

## Residential Care Home - Heating

### Executive Summary

- Residential Care Home: 2 Floors, 45 bedrooms;
- Leading blue chip Healthcare provider, Midlands location;
- 21% energy saving;
- 24 hour x 365 days heating;
- Annualised saving of 99,000 kWh and 18 tonnes CO<sub>2</sub> ;
- Return on investment < 2 years;
- Practical and cost effective energy saving opportunity

A blue chip provider of care homes across the UK has completed a pilot using the Hydromx energy saving solution; with their in-house energy analysts verifying a 21% energy saving in a high demand 24 hours 365 days per year care home.

The installation process was carried out in just two days without any disruption to the residents or staff of the care home.

During a six month period the half hourly gas consumption was compared to a baseline of consumption from the previous year. The consumption was adjusted for weather differences using Heating Degree Days Analysis<sup>1</sup> - HDD, (a methodology recommended by the Carbon trust and the Chartered Institute of Building Services Engineers), and data from a nearby International Airport Weather Station.



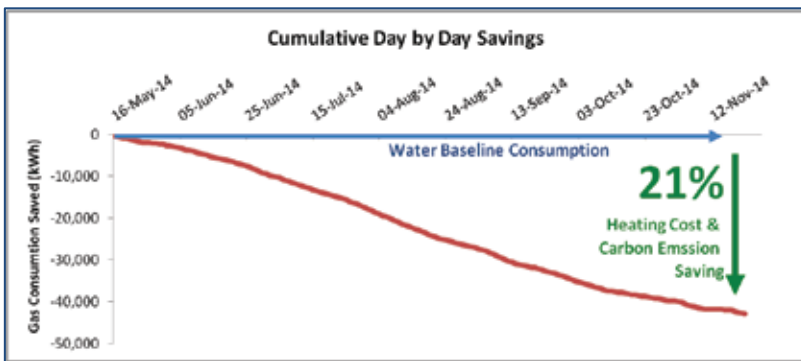
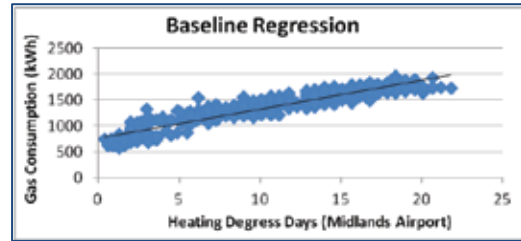
The Care home is heated by a multi-boiler cascade system comprising four Buderus GB162 boilers which provide both domestic hot water for a busy laundry and space heating for all bedrooms and communal areas. All bedrooms have a low water volume radiator with thermostatic radiator valves (TRV). Corridors and communal areas use a combination of classic steel panel radiators and low level, space saving radiators.

The building management system (BMS) was used to track internal and external temperatures and the BMS target space heating temperature settings remained set at 23°C throughout. The BMS sensors are located in corridors on each floor and each wing of the building, so separate temperature data loggers were also deployed around the building to verify that there were no cold spots or areas of overheating. On-site maintenance also used handheld temperature sensors to verify that the rooms were being maintained at a comfortable 23°C.

<sup>1</sup> <http://www.carbontrust.com/resources/guides/energy-efficiency/degree-days>

The Healthcare company's own energy analysts used the HDD methodology to adjust the home's gas consumption for the weather conditions and concluded a 21% saving using Hydromx.

First they built a baseline regression analysis of the previous years half hourly gas consumption data giving a clear correlation between external temperatures and gas consumption when using water alone. Then, after the installation of Hydromx the external temperatures were used to calculate the number of Heating Degrees for each day (the heating demand) and these in turn were used to calculate what the consumption would have been with just water in the heating system.



A Cumulative Energy Saving graph was then produced which shows a day by day calculation of the difference between the water calculated consumption, and the actual consumption with Hydromx. The graph clearly shows that the difference is negative and that Hydromx is saving energy.

## Return on Investment (< 2 years) & Reduced Emissions

Over a six month period 45,000 kWh were saved. Using the number of Heating Degrees for a year this is annualised at 99,000 kWh and results in the reduction of 18 tonnes of CO<sub>2</sub> emissions.

These savings equate to a little over 21% in a property where the heating is on all year round and the demands for warmth are higher than a domestic home or typical office.

The value of these savings are substantial resulting in a return on investment of under 2 years.

"Hydromx is a very cost effective energy saving opportunity. Our own energy analysts have used the HDD methodology using our gas consumption data and publically available weather information to prove these savings of 21%. We are now looking at where we can benefit from using Hydromx in other properties".

Mechanical Engineer, Property & Development, Blue chip healthcare company.