

Nursing home warmed by combined heat and power generator

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Joseph and Ingrid Butler run a nursing home in County Wexford, Ireland, and recently decided to extend the main building.

The couple's energy bills were high due to the fact the building relied on an old, oil-fired heating system that required constant heat and power.

"Joe was already a Calor customer," says Ed Mc Donnell, technical manager for Calor Teoranta. "When he was building the extension, there was an opportunity to upgrade the existing heating system to something much more efficient."

Combined heat and power (CHP) is an older, but proven technology compared to some of the newer options on the market. It allows heat and electricity to be produced simultaneously from the same fuel source – liquid petroleum gas (LPG). This means that high fuel efficiencies (up to 75 per cent, some vendors claim) can be gained, instead of taking power from the grid and leaking heat through the supply chain.

LPG, while still a fossil fuel, is lower in carbon emissions than oil and electricity from the grid, although still requires a gas provider to set the price of the fuel, which can vary.

Gas provider Calor, a subsidiary of SHV, worked with distribution company Kinviro, which sells a German CHP system called the Dachs.

This washing-machine sized unit, which generates the electricity from gas, is too large for most houses, but ideal for slightly larger buildings, such as a nursing home or hotel.

Once refilled, a Calor bulk tank (about six-foot long and usually parked outside a building) provides the 20.5 kW of gas to deliver a constant 5.5kW of electricity and 12.5kW of heat. This returns an additional 2.5kW of energy back into the system, boosting the efficiency of the heating and power.

"With the nursing home, the carbon footprint was reduced by about 17 tonnes," says Frank Daly of Kinviro. "They also saved something like €2,500 a year on energy. The beauty of this is that they get electricity as a bi-product."

Ireland's energy policies lean towards the promotion of CHP and microgeneration – a response to the EU's Energy Performance of Buildings Directive and CHP directive.

Research from the International Energy Agency states: "Expansion of co-generation [otherwise known as CHP] in France, Germany, Italy and the UK alone would effectively double the existing primary fuel savings by 2030... The savings equate to a co-generated electricity expansion in these countries from 155.69Twh today to 465Twh in 2030."

"In the last year, combined heat and power systems have seen a real uptake," adds Mr Daly. "We're quite far behind the rest of Europe in terms of clean tech. We think Ireland is catching up quickly though, but we still have a long way to go."

The Dachs system also provides a backup to the solar panels that are a primary source of hot water for the nursing home, which caters for 50 people. The CHP unit, which also has a longer maintenance interval compared to oil fired equipment, now targets most of the heat and electrical needs of the nursing home.

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