

Case Study #13

Voltage Power Optimisation



Electric performance

Why it is interesting: It has long been asked of us, how do we know that the 'grid' won't change the output from 242V down to 220V? The answer is that the National Grid is a client and advocate of **powerPerfector** technology.

National Grid

Annual Savings

kWh:	211,157
CO ₂ kg:	118,766
£:	17,693
Av. saving %:	11.8
NOx kg:	250

The distribution voltage on the grid has historically been 242V on average. **powerPerfector** brings that voltage down to 220V, conditioning the power and delivering energy, cost and carbon savings.



The cost of an overhaul to the networks that supply our homes and businesses is prohibitive. As such, National Grid will continue to juggle a 242V grid.

This is a task that is becoming increasingly difficult, as more forms of sustainable power are added to the grid.

Whilst in the past the National Grid had the task of prioritising and balancing the UK's electricity demand using the traditional sources of nuclear, coal, gas, hydro-electric and oil generation, now a raft of wind farms, CHP, biomass plants and domestic micro-generation make the job infinitely more complicated.

The intermittent nature of these forms of energy means that, when there is a drop in generation from renewables, other forms of generation are called upon to fill the shortfall. This switching between sources, to ensure a constant supply of energy, has a knock-on effect on the quality of the power supplied to our homes and businesses, increasing the number of transients or spikes on the supply.

What is more, all electric components create harmonic distortion. The more gadgets we have the more harmonics are created locally.

Power spikes and harmonic distortion can damage sensitive equipment and increase the regularity with which organisations have to carry out maintenance and replace electrical equipment.

National Grid is a 24/7 operation and **powerPerfector** protects the organisation from these power quality issues, ensuring that the

nationalgrid

Further information

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difficult task of juggling the nation's energy supply can continue uninterrupted.

National Grid in numbers

In January and March 2010 three VPO® units were installed at the Windsor Street, Hollinwood and Slough sites.

Our analysis of the Slough site indicates that VPO® has reduced energy consumption by 11.8%. The savings achieved by the **powerPerfector** project at the Windsor Street site are between 12.5 and 16.8%, whilst savings of 10% were achieved at Hollinwood.

The **powerPerfectors** are ensuring that National Grid operates at a higher level of efficiency, as well as benefiting from improved power quality and protection from common transients.

All of the savings figures were evaluated using the International Performance Measurement

and Verification Protocol (IPMVP), the world's only measurement and verification standard for energy saving projects.

powerPerfector were the first energy efficiency technology provider in the UK to use this international standard and all our projects are now evaluated by EEVS Insight.

powerPerfector is part of a jigsaw of measures introduced within National Grid. As a responsible business, it pro actively manages existing and future environmental risks and impacts.

The 2010/11 Environmental Report shows that the company achieved a 51% reduction in scope 1 and 2 greenhouse gas emissions compared with its 1990 baseline.

The trial of **powerPerfector** at three sites has led to further opportunities being explored within the National Grid.



There are a range of case studies and client testimonials available on our website, please visit www.powerperfector.com for further information.