Blowing away costs

A combination of the wet weather last year and the national economic problems meant most clubs have had to act to reduce costs. As a result, several have installed energy-saving equipment to cut electricity and gas bills. **Nigel Harte** reviews some of the biggest installations over the last year

You might think, with negative publicity surrounding wind turbines in the media, Feed-in Tariff (FiT) payments reduced for businesses to embark on renewable energy products and with seemingly less cashflow available for golf clubs to invest in environmental measures, that there has been a lull in renewable spending in the last year.

But that would not be true. Golf clubs are still spending heavily on, for example, solar panels, heat pumps and biomass boilers, as they often pay for themselves in a few years, due to the reduced energy expenditure and, in some cases, the grants, funding and other payments that these schemes can generate.

For example, the Wentworth Club now provides clean electricity, heat, hot water and cooling solutions at its clubhouse, plus for its tennis and health club, ensuring energy savings despite zero capital outlay.

Under the terms of the two 15-year agreements, EuroSite Power will install and operate a **combined heat and power** (CHP) system at the clubhouse, which will produce up to 100 kW (kilowatts) of power while saving up to 277 tonnes of CO2, each year. A similar system will be located at the club's tennis and health facility.

EuroSite Power will buy gas from the National Grid to power the CHP units and sell that energy to Wentworth at a cheaper rate than it was previously paying for its energy, as part of a 15-year deal.

Paul Hamblyn, managing director of EuroSite Power, said: "We will produce clean energy in the form of electricity, heating and domestic hot water at a price lower than the club's current and future energy suppliers. The club will pay only for the energy used and will avoid all capital, installation and operating costs as part of the deal."

Meanwhile, Merlin Golf Club in Cornwall has also saved money following the erection of a 24-metre **wind turbine**.

"The turbine has immediately become a focal point out on the course and has proven to be remarkably quiet, certainly not the blot on the landscape or an irritant to our members – it has actually been warmly received as the right thing to do against carbon reduction and climate change, and shows an eco-consciousness that blends with Cornish society," commented Jim Barlow, a director at the club.

This turbine will furnish the club with all its electric needs and give capacity for any proposed expansion, but perhaps best of all is the fact that the club benefits from FiT payments.

"We are expecting some 160,000 kWh [kilowatt-hour] of production from this site – this is a return to the club of some £35,000 – the client has already expressed an interest in going for turbine number two," said Iain Macpherson, energy manager for Rain Bird, the company behind the turbine.

"Clubs are paying in the region of 10p per kWh and our client gets paid 21p per kWh for their production. Why wouldn't you do it?"

Merlin now has insurance against revenue-sapping energy price rises.

"We are fixed on these payments for the next 20 years, which is not to be dismissed against the inevitable raises that occur against world energy demand," said Jim Barlow.

Richard Garrad, the course manager, is also delighted with the turbine. "Jim believes in investing in the club's asset – the course," he said.

"I can look forward to investment in

machinery to ease the workload of my staff and improve the presentation paid for in part by the returns made by the turbine – what is there not to like?"

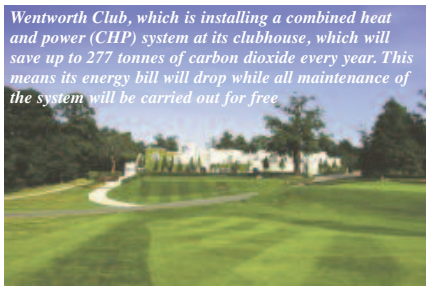
Bowood Golf and Country Club in Cornwall had an electricity consumption of around 200mW per year, costing over £20,000, powering its 31-room hotel, bar, restaurant, golf carts, shop and other areas. As with many golf clubs it owned some neighbouring land and got Natural Generation involved, looking into renewable energies. (Bowood and Natural Generation are hosting a wind turbine open day at the club during February or March this year for anybody interested in renewable wind technologies).

Natural Generation's George Hartgill carried out all of the planning, grid applications, supply and installation of an Endurance wind turbine located to provide optimum performance. It will supply over 160mWh per year, which will offset nearly all of the electricity usage for the site and, with the FiT, will pay for itself within six years, after which the club will benefit for many years from producing its own energy from the naturally generated resource of the wind.

At Mid-Herts Golf Club, So Go Solar installed 60 **solar panels** as part of a 15kWp system across the greenkeepers' workshop, the clubhouse and two attached flats. The panels have been installed such that they are not visible from the public areas of the course. When the project was first under consideration, planning consent was required but recent changes in planning law mean most commercial installations can now be carried out under 'permitted development rights'.

"We made a significant investment in solar energy," detailed Martin Bennet, general manager, "which we feel makes good business sense. The system should generate over 12,000 units of electricity per annum and we will be paid for every unit generated, even those we use on site. These payments will be made for 25 years, are index linked and we hope the system will pay for itself in around six years."

Ben Saunders from So Go Solar added: "equipment costs have come down significantly over the last year and returns of 10 per cent are



Wentworth Club, which is installing a combined heat and power (CHP) system at its clubhouse, which will save up to 277 tonnes of carbon dioxide every year. This means its energy bill will drop while all maintenance of the system will be carried out for free

achievable in most cases. Additionally, finance for energy efficiency investments, including solar, is currently available from Siemens via their 'Energy Efficiency Finance' programme and we would be happy to work with clients to access this finance."

And Mid-Herts has installed rainwater collection, which has seen improvements to the health of the turf by using rainwater over mains' water.

"Both of these projects follow on from an installation of a closed loop washdown system," said Martin. "Mid-Herts prides itself for their part in protecting the environment."

Another recent project was at Cottingham Parks Golf and Leisure Club in Yorkshire. The venue has installed 50 kW REC solar panels in which a Fronius CL48 inverter is located 200 metres away from the array and an AC cable was laid under the club's grounds.

Humber Solar installed a data logger to provide real time online analysis of the system's performance.

Accrington and District Golf Club in Lancashire has also installed solar panels – 12 as part of a £15,000 scheme to generate its own electricity and reduce utility bills.

Club secretary Stuart Padbury said the panels are a 'long term investment' and the club will start generating a profit after the first four to six years.

He said: "These days we are always trying to save money and everybody is trying to go green. We have thought about it for a number of years and we deduced it would be of benefit to our members. Any money we can save on the electricity and utility bills we can then spend on our course – which is our prized asset – and the clubhouse building to make it more attractive for people to come here."

The panels are generating more than 3,534 kW of electricity every year.

Perranporth Golf Club in Cornwall is another to have installed solar panels in the last few months. "We had our 14.4 kW system installed at the end of 2011 and were extremely impressed," said a club spokesman. "In the three months to the end of May 2012 the system, according to our electricity suppliers, excelled in performance, achieving 136 per cent of anticipated results."

At Cleobury Mortimer Golf Club in Shropshire, the club had already made annual savings of 1.5 tonnes of carbon dioxide simply by fitting out its buildings with low energy bulbs. However, more energy and cost savings have been guaranteed thanks to the introduction of a hot water system power by solar energy that heats the showers, and which the club will benefit from FiT payments for the next 25 years.

The club brought in a 75 kW Profi log boiler into a purpose-built plant room adjoining the club, along with a 5,000 litre Akvaterm accumulator tank with a solar coil and hot water coil.

The manager of the club said: "Like many golf clubs, we were severely affected by the economic downturn and even more so by the bad weather in 2012.

"This concentrated the minds of the owners to look for more efficient ways to run and operate a clubhouse that needs to be warm, friendly and inviting, whatever the weather outside.

"It became clear that a **biomass boiler** heating system could offer real benefits and would fit in well with the club's management of the course and its 30 acres of woodland to supply fuel for the boiler. Not only have we reduced our carbon footprint and become a greener business, we are now saving almost £1,000 per month in LPG costs."

And at Nailcote Hall Hotel, Golf & Country Club in Warwickshire, Rick Cressman, proprietor, wanted to reduce the hotel's carbon footprint, while at the same time lessen the impact of escalating electricity costs.

In order to finance the required upgrade to more energy efficient technology, Rick turned to the Energy Efficiency Financing (EEF) scheme, a joint venture between the Carbon Trust and Siemens.

The benefits of using an EEF arrangement was first introduced to Nailcote Hall via its **energy efficient**

Nailcote Hall Hotel, Golf & Country Club, which has installed a biomass boiler

lighting supplier, City Electrical Factors (CEF). The availability of specialist financing for the project enabled the club to start work on a relamping project, converting 670 regular halogen light fittings which can use anything between 35 and 100 watts into LED light fittings which only use seven watts of power.

A Carbon Trust assessment of the application confirmed that investing £30,000 in relamping all the light fittings should bring a saving of approximately £12,000 to £14,000 per year. This investment was expected not only to help reduce power usage but also reduce the amount of staff time changing light bulbs, the cost of buying replacement light bulbs and a reduction in maintenance time. The expected payback on the project is around 2.5 years and as the monthly payments are less than the monthly energy savings achieved from the new lighting, the club will be cash positive from the very start of the project.

Nailcote Hall then launched a second energy saving project – the installation of a 100 kW biomass boiler, with the aim of reducing heating costs. The biomass boiler will run on a combination of woodpellet and the bi-product of biodigestor, a biomass fuel which is a sustainable, carbon neutral source energy alternative.

In addition, the club has already undertaken a further project to install a food digestor to reduce food wastage costs, as well as delivering a supplementary supply of burnable fertiliser. This will be combined with the wood pellet supply for the biomass boiler. The biomass boiler was supplied through BioNova Recycling and the biodigestor through ACM on an EEF lease.

And at Swanston Golf Club, IHS has installed a 45 kW **heat pump** combined with an underfloor heating system to heat the 800m² clubhouse. It is an open well system which extracts heat from a well that was specially drilled into an aquifer. After the water has circulated through the heat pump and the heat has been extracted from it, the water is then taken on to a holding tank where it is subsequently used for irrigation of the greens.

"We use the water from a borehole for drinking, heat exchange (under-floor heating pipes) and all toilets," said Colin McClung, club manager. "The excess from the heat exchanger also tops up the irrigation tanks and overflows into a pond.

"The heat pump is user friendly and runs efficiently, heating the building through an under-floor heating system. It generally has given us no problems but recently due to a loose valve connection and a power surge we have had a few breakdowns. The water comes from a 40 metre borehole which is the most efficient method of heat recovery from the water, as opposed to a network of pipes laid underground using mains water."

In 2012, two golf and country clubs in Essex installed **voltage optimisation systems** (electrical energy saving techniques in which devices are installed in series with the mains' electricity supply to provide an optimum supply voltage for the sites' equipment) that resulted in immediate savings in energy consumption and a substantial reduction in electricity costs and CO2 emissions.

At Three Rivers Golf & Country Club, a site survey carried out by EMSc indicated that voltage optimisation offered an ideal solution for delivering substantial savings without affecting operations. A Powerstar unit was installed, which has helped Three Rivers achieve savings of 6.8 per cent on total electricity consumption – an expected annual cost saving of £3,498. In addition, the club's CO2 emissions have been reduced by 26.1 tonnes.

Stock Brook Country Club is also set to achieve savings of 4.3 per cent in energy consumption after the installation of the Powerstar voltage optimisation system. The club was aware of its high levels of energy usage and sought a reliable solution to reduce its energy consumption and minimise its carbon footprint. It also turned to EMSc, which recommended that the Powerstar system would be suitable to help achieve cuts to both its energy bills and its carbon footprint. Since the installation, Stock Brook Country Club has achieved electricity cost savings of £3,649 per year.

"Any money we save on the utility bills we can then spend on the course"

The reason voltage optimisation can have such a significant impact on energy used is because on the whole, the National Grid supplies a higher voltage than is generally required. Although the nominal voltage in the UK is 230V, the average delivered is actually 242V. This 'over-voltage' means that energy consumption is significantly greater, the result of which is higher energy bills.

Voltage optimisation, stated a spokesman for EMSc, saves on average 12 to 15 per cent of total electricity consumption and related carbon emissions, all without compromising the supply to electrical equipment.

Last year may have been economically challenging for many clubs in the UK, but several have addressed potential problems by developing long-term plans to significantly reduce prohibitive costs. **GCM**