

Case Study

Energy Monitoring of LED Lighting



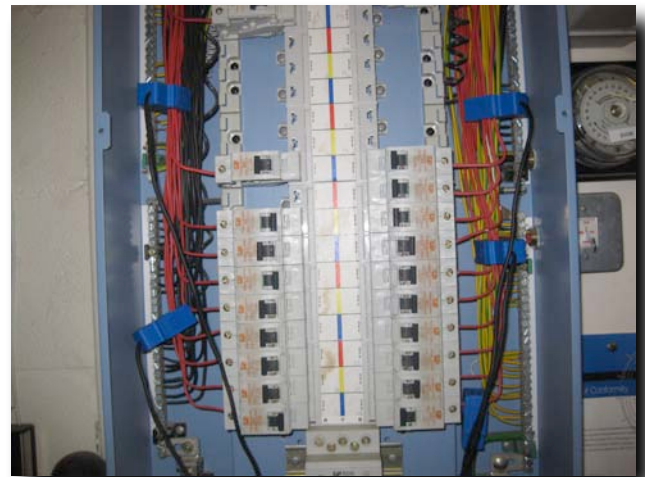
April 2010

Project Brief:

In April 2010 Goldsmiths Ltd considered changing their current lighting system of halogen bulbs to LEDs in order to reduce energy consumption and running costs. The potential lighting provider, Green LED Ltd employed the Zero Trace Team to conduct an energy survey in conjunction with a trial being conducted in store to check lighting levels and colours. The aim of the survey was to provide an independent assessment on the criteria;



- To monitor energy usage before and after the installation of LED lighting in order to prove whether the installation of LEDs in the retail outlet would save energy and therefore reduce electricity costs in comparison to the current system.
- To provide data showing exactly what annual savings (if any) could be made by installing LED lighting in the retail unit.

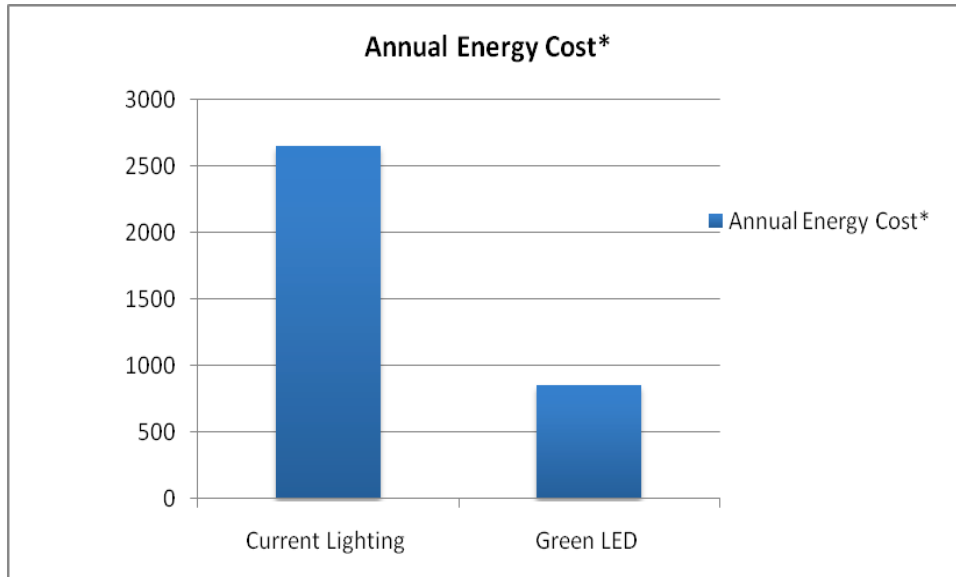
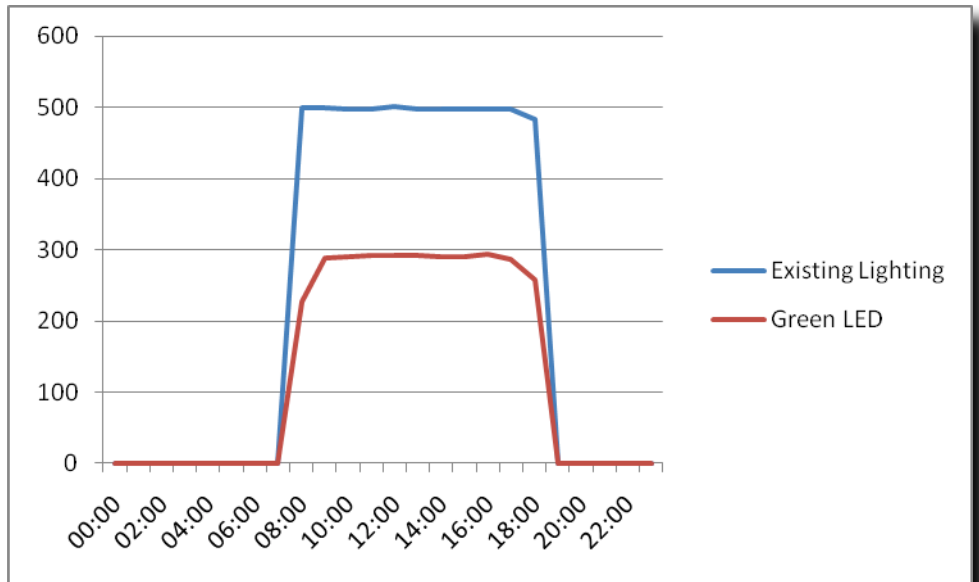


Assessment:

To carry out the assessment, energy monitoring equipment was installed on site for two weeks. In order to establish a baseline for the test, the first week was spent monitoring the energy consumption under the present lighting design. After the first week LEDs were installed in a selected area of the shop and monitoring continued for another week. Through analysing the data and making comparisons we were then able to ascertain the potential savings. For the purpose of the trial one perimeter display cabinet and four out of a circuit of sixteen halogen down lighters were retrofitted to LED bulbs.

Analysis:

Data was produced for the different lighting circuits and displayed in graphs such as can be seen here. The data was studied to find the exact difference the LED lighting made in comparison to the existing halogen system, and then extrapolated to produce estimates for annual consumption and savings.



Results:

The main conclusion of the study was that an energy reduction of 68% was achievable by installing LEDs to display cases and down lights. This equated to a potential 27.2% reduction on total electricity consumption, resulting in a saving of over £1800.00 per annum.

	Current Lighting	Green LED
Weekly Total (wh)	425402.79	136128.89
Annual Total (wh)	22120945.29	7078702.49
Annual Total (Kwh)	22120.95	7078.70
Annual Energy Cost*	2654.513435	849.442991
Financial Annual Saving from Lighting		£1,805.07
% Annual Saving from Lighting		68.00%

* Energy costs based on 12p/Kwh