SAV SYSTEMS

Low Carbon Energy Solutions for Building Services

BROOKSIDE EXTRA CARE SCHEME - CASE STUDY

SAV FlatStations and LoadTracker cut costs and emissions for Brookside Extra Care Scheme

The Project

Operated by Arena Housing Group, Brookside comprises 111 self-contained 1 and 2 bedroom apartments and provides extra care housing and support for older people and specialist care for dementia. Space heating and domestic hot water are provided from a central energy centre and controlled through SAV FlatStation heat interface units in each of the apartments.

The Challenge

A LoadTracker modulating combined heat and power (CHP) unit from SAV Systems is helping to minimise environmental impact and reduce running costs for the new Brookside Extra Care Scheme in Ormskirk, Lancashire. The system was specified by consulting engineers Hannan Associates and installed by Technic Mechanical Services.

Summary of CHP Production

Annual electricity production	**118,125 kWh**
Electricity price (excluding CCL)	**11 p/kWh**
Annual heat production	**229,266 kWh**
Gas price (excluding CCL)	**3 p/kWh**

Cost and Carbon Savings

In the 12 months from August 2012 to July 2013 the 15kWe/30kWth LoadTracker unit has produced over 118,000 kWh of electrical power and over 229,000 kWh of heat. Compared to a traditional boiler/mains electricity arrangement, use of CHP has reduced energy bills by around £8,500 per annum. Annual carbon dioxide emissions have been reduced by over 32 tonnes.

Features

- Differential pressure and temperature control
- Stand-by function guaranteeing DHW on demand
- Low CHP noise levels (49dB), equivalent to a quiet office
- Long CHP service intervals (8,000 hours or 2 years)
- Automatic modulation of electrical output to minimise use of grid electricity

Benefits

- Optimizing system energy efficiency
- Lower energy bills
- Significant reduction in carbon footprint
- Onsite power generation with reduced consumption of grid electricity
- Compliance with CIBSE recommendations

The Solution

In contrast to traditional fixed-output CHP unit, the LoadTracker unit monitors the site's electrical consumption and modulates to match the demand. This maximises the run-time of the CHP and minimises the use of expensive mains electricity and back-up boilers.

The 7 Series indirect FlatStations in each apartment supply both space heating and instantaneous hot water. Each FlatStation uses a differential pressure control valve to ensure that differential pressure remains at around 35kPa in every unit, irrespective of location within the distribution system. The result is that DHW temperature is controlled to within +/- 2.5°C.

The high level of efficiency delivered by the FlatStations also helps to reduce the primary return temperature, resulting in improved CHP performance. This is achieved through efficient heat transfer across the plate heat exchangers, combined with differential pressure control valves and thermostatic valves that take account of variations in pressure and temperature.

In addition, an integral idle temperature controller in the control valve will ensure that water in the supply pipe remains warm. This enables the DHW to be highly responsive – even at times when space heating loads are low.

SAV FlatStation 7 Series BS supplied for Brookside Extra Care Scheme – one for each dwelling

SAV's Ultrasonic energy meters and pulsed output water meters monitor and provide detailed personal consumption of energy and cold water for billing and energy monitoring purposes.

CHP operation August 2012 – July 2013	
Operating hours	7,815
Electricity production [kWh]	118,125
Heat production [kWh]	229,266
Cost savings	£8,500
CO_2 reduction [kg]	32,052

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