

Case Study #31

Voltage Power Optimisation



Savings observed at Greenwich

Why it is interesting: How **powerPerfector** balanced the need to make energy savings with the need to protect the historical and cultural significance of the University estate.

The University of Greenwich

Annual Savings

No. of units:	8
kWh:	7.75%
CO ₂ ,kg:	446,600
£:	63,110
ROI:	22%

Don't take our word for it...

*"The analysis of our savings using IPMVP, was a big attraction of the **powerPerfector** offering. It is rare that suppliers submit their projects to such robust and rigorous scrutiny."*

Nigel Heugh
Building Services Manager
University of Greenwich



UNIVERSITY
of
GREENWICH

Further information

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The historical buildings housing many of our 'red brick' universities can exacerbate the energy saving challenge. Certainly that is the case at Greenwich University, where the largest campus



is centred on three baroque buildings designed by Sir Christopher Wren at the end of the 17th century.

Described by The Independent as "more breathtaking than the Versailles of Louis XIV", the University is set within 'Maritime Greenwich' a world heritage site - home to the National Maritime Museum, the 17th century Royal Observatory, The Royal Palace, Royal Naval College and Royal Park.

Nevertheless, like all of our public sector organisations, the University must play an active part in the fight to reduce carbon emissions - setting a reduction target of 30% by 2016 and 40% by 2020 (against the 2009/10 baseline). The challenge therefore is how to balance the need to make energy savings with the need to protect the historical and cultural significance of the University estate.

As part of this process the University has been working with the Carbon Trust to measure its carbon footprint; to set targets for reducing carbon emissions; and to formulate a plan to deliver the target.

University's sustainability vision

The University of Greenwich will be a sector leader in sustainability, a beacon for research and innovative teaching and a leader and partner for local business and enterprise. The university will move to a low carbon estate through efficiency improvements, rationalisation of space, and innovation and changes in its working practices.

An early initiative was the introduction of Voltage Power Optimisation (VPO) across eight supplies, seven buildings and three campuses.

"We are restricted with the types of implementations we can install. Generation, such as wind or solar energy, is out of the question at the Greenwich campus, because of the designation," said Nigel Heugh, Building Services Manager at the University of Greenwich. *"All of our efforts are focused on energy reduction measures."*

"We have achieved excellent results from the introduction of Voltage Power Optimisation, it has been the single most effective energy saving measure we have introduced," added Nigel Heugh.

Used extensively with Higher Education, **powerPerfactor's** voltage optimisation technology regulates and controls the energy supplied at source to lower consumption and therefore reduce electricity bills, protect vital electrical infrastructure and help equipment work more efficiently for longer.

Three units were installed at the Avery Hill Campus, three at Greenwich Campus and a further two at the Medway Campus. Analysis of the installations

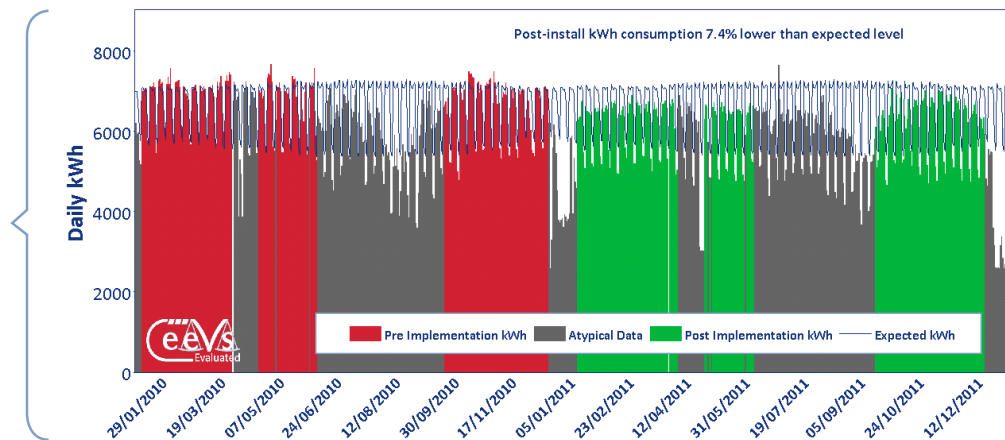
indicates that the electricity consumption at the University has been 7.75% lower than the expected levels. This equates to a projected annual carbon dioxide emissions saving of approximately 446,600kg and an annual financial saving of £63,110.

The standard that **powerPerfactor** utilises for all of its energy saving measurement and verification is IPMVP - the International Performance Measurement and Verification Protocol. Originating out of the US department of Energy as a method of analysing savings under Energy Performance Contracts, IPMVP has quickly become recognised as the leading standard for measuring energy efficiency savings.

Such analysis is critical at education sites where the term time energy usage varies significantly from usage out of term. The graph below outlines the IPMVP approach to savings analysis at Greenwich University's Drill Hall and Pilkington Buildings.

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Greenwich University - Drill Hall & Pilkington Building Regression Analysis



History in heritage sites

London has four World Heritage Sites, **powerPerfactor** is in use across three of them. The installation of two **powerPerfactor** units at Westminster Abbey ensures that the supply is more efficient and secure. It will cut bills by over 12 per cent, saving approximately £8,400 a year. Carbon emissions are reduced by over 50 tonnes every year.

There are also two units installed within the Tower Of London, the most popular paid for tourist attraction in the country. The Tower is saving 11 per cent in kWh consumption, equating to £26,555 and a reduction in CO₂ emissions of 168 tonnes every year.