

Voltage Power
Optimisation (VPO)[®]

Prepared for:
Theatrical Management
Association

‘the foundation of every
energy efficiency
programme’



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VPO – redefining power supply



- Ventilation (HVAC)
- Lighting / IT

**Supply
Optimisation**

**Demand
Optimisation**

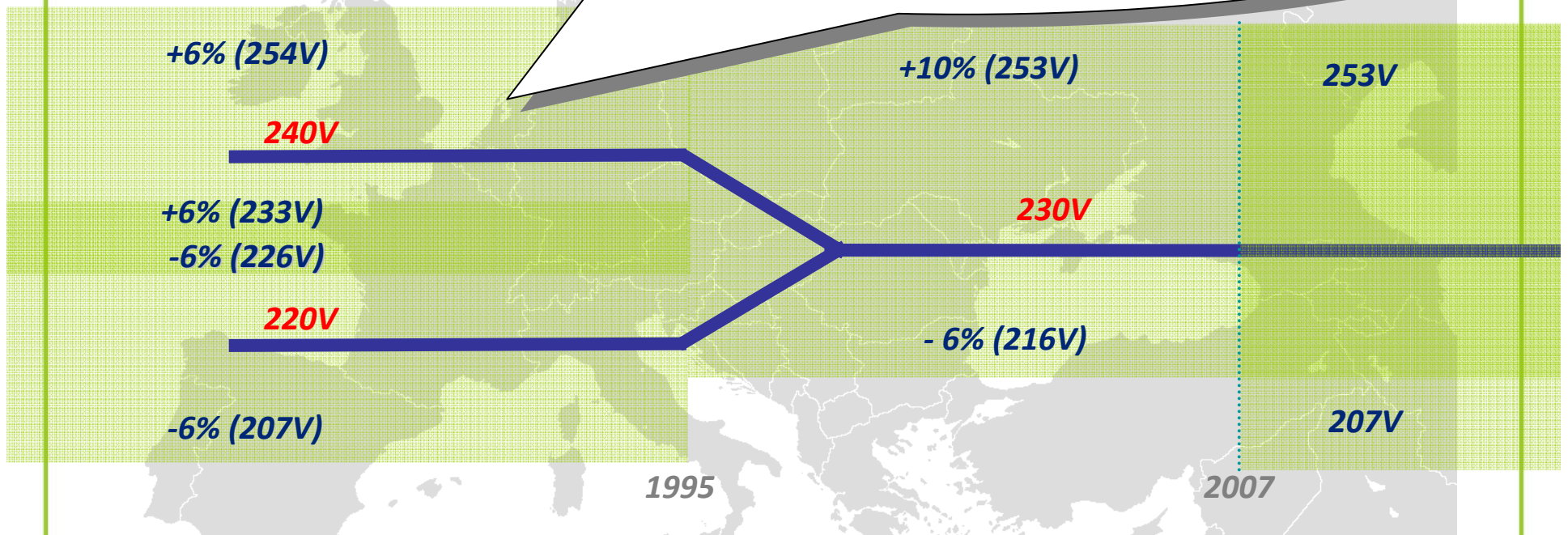
- At-source Voltage Power Optimisation (VPO)[®]
- Ensure all equipment runs efficiently



European Harmonisation

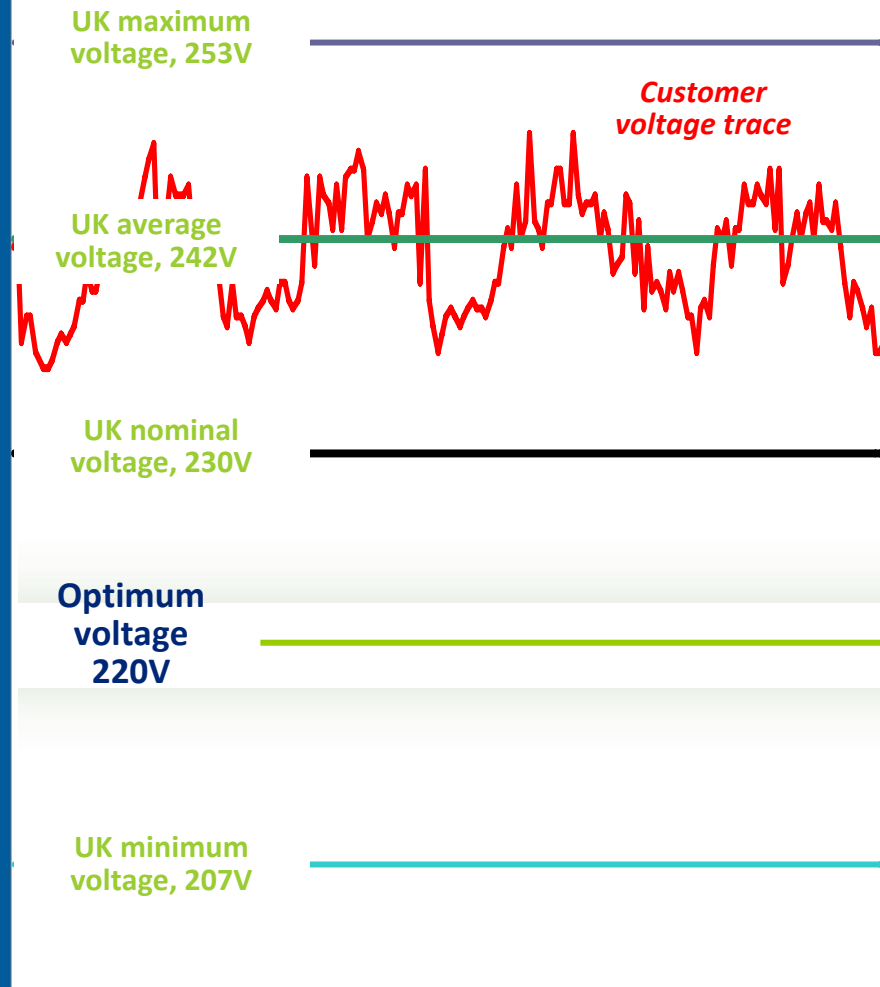


“A 230V linear appliance used on a 240V supply will take 4.3% more current and will consume almost 9% more energy ...” and “... only achieve 55% of its rated life”



Permissible supply: 207V to 253V (BS EN 50160:2007)

Over voltage...



Transients

- Spikes are on the increase and can be devastating

Harmonics

- Disrupt sensitive electronic equipment and reduce efficiency of HV transformers

3-phase imbalance

- Reduces motor efficiency and leads to triplen harmonics

Power factor

- Poor power factor is a result of high reactive power, and can result in additional penalty charges

Poor Power Quality



Buckinghamshire
County Council

DEFRA CSL



Units at the
Distribution Centre



Land Registry



Installed at more than...

250 private companies, including

- Retail
- Hospitality
- Financial services
- Manufacturing
- Offices and data centres
- Many others

126 councils (includes 23 schools)

56 HE / FE facilities (all types)

16 government agencies



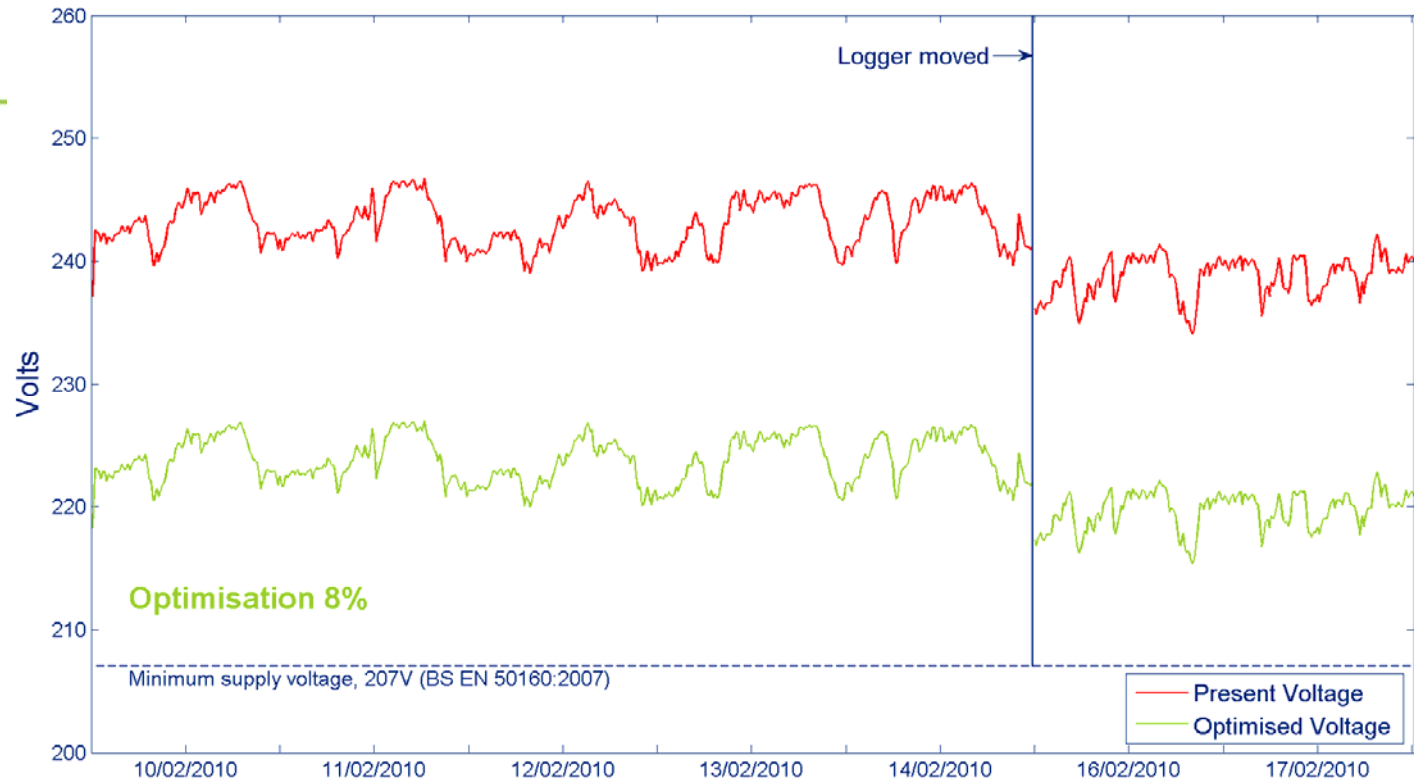
Proven 4 step process



Using your data we estimate your savings

| Cost/Value Estimate | | Example Site | | | | Next Step: Voltage Logging | |
|---------------------------------|--------------------------|---|-------------------|---------------------------|------------|---------------------------------------|---------|
| Optimisation setting | 8 = 13 | Estimated Saving % | | | | No On-Going Maintenance Costs | |
| pP Unit selection | pP-280kVA / 400A 5,6,7,8 | | | | Total Cost | £19,146 | |
| No. of units | 1 | | | | | Unit Cost | £14,007 |
| Maximum Demand in kVA | 220 | Estimated installation and delivery cost | | | | £5,139 | |
| Total kWh over last year | 980,000 | | | | | | |
| Total bill in £ over last year | 73,500 | | | | | | |
| Energy cost in pence per kWh | 7.50 | Including CCL | | | | | |
| Load factor % | 50.85 | | | | | | |
| kWh saving p.a | 127,400 | | | | | | |
| Salix financing indication | £18.77 | Capital cost per tonne of CO ₂ saved must be less than £100 to qualify * | | | | | |
| | pP savings % | pP savings £ / hour | pP savings £ p.a. | No. of months for payback | % ROI | Annual CO ₂ saving (kg) | |
| SAVING FOR THIS INSTALLATION | 13.00 | 1.09 | £9,555 | 24 | 50 | 69,306 | |
| | 12 | 24 | 36 | 48 | 60 | Five year CO ₂ saving (kg) | |
| Cumulative savings over 5 years | £9,555 | £19,110.00 | £28,665.00 | £38,220.00 | £47,775.00 | 346,528 | |

Voltage logging and site load analysis



Voltage logging and load analysis to determine your voltage profile and optimisation opportunity and estimate savings



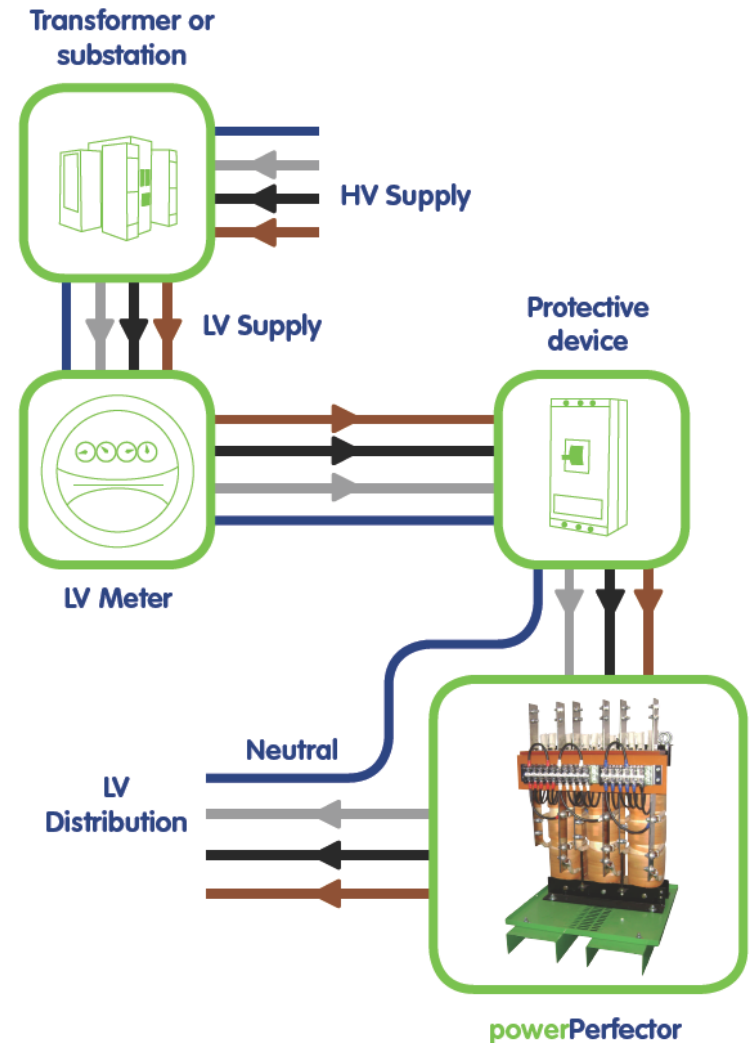
Engineering Excellence

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We survey your site(s) and provide a more detailed proposal

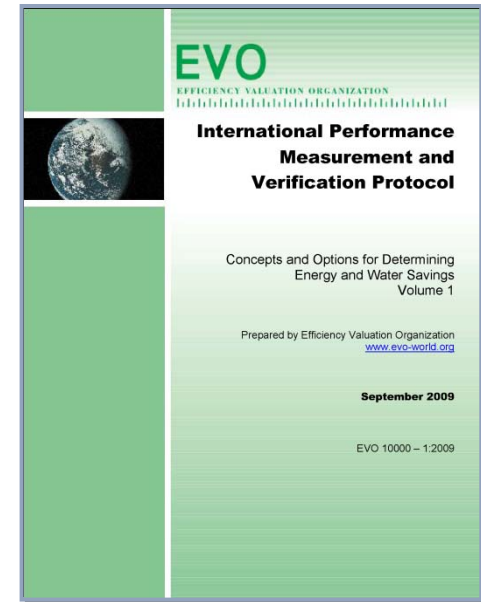
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Full project management of your installation to PRINCE2 methodology



Savings Analysis

- **powerPerfector** will objectively analyse your **half-hourly data** to **demonstrate** the savings attributable to your **powerPerfector**
- Pre-installation **baseline** report, then final report **3 - 6 months** after installation
- Robust analytical **methodology**
 - Based on the **IPMVP** (International Performance Measurement and Verification Protocol)
 - **Normalisation** for weather, production volume or other variables
 - Where possible, **power quality** improvement is assessed



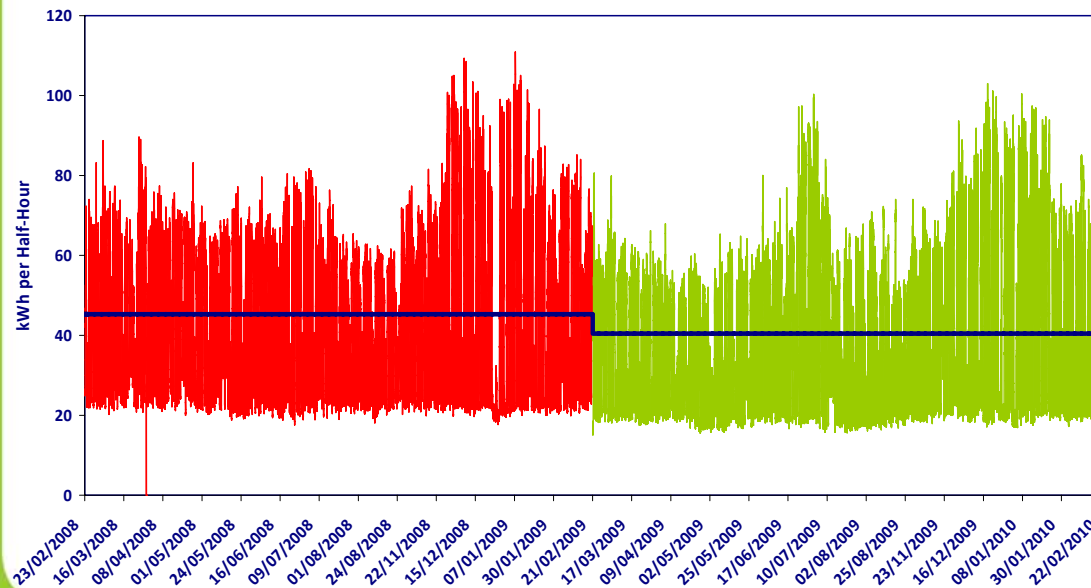
www.eevs.co.uk

Voltage Power Optimisation

Leisure

Nottingham Playhouse

Nottingham Playhouse - All Post-Data Year-on-Year



| | |
|------------------|-----------|
| Unit | 280kVA |
| Optimisation | 7% |
| kWh Savings | 11% |
| £ Savings p.a. | £5,700 |
| CO2 Savings p.a. | 42,800 kg |

- Nottingham Playhouse is one of the UK's leading production theatres
- Peter Moro designed the Grade II* listed Playhouse in 1963
- Savings of 11% proven through regression modelling, incorporating almost a full year of post-installation data.
- Case study available on request.

Some results

TATE

13% saving

**National
Portrait
Gallery**

10% saving

**ROYAL
DERNGATE &**

12% saving

**ASSEMBLY HALL
THEATRE**

**Tunbridge
Wells
Borough
Council**

12% saving



7% saving (average)



Customer benefits – totally risk free

Financial

- *Reduces energy costs by up to 20%*
- *Reduces price volatility risk*
- *Reduces maintenance/capital costs*
- *High ROI (25% – 100%)*

Legislative

- *Achieves your CRC obligations*
- *Reduce exposure to Climate Change Levy*
- *Provable, auditable energy and carbon reductions*

Environmental

- *Reduces energy waste*
- *Meets your CSR targets*
- *Reduces CO₂ emissions by up to 20%*

Technical

- *High efficiency and high performance*
- *Improved security of supply*
- *No maintenance required*
- *15 year warranty*

- **Free Evaluation**
- **Return on Investment Guaranteed**



Financing Options



- **power**Perfactor Leasing Options





power
Perfector
energy saving like no other