000 miles of car journeys which considerably outweighs the 150 miles of delivery lorry journeys each year.

Costs and grants

Calculating the total project cost at £98,000, the club applied for a Scottish Biomass Heat Scheme grant from Forestry Commission Scotland and was awarded £37,000. For the balance it applied successfully for an interest free Energy Saving Trust loan. It anticipates full payback of the biomass boiler within eight years of installation.

The club had also looked into ground source heat pumps, but their ongoing electrical supply costs and longer payback period made this a less attractive option in this case.

Key learnings

“A big issue in the Renewables sector is that there are a lot of self-styled experts / consultants,” said Mr Fyffe. “You have to be very careful that you are working with people who have got real knowledge and experience and you need to visit and really understand several of their projects before you decide which to contract. My role as a director of Scottish Land & Estates has given me enormous help in identifying and visiting working biomass projects of a similar size and scope to Kemnay Golf Club’s.”

“Technology is obviously ever-changing and there will be greater choice, and possibly less cost in the future”

“We’d definitely encourage more people to do this. But if a golf club can’t have a really green identity then what can?”



Grand Opening on 25th Nov 2011 with Club Captain Craig Sangster, MP Sir Robert Smith and House Representative David Fyffe