



**HOMERTON COLLEGE**  
UNIVERSITY OF CAMBRIDGE

## Sky-high energy prices means improving heating efficiency is more important than ever before

Traditionally this is done through expensive & disruptive building material upgrades. However, the EcoSync solution can be installed in a matter of hours, delivers results, and eases operational headaches instead of creating them.

Homerton College, a constituency college of the University of Cambridge, are one of the many Higher Education institutes who have deployed the EcoSync solution to address the heating challenges faced by thousands of organisations up and down the country.

With EcoSync:

- Organisations can **Stop Heating Empty Rooms**, reducing their energy and carbon usage drastically.
- Building occupants have the power to easily fine tune the room temperature to a level that suits them, increasing the comfort of faculty, students & staff.
- Avoid the costs, disruption, and complex procurement processes associated with major insulation instalments.
- The solution can be installed in as little as a single morning, without need for specialist trades or building adjustments.
- Reduce Building Managers' workloads, the smart devices are constantly analysing data points and patterns to identify potential issues and send automatic warnings, before complaints come in.

Homerton installed EcoSync's intelligent devices in preparation for the Michaelmas academic term (Oct 4th-Dec 2nd). **390 maintenance-free intelligent TRVs**, connected via **5 ethernet gateways** (with 4G backup), gave full individual control to **276 rooms** spanning across **4 floors**. The whole installation was completed flexibly by Homerton's facilities team after EcoSync training.



“ I am getting comments from users saying how much more comfortable the temperature is in the corridors, when previously it always felt way too hot and overheated ”

**Shaun Fordham - Building Services Manager, Homerton College**

“ With the reduced heat consumption since the introduction of EcoSync here at Homerton College we are now running each of our two boilers on alternate weeks when we previously used to run both together on full power ”

## The Results

From 1st Sept - 3rd Dec 2022, **Homerton College saved:**

Heating-related energy usage has reduced **40%**. This is an EcoSync figure based on the assumption that their manual TRVs were set to mid-level (3/5). Homerton believe this is a conservative figure, and the actual savings could be as high as **60%**, stating that their radiators were routinely set to full power (5/5), prior to EcoSync being installed.



**39.28 MWh of energy**

That's the equivalent of



preventing **7.18 tonnes** of carbon being released into the atmosphere



**342 trees** absorbing carbon for a year



## How are savings calculated?

### Baseline Consumption Methodology

EcoSync create a digital twin of every room in your building. This is a computer model that matches the behaviour of your room, and can be tested in different scenarios.

The digital twin takes into account your boiler settings, external weather information and data from the smart devices to accurately predict how much energy is needed to heat a room at different temperatures.

The model is used to compare the calculated energy consumption to a simulated baseline. To simulate a baseline, the digital twin is utilised to calculate how much energy would be used with a standard radiator valve set to mid-level (3/5), with everything else being the same.

The digital twin is always improving, and gets increasingly accurate over time as more and more data is gathered on the specific performance factors and unique aspects we analyse your buildings.

### Energy Consumption Methodology

EcoSync devices measure and record 32 data points, including air temperature, hot water temperature and valve position every 5 minutes, in every radiator.

These are combined with even more data about the building and the ambient weather conditions to calculate how much heating energy flows through each radiator, through convection and conduction, over the course of a day.

These energy consumption measurements are then calibrated from any gas meter information you may have provided us and the room areas from your floor plan.

The energy consumption is then compared to the baseline consumption and the savings figures are derived from the difference between the two measurements

## 3 Point Validation

### Heat Meters

In St. Peters College, we compared to a heat meter which directly measured the heat output of the boiler. The heat meter measured all hot water usage, including the hot water required for showers and kitchens, so did not directly tell us heating energy consumption. However, we used the months of term time outside the heating season to estimate the breakdown of energy consumption between heating and hot water, and found it was:

45% heating - 55% hot water

Applying this breakdown, we found that their heating energy consumption was 18.64 MWh from January to March 2022, and our digital twins predicted 19.85 MWh over the same period – **an accuracy of 94%**.

### Control Building

From January to March 2022, Corpus Christi College installed EcoSync in one of two identical student accommodation buildings. They found that their gas bill was considerably lower in the building with the EcoSync solution installed, compared to the building without:

**Jan - 27.3% saving**  
**Feb - 32.4% saving**  
**Mar - 45.9% saving**

We had initially predicted a saving of 27% using conservative assumptions about how our technology could be used, and were pleased to see that users and building managers quickly adapted to achieve even better results.

### EPC Comparison

At Lady Margaret Hall College, we used our digital twins to estimate the total energy consumption, without the use of the EcoSync solution:

285 kWh / m<sup>2</sup> per year  
(heating & hot water)

We compared this to the Energy Performance Certificate, which stated a total energy consumption of:

309 kWh / m<sup>2</sup> per year  
(heating & hot water)

**An accuracy of 92%.**