Cornish garden puts its trust in CHP

Cornwall's Trelissick Gardens has become the first National Trust property in the UK to install an LPG powered Combined Heat and Power (CHP) unit. Rurally located near Feock, close to the city of Truro, Trelissick Garden used to rely solely on Calor LPG to provide fuel for the onsite catering facilities. But when the restaurant and café were to be extended and refurbished, it was the ideal time to integrate a low-carbon heating solution into the mix.

Trelissick Garden is a beautiful and popular natural attraction with an excellent selection of exotic plants, including the National Collection of photinias and azaras. Surrounded by parkland, woodland and riverside walks, Trelissick's rich tapestry of natural beauty and focus on conservation makes it the perfect setting for the National Trust's first LPG powered CHP unit.

In very simple terms, a CHP unit generates electricity from a single fuel, such as LPG, and uses the heat produced in the generation process as thermal energy for space and/or water heating or industrial processes. In conventional centralised power generation this heat would normally be directed into cooling towers, discharged to the atmosphere and wasted – leading to low overall plant efficiencies.

The decision to introduce a low-carbon heating solution was made when a project was commissioned to extend and refit catering facilities at the site. During the refurbishment of the restaurant and café, the National Trust was keen to integrate green building technologies where possible, while maintaining the existing supply of clean burning Calor LPG to power the CHP unit and provide a real, controllable flame for cooking.

Trelissick Garden estate manager Chris Curtis said: "At the National Trust we are always looking for ways to minimise our environmental impact and we try to consider greener options. So when deciding on a solution for Trelissick's expanding heating and electrical demands, it was important that we chose something which could offer both environmental and economic savings.

"We considered various options, including biomass, but this was deemed inappropriate as we don't have any woodland that would provide the fuel for such a system. When the LPG fuelled CHP unit was recommended it seemed ideal."

Working alongside the National Trust on the project was SJH Design Services. Robert Beeman, senior engineer at SJH Design Services, said: "The National Trust's brief was to achieve the site's heating and electrical demands with a minimal carbon footprint. In the design process, we established that there would be a base electrical load 24 hours a day and seven days a week and, for most of the year, a base heat load requirement. This made the choice of a CHP unit a natural one."

The specifiers at SJH Design Services recommended a Baxi DACHS mini CHP unit, which had sufficient capacity to meet the needs of the new catering facilities at Trelissick Garden. The DACHS CHP unit was installed to act as a lead boiler with the additional benefit of providing onsite electrical generation. The CHP heat output is supported, as required, by standby LPG fired condensing boilers controlled by the building management system.

David Shaw, business manager for Baxi SenerTec, said: “By generating heat and electricity from a single source, CHP can deliver overall fuel efficiencies well in excess of 75 - 90 per cent. When compared with electricity generated from a centralised power station, and the use of heat only boilers, CHP can reduce primary energy needs by up to 30 per cent, considerably reducing energy costs and delivering significant reductions in CO2.”

Calor’s bulk market manager Laura Luty said: “The National Trust has demonstrated that heat and electrical demands can be achieved in an environmentally friendly manner. More and more commercial and public sector organisations are considering their energy costs and their environmental impact, so we believe that many other rurally located organisations across the UK can really benefit from this technology.”

Chris Curtis concludes: “The facilities on site have changed dramatically since the installation, so the direct running costs cannot be compared. However we know that the system is extremely energy efficient and we are looking forward to economical as well as environmental benefits.”

As the UK’s leading LPG supplier to rural homes and businesses, Calor is working alongside leading manufacturers to ensure that LPG is compatible with innovative low-carbon and renewable technologies.

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