

Executive Summary

- **Student Accommodation: 1,800 m², 3 Floors, 23 Flats, 160 bedrooms;**
- **26% energy saving, QUICK WIN;**
- **Return on investment < 2 years;**
- **Annualised saving of 218,000 kWh;**
- **The emission of 44 tonnes CO₂ was prevented; the equivalent to the CO₂ absorbed by over 700 trees**
- **Practical and cost effective energy saving opportunity**

A major provider of accommodation to the UK education sector has completed a year long trial using the Hydromx energy saving solution achieving a remarkable 26% energy saving.

Hydromx was installed in Sept 2013, with the heating system fully operational at the end of the two day installation process (Drain, Flush and Fill), in time for the students' arrival at the start of the academic year.



During the period the students were in residence the gas consumption over the 2013/14 heating season was compared to the gas use in the same period of the 2012/13 heating season. The consumption was adjusted for weather differences using Heating Degree Days Analysis¹ - HDD, (a methodology recommended by the Carbon trust and the Chartered Institute of Building Services Engineers), and data from the nearby National Weather Station.

The accommodation block used for the trial was a single building heated by Hamworthy Wessex 3x50 high efficiency boilers and has separate gas hot water heaters in a central plant room. The accommodation is split into communal areas across 5 blocks (A - E). All blocks have several flats, each with 5 to 10 student bedrooms, bathrooms and kitchens. Each student room is equipped with typical furniture and a single steel panel radiator with thermostatic value. Further steel panel radiators are used in kitchens and other communal areas.



Consumption after Hydromx was installed reduced significantly for two reasons; firstly the weather was warmer in 2013/14 compared to 2012/13 so demand was lower; and secondly due to the improved efficiency of the heating system using Hydromx.

The HDD value is a calculation derived from the outside temperature in the local area. When it is warm outside the number of HDD is low, and conversely when it is cold outside the HDD value is high. The total number of HDD in a period is therefore a measure of the demand for heating. Over a long period the energy consumption for each HDD indicates the rate of energy consumption, and therefore the efficiency of heating a building.

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

Student Accommodation – Space Heating

The reduced demand in the accommodation block is demonstrated by the number of Heating Degree Days (HDD) in the two periods being compared. This is a reduction in demand for heating of 25%.

| Start Date | End Date | No. HDD |
|----------------|----------------|---------|
| 1 October 2013 | 31 March 2014: | 1,668 |
| 1 October 2012 | 31 March 2013: | 2,229 |

However, in the days when heating was required the HDD analysis showed that Hydromx reduced the consumption from 305 kWh per HDD, to just 224 kWh per HDD, a reduction of 26%, proving that less energy was needed to heat the building than before the installation of Hydromx.

Return on Investment & Reduced Emissions

Using the total number of HDD in the 2013/14 heating season and the rate of energy consumption, an annual saving of 218,000 kWh was calculated for the accommodation block. In monetary terms this meant the energy bill was slashed by £6540 (3p/kWh) with a return on investment in less than 2 years.

The energy efficiency achieved by Hydromx in the building also resulted in reducing carbon emissions by 44 tonnes CO₂ per year, which is equivalent to the CO₂ absorbed by over 700 trees.

Huge Savings Across the Estate

Following the 2014 announcement of the Energy Savings Opportunity Scheme (ESOS)¹ all qualifying organisations must carry out their first ESOS assessment by 5 December 2015 and identify practicable and cost effective energy saving opportunities. Organisations with large estates, like this Student Accommodation provider, will see huge opportunities to save energy with Hydromx.

Hydromx is an important tool in the fight to reduce energy demand and cut carbon emissions, it is quick to install, requires no changes to the heating system or the building, and delivers immediate results.

"Hydromx is a very practical and cost effective energy saving opportunity".

¹ Government established the ESOS to implement Article 8 (4-6) of the [EU Energy Efficiency Directive \(2012/27/EU\)](#). The [ESOS Regulations 2014](#) give effect to the scheme.