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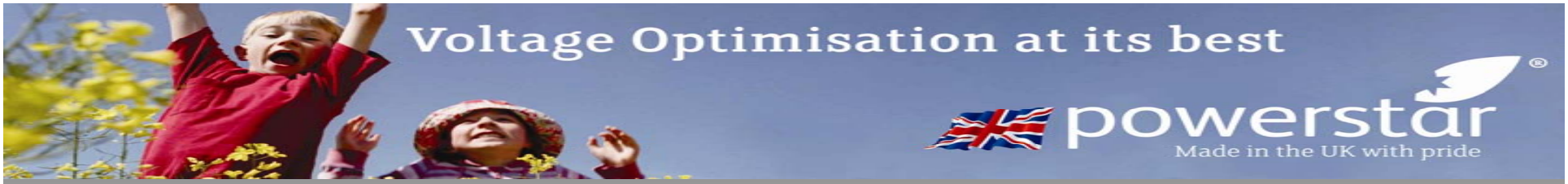
CYPRUS HOTEL ASSOCIATION

ΗΜΕΡΙΔΑ
ΠΑΣΥΞΕ - EMS

Τετάρτη 21 Οκτωβρίου 2009
Ξενοδοχείο AMATHUS BEACH, Λεμεσός

ΚΑΛΩΣΟΡΙΣΑΤΕ - WELCOME



ESTA
energy services and technology association

26.1%
Saving you up to ~~25%~~ of your Total Electricity Bill

ECO-FRIENDLY PRODUCT

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CARBON TRUST SALIX

PowerStar® is an approved energy savings system. This product may qualify for an interest-free Energy Efficiency Loan from the Carbon Trust.

EMSc (Cyprus) Ltd, 51A Athalassis Ave.
Office 301, Strovolos, Nicosia, Cyprus
Tel: +357 22 423142
Fax: +357 22 422642
Web: www.PowerStar.com.cy; www.ems-uk.org

PowerStar, 7 Genesis Park, Sheffield Road Rotherham, S60 1DX, UK
Tel: +44 (0)1709 836200
Fax: +44(0) 1709 821276
E-mail: PowerStar@ems-uk.org

PowerStar®

- ✓ Reduces energy consumption by up to ~~25%~~ 26.1%
- ✓ Reduces Harmonics by up to 90%
- ✓ Improves Power Factor by up to 20%
- ✓ Improves the life expectancy of your equipment
- ✓ Comes with 15 years warranty (10 year on MAX system)
- ✓ Comes with Guaranteed Savings
- ✓ Is Fully Designed and Manufactured in the UK
- ✓ Provides Absolute Voltage Phase Balancing
- ✓ ECA Can be claimed for PowerStar® M&T

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Intel 1997 Study

- The biggest study into voltage reduction technology (VRT) was carried out by Intel in 1997.

- Intel identified that by dropping the voltage from 3.3V to 2.9V (9% reduction) they could achieve a 20% reduction of the power consumption at the Microprocessor.

- Since this study all Intel microprocessors use VRT in their CPUs.

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IET (Institute of Engineers and Technicians) Recommendation on Voltage Optimisation

On average a 1% reduction in Voltage will produce a 2% reduction in Electricity Consumption.

The 17th edition of the Electricians ***Guide*** BS7671

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PowerStar®

PowerStar® is a uniquely designed triple wound Voltage Optimiser which reduces the Voltage from Low Voltage (415V) to even Lower Voltage (380-390V). Due to the design characteristics and high quality materials used, PowerStar ® has extremely high efficiencies, up to 99.91% at maximum load.

All PowerStar® components, including minor items such as the paint, are sourced from UK manufacturers. The PowerStar® design and any associated software are designed by us. We are highly committed to manufacture in the UK.

Our experience has clearly shown that for a 5% voltage reduction we expect at least 10% energy savings.

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PowerStar® Schematic

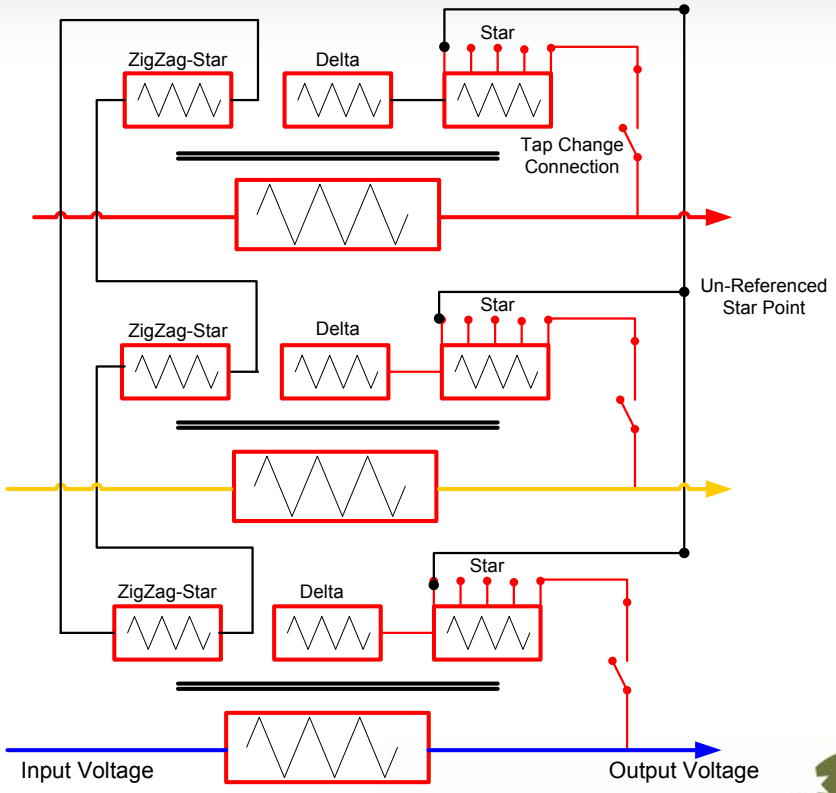
Triple wound System

1. Harmonic Trap – Star Configuration to Eliminate harmonics

2. Delta Configuration to further suppress all harmonics

3. Star Configuration to control voltage

1,000kVA has an impedance of 0.000178Ω and consumes a maximum of 175W



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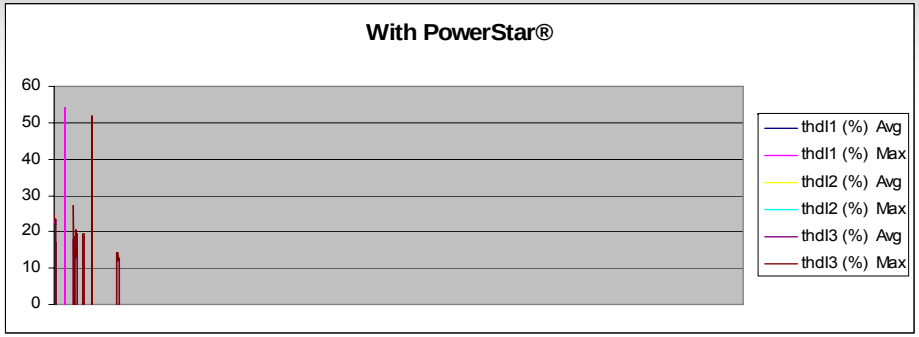
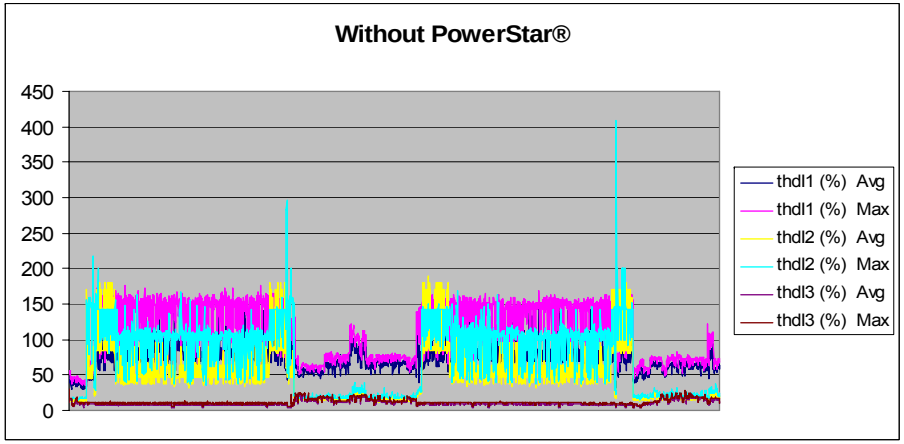
Harmonic Distortions

The effect of reduced harmonic distortion is shown below at a printing machine electrical supply, where the two traces are measured concurrently either side of the PowerStar® unit. Total current harmonic distortions were significantly reduced by 90%.





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How does PowerStar® work?

- Energy Savings through Voltage Reduction of your total Incoming Power.
- Fixed reduction and Absolute Controlled (**PowerStar® MAX**) systems available.
- The PowerStar ® system will automatically adjust the incoming voltage to suit your requirements (**PowerStar® MAX** only).

  The System will allow absolute controllability of the site voltage down to an accuracy of 1V. Therefore, a constant 225V will be provided if you wish to have a 225V. This is PLC controlled, IP addressable and can be adjusted if required at any time remotely (if necessary).

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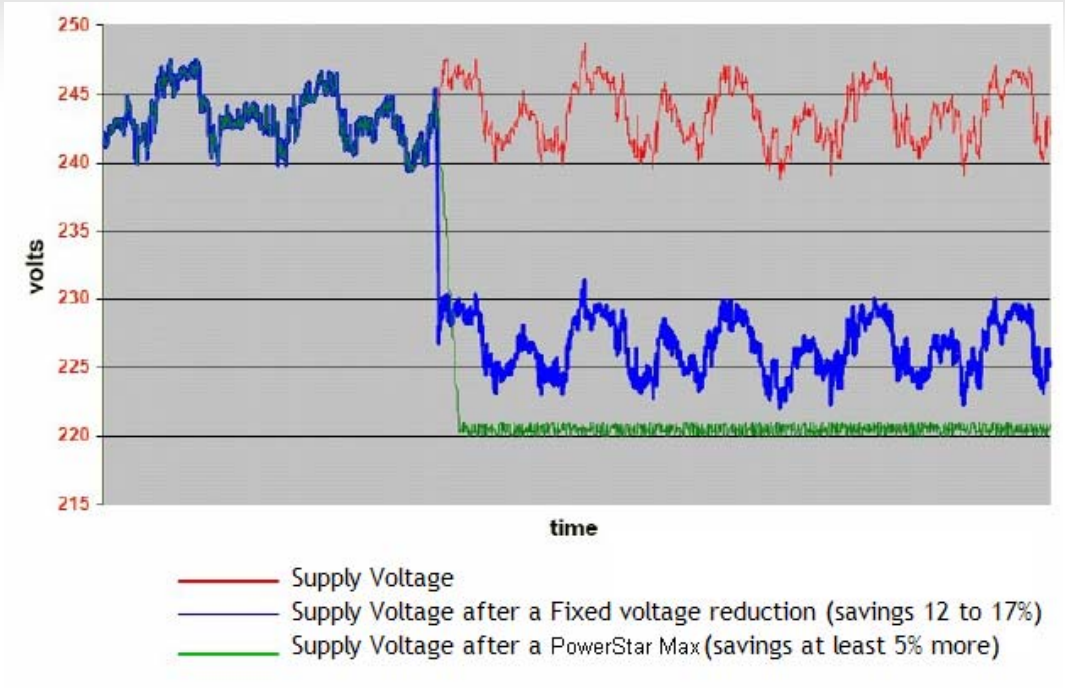
Fixed vs MAX Systems

The graph shows how the incoming voltage is controlled by a fixed voltage reduction and an absolute voltage control system. The PowerStar® MAX achieves on average 5% more savings than the Fixed Voltage reduction system. In some cases the additional savings can be 10% more that the Fixed Voltage reduction unit.



An additional advantage is simply that regardless of the incoming voltage, the PowerStar® MAX unit will maintain voltage at the pre-programmed level. The voltage level can be changed at any time by authorised personnel through any PC on the network and therefore further savings can be obtained by fine tuning the system after its installation.

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Does it work on everything?

NO it doesn't work on everything…

It works better on inductive loads (Motors, Lighting) than Resistive Loads and again depends on the loading of these inductive loads.

Therefore, it is important to understand the electrical loading characteristics of your site.

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Examples

- Voltage reduction will not achieve any savings in High Frequency (HF) Lighting.
- No savings on a kettle or similar resistive loads.
- Less savings on motors with VSD controls (4% to 8% instead of 12% to 20% with Fixed speed motors)
- But it will achieve significant savings on motors, especially if these are not loaded at 100% of their capacity at 100% of the time.

It is therefore important to consider all potential energy saving projects within your organisation as Power Optimisation is only one of the tools you can use.

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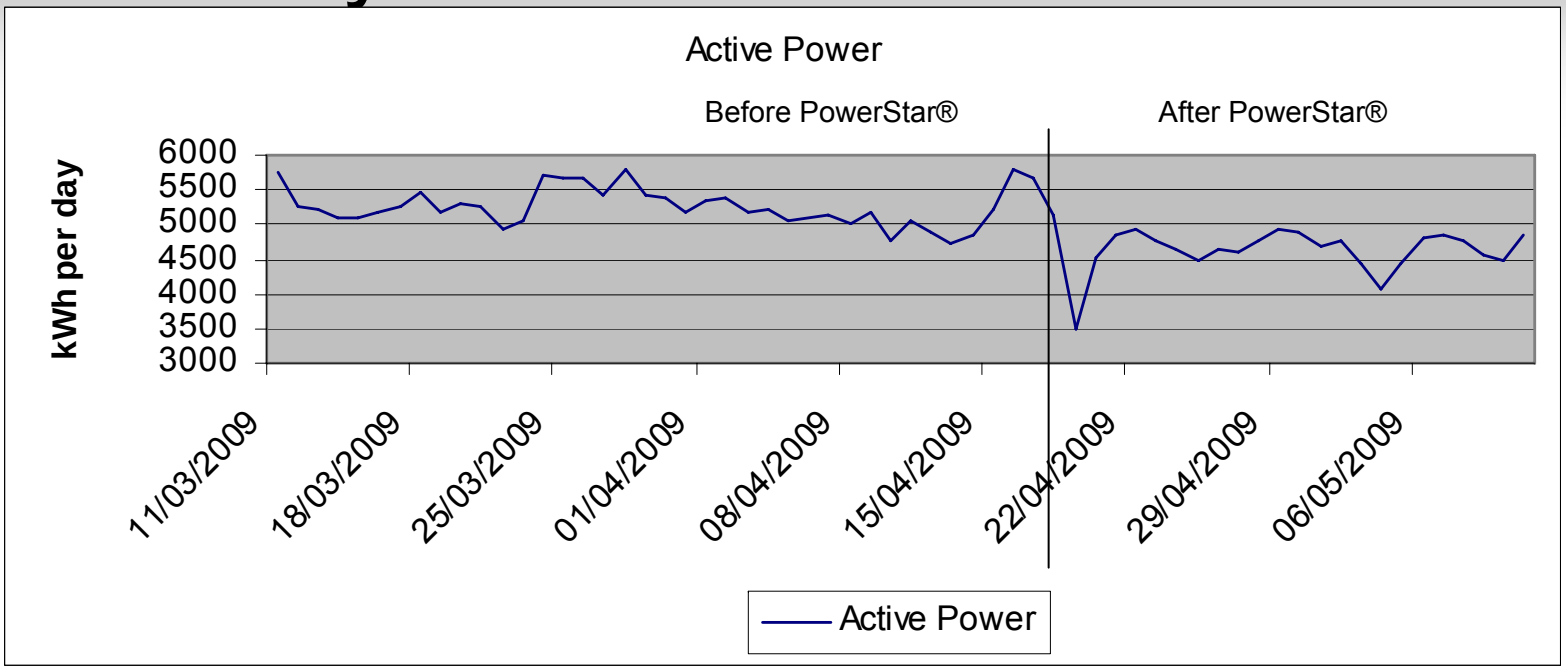
Holiday Inn – Heathrow



Payback: 1.7 years

Achieved savings=13.1%

Predicted Savings=10%

Holiday Inn HOTELS · RESORTS

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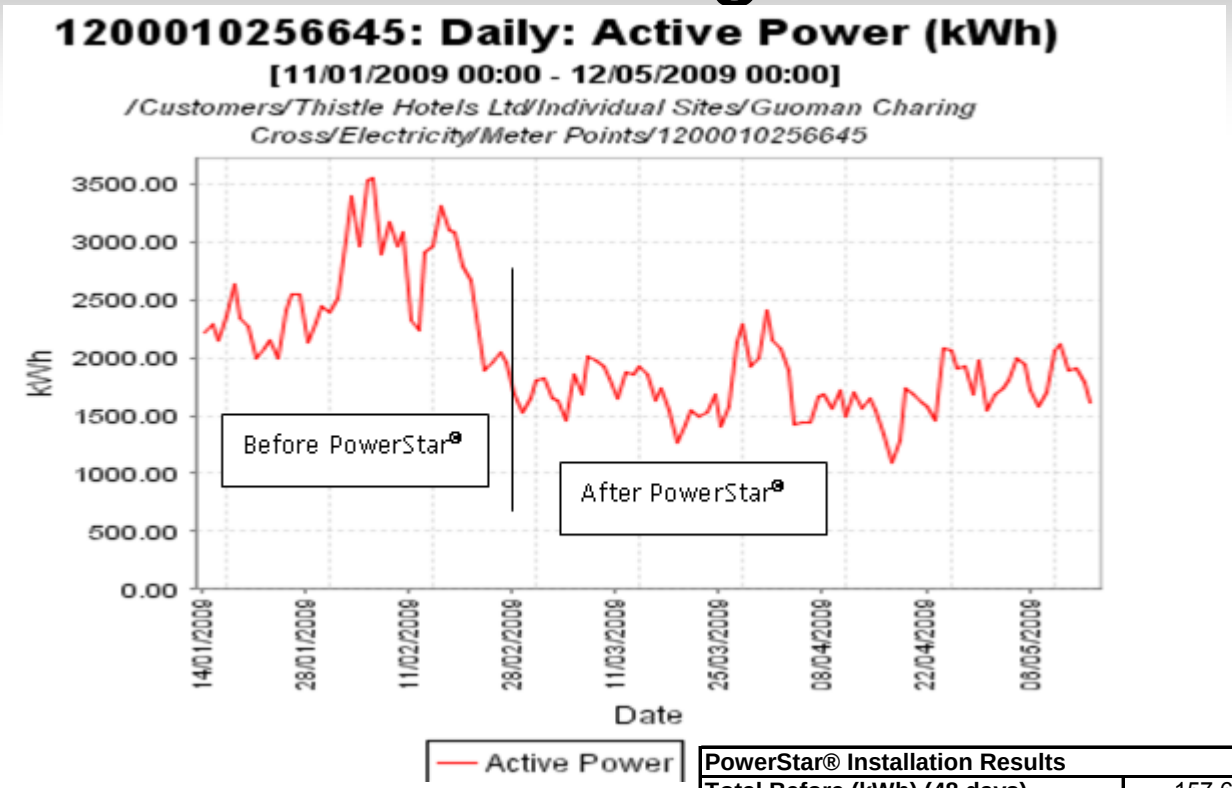
Thistle – Charing Cross



Payback: 1.3 years

Achieved Savings=10%

Predicted Savings=7.5%

PowerStar® Installation Results	
Total Before (kWh) (48 days)	157,629
Total After (kWh) (48 days)	141,646
Savings (kWh)	15,982
% Savings	10.14%
Extrapolated to yearly kWh	121,534
Annual Savings based on 8p/kWh	£ 9,723

thistle

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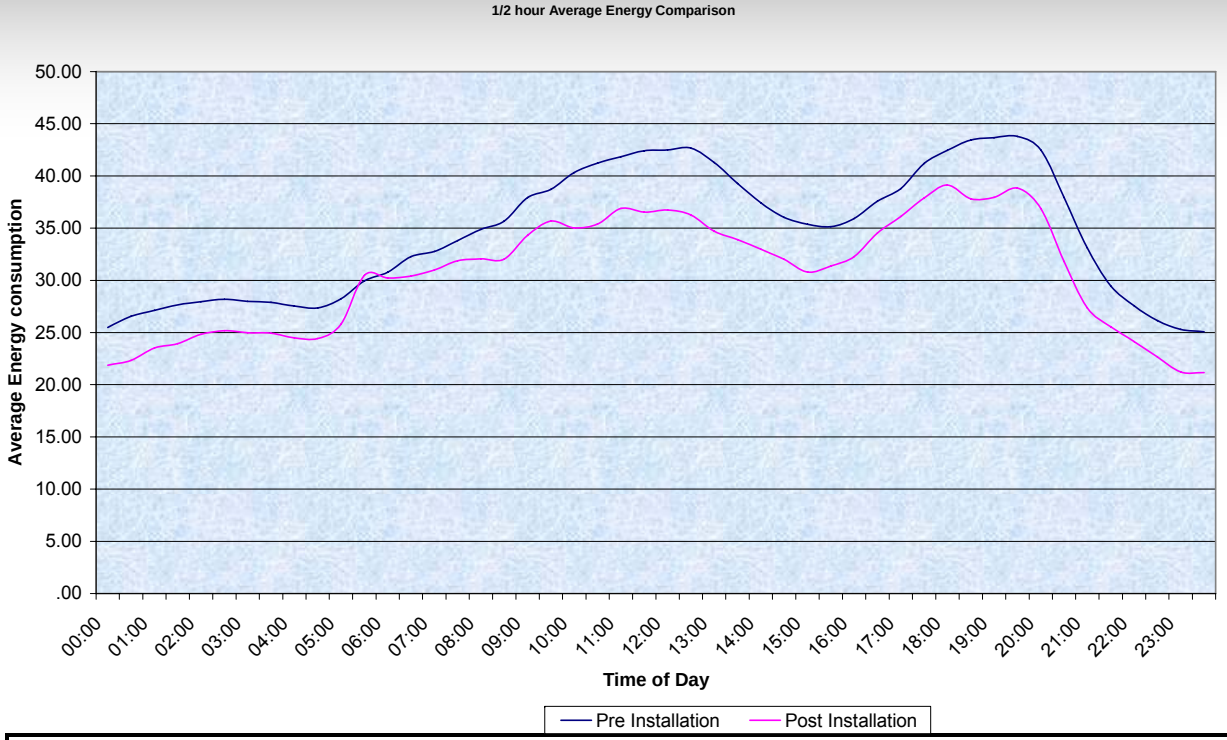
Hilton - Dundee



Payback: 1.7 years

Achieved Savings=11%

Predicted Savings=10%

Hilton

PowerStar With 13V reduction	Total	Midnight -7Am	7Am - Midnight
Average Daily kWh consumption before installation	1,658.1	394.9	1,263.2
Average Daily kWh consumption after installation	1,472.3	357.4	1,114.9
Daily kWh Savings	185.8	37.6	148.3
% reduction	**11.21%**	9.51%	11.74%
Extrapolated Annual kWh Savings	**67,828.0**	13,706.3	54,122.0
Extrapolated Annual £ Savings	**£7,596.73**	£1,535.11	£6,061.66

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Environment Agency

Payback: 1.0 years

Achieved Savings=22%
Predicted Savings=16%

PowerStar® at -20V	total	midnight to 7am	7am to midnight
Total before (kWh)	2,120.92	477.83	1,643.08
Total after (kWh)	1,648.27	380.73	1,267.55
Reduction (%)	**22.28**	**20.32**	**22.86**
Reduction (kWh)	472.64	97.11	375.54
Extrapolated (kWh)	172,515.04	35,443.71	137,071.33
Annual Saving	**£ 13,801**		

Environment Agency

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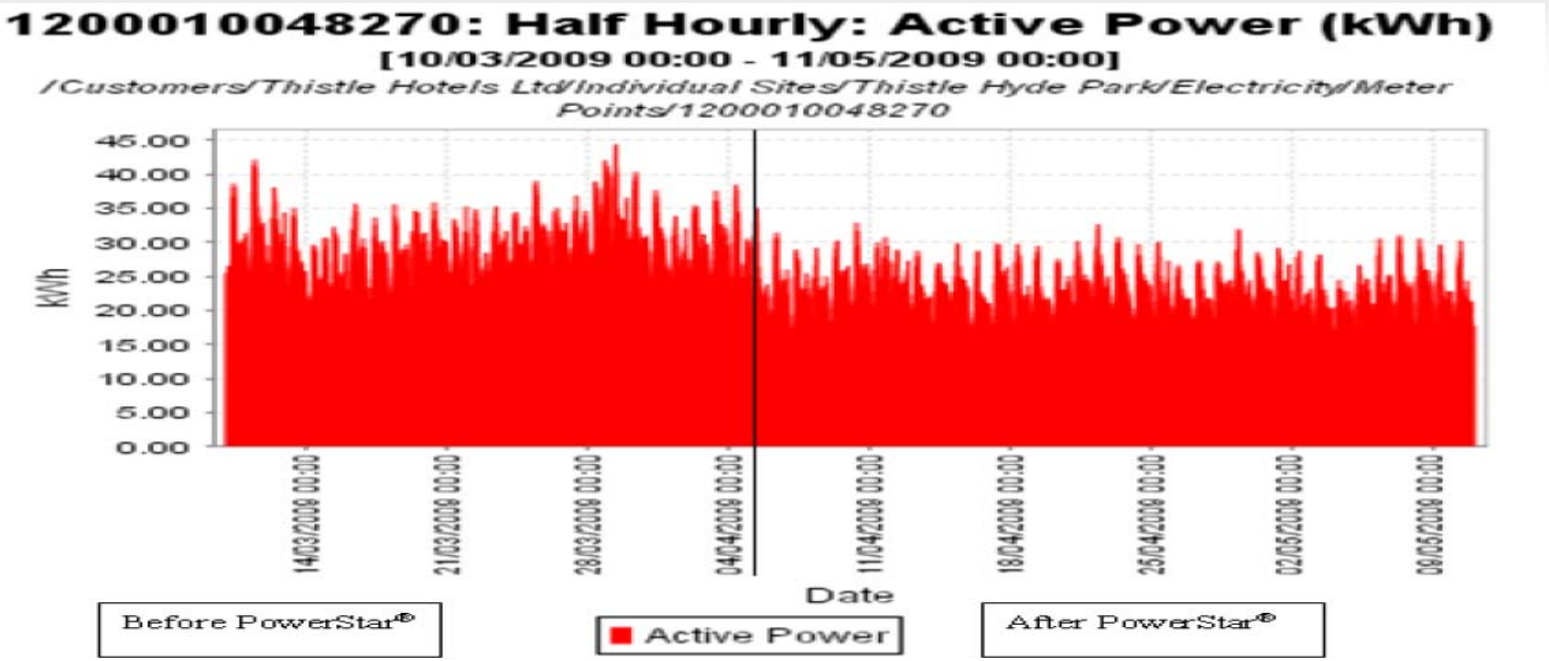
Thistle Hyde Park Hotel - London



Payback: 0.8 years

Achieved Savings=26%
Predicted Savings=17%

PowerStar® Installation Results	
Total Before (kWh) (24 days)	34355.3
Total After (kWh) (24 days)	25403.8
Savings (kWh)	8951.5
% Savings	26.1%
Extrapolated to yearly kWh	136137.396
Annual Savings based on 8p/kWh	£ 10,891

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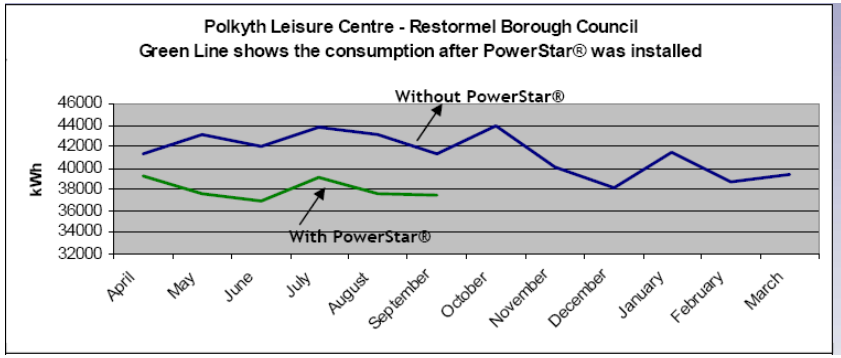
Case Study: Restormel Borough Council

"As part of our efforts to achieve the highest efficiency rating of our buildings, Powerstar® has been installed to three leisure centres within the council. The results have been exciting with an average of 12.5% reduction in the three leisure centres."

"As a direct result of the PowerStar® installation our efficiency ratings were excellent"
***Martin Perrow, Energy Manager* – Restormel Borough Council**



At Polkyth, a 4% voltage optimisation achieved savings of 11.5% in the total electricity consumption.

Payback: 1.4 years

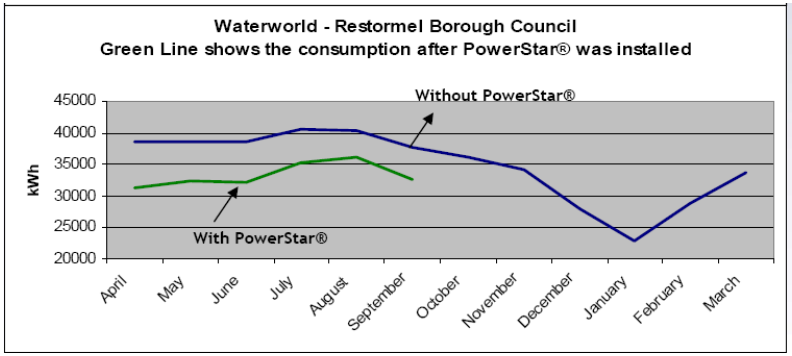
Achieved Savings=11%

Predicted Savings=7%

Payback: 1.0 years

Achieved Savings=13%

Predicted Savings=12%



At Waterworld, a 5% voltage optimisation achieved savings of 13% in the total electricity consumption.

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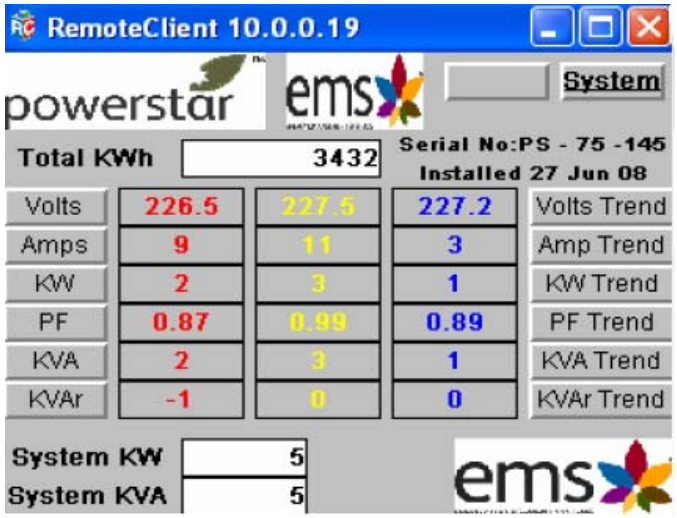
Case Study: Textile Industry Federation

"We have seen a reduction of 16.3% in our total electricity consumption since the installation of the Powerstar system. Our maximum demand has also dropped by 21% which is an additional saving in costs, we never calculated in the first place, hence further improving our pay back. EMS was impressive in all aspects from the initial meeting to final installation. The power shutdown of our building was only 15 minutes which caused no inconvenience at all." **Adam Mansell - BATC**



In addition to the direct savings achieved as a result of the Powerstar® installation, the online real time savings is excellent and has started to have significant effect on our consumption.

We are hoping that we can save an additional 10% of our total electricity consumption through the online Monitoring and Targeting System as provided as standard with the Powerstar® system. This can be clearly seen on the graph where our non-productive consumption has been reduced from 5Kw per hour to less than 1Kw.

We simply look at the Powerstar® data and shut down anything which is not essential.

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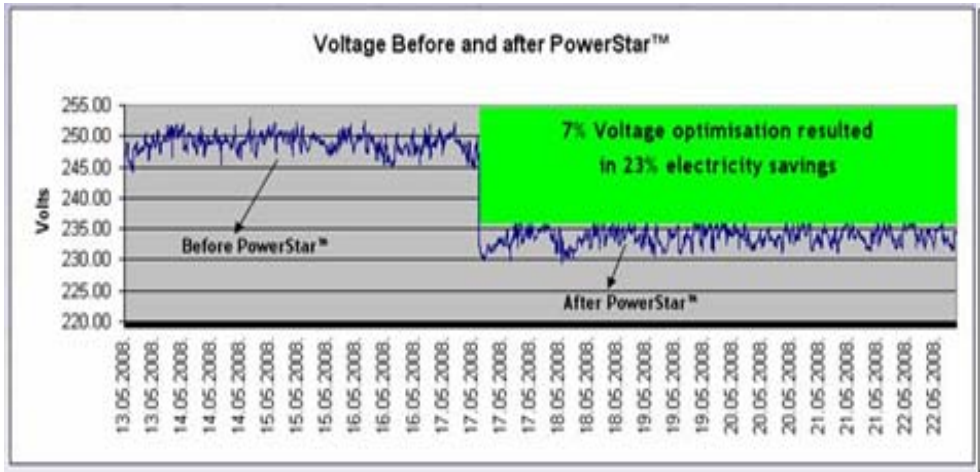
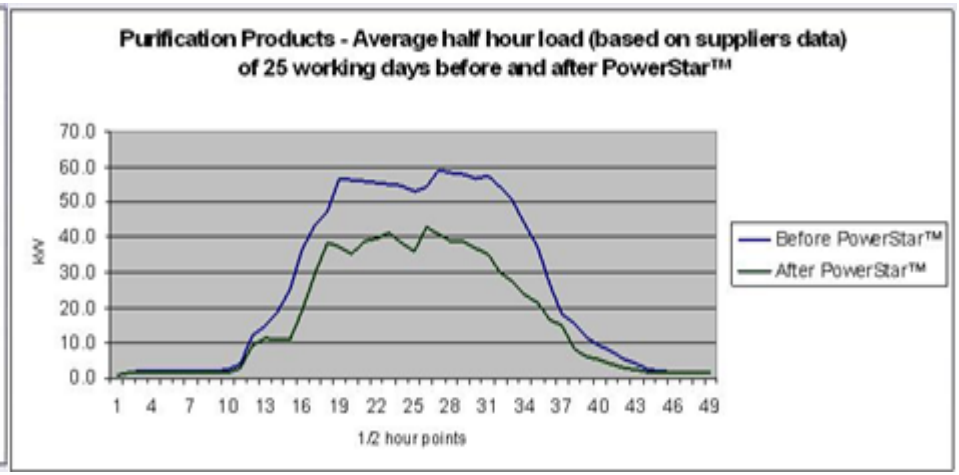
Case Study: Purifications Product Limited

"We have always strived to minimise the use of electricity and gas at our company; however most of our efforts related to non-productive items, such as lighting and heating. The installation of the Powerstar® system has reduced our total electricity consumption by almost a quarter (23%) and we are absolutely delighted" Quentin Mackenzie – Managing Director





A PowerStar® 300kVA unit powers the incoming supply to the factory. Power Consumption relates to motors running the paper line, Discharge Lighting, compressed air, extraction and small administration block.

Payback: 1.2 years

Achieved Savings=23%; Predicted Savings=15%

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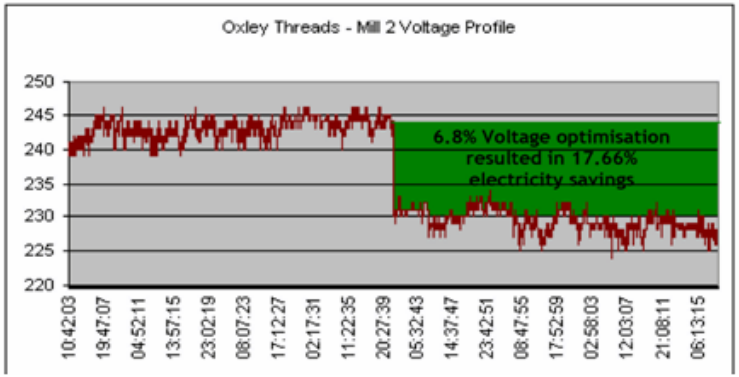
Case Study: Oxley Threads Limited

"Having the unit installed and working in less than 4 weeks from order did indeed impress us but saving £2,000 a month on our electricity bill was even more impressive" **Graham Hall – Production Director**



A 6.8% voltage optimisation through a PowerStar® 500Kva unit achieved savings of 17.7% in the total electricity consumption, saving the company £24,000 per year.

Oxley Threads Limited has been manufacturing high quality threads for 140 years and as part of their drive to reduce their environmental impact a PowerStar® was installed in January 2008 on the incoming supply for the spinning mill. Initial indications showed that a minimum of 12% potential saving to the total electricity supply was possible. The actual savings were 17.66% reduction of the total electricity consumption.

This data below shows the average consumption and savings based in 10 working days before and after the PowerStar® installation.

Before Powerstar; Weekly consumption = 45,456kWh
After Powerstar; Weekly Consumption = 37,427kWh

A PowerStar® 500kVA unit powers the incoming supply on Mill 2.Power Consumption relates to motors running spinning machines, Discharge Lighting, compressed air and extraction

Payback: 1.2 years
Achieved Savings = 17.7%; Predicted Savings = 14%

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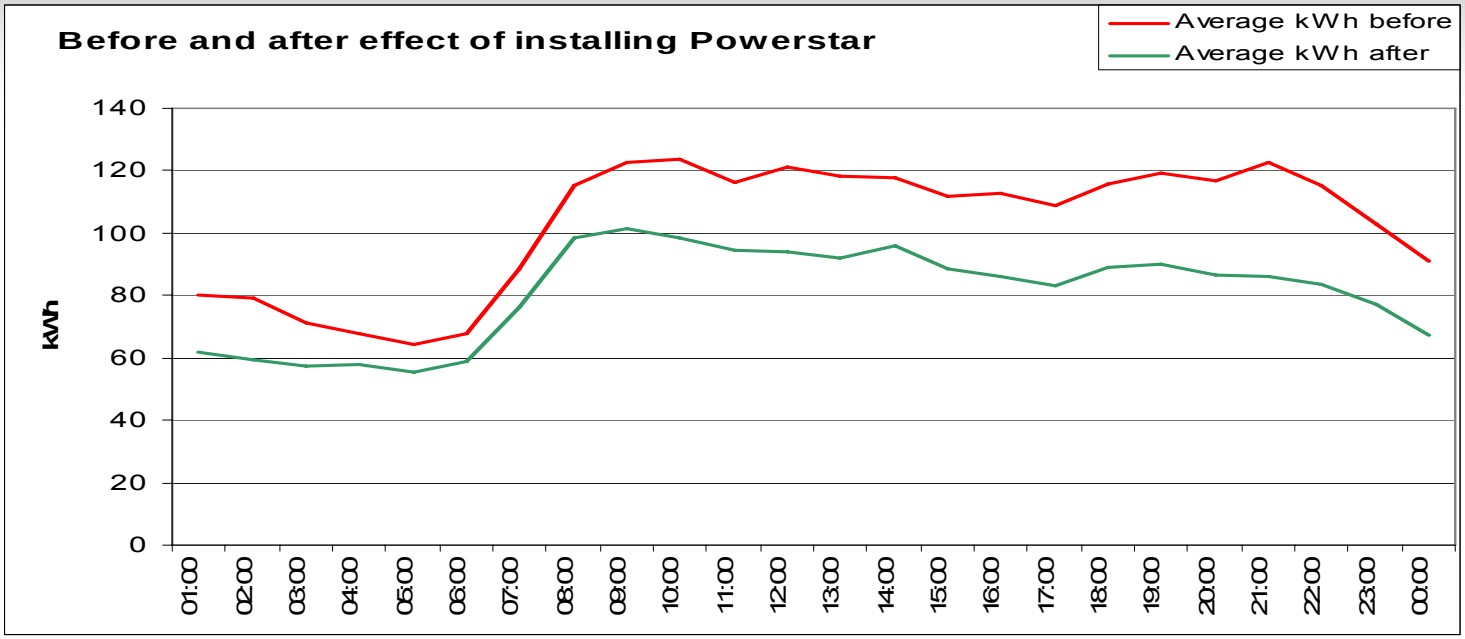
Saint Davids Hotel – Cardiff



Payback: 1.5 years

Achieved Savings=21%
Predicted Savings=15%

	total	midnight to 6am	6am to midnight
Total before (kWh)	2,472.19	430.73	2,041.46
Total after (kWh)	1,939.04	350.74	1,588.30
Reduction (%)	21.57	18.57	22.20
Reduction (kWh)	533.14	79.99	453.16
Extrapolated (kWh)	194,597.14	4,170.68	23,628.91
Annual Saving	**£ 15,568**		

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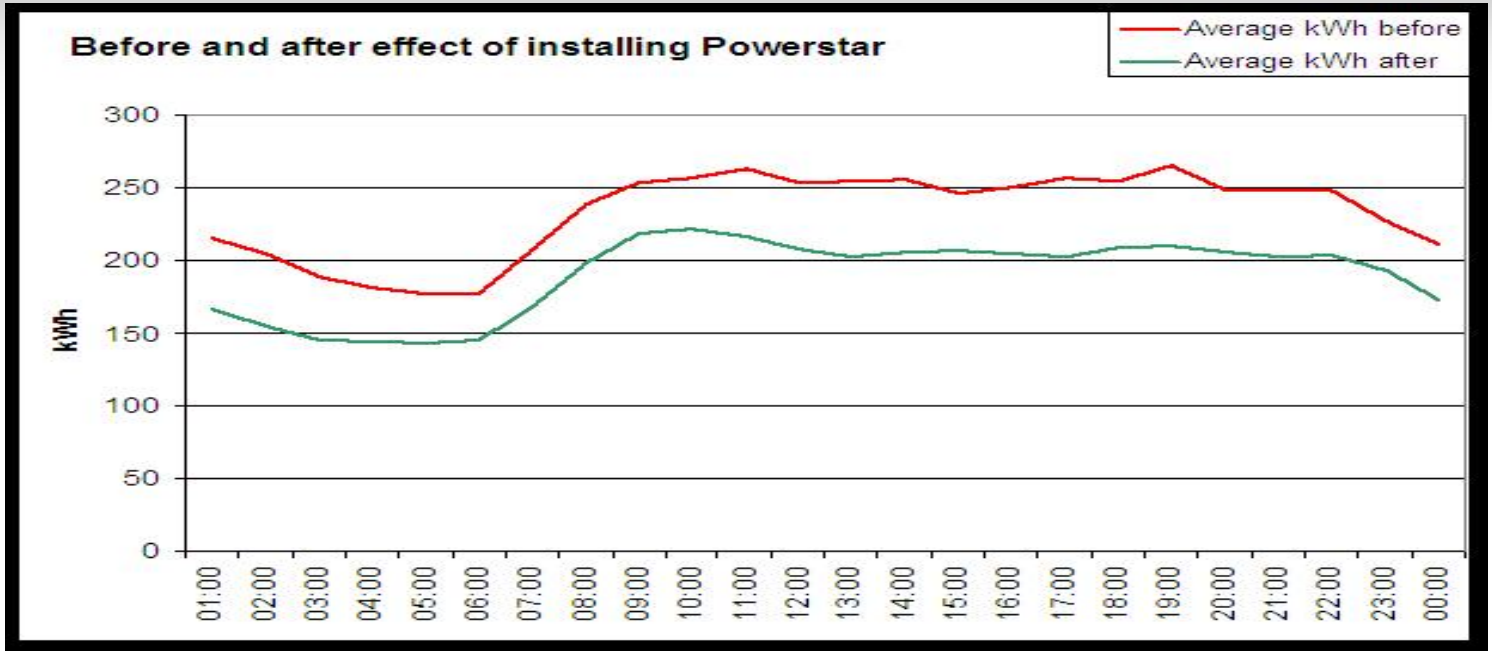
The Manchester Palace Hotel



Cost: **£41,000**

Savings: **£30,000**

Payback: **1.4 years**

Achieved Savings=18%
Predicted Savings=18%

	total	midnight to 6am	6am to midnight
Total before (kWh)	5,578.13	1,143.53	4,434.60
Total after (kWh)	4,546.40	899.81	3,646.59
Reduction (%)	18.50	21.31	17.77
Reduction (kWh)	1,031.73	243.71	788.01
Extrapolated (kWh)	376,580.93	12,707.96	41,089.32
Annual Saving	**£ 30,126**		

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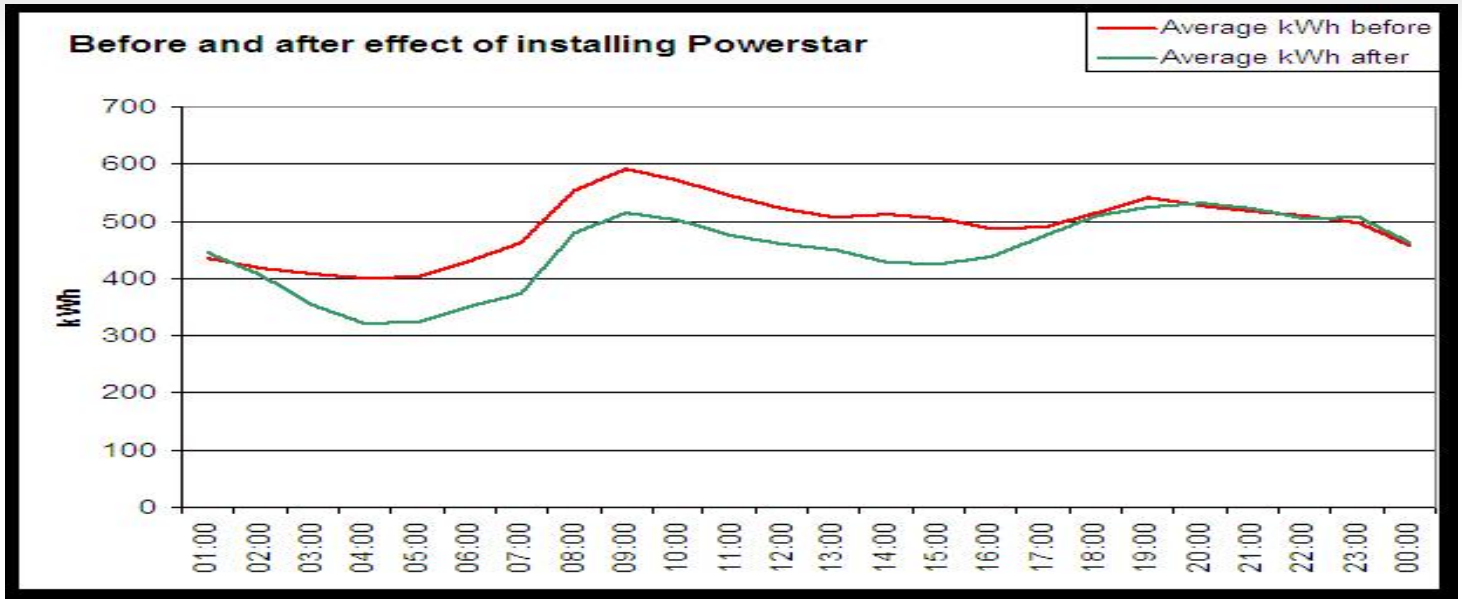
The Hotel Russell



Cost: **£37,000**

Savings: **£30,000**

Payback: 1.3 years

Achieved Savings=8.6%
Predicted Savings=6%

	total	midnight to 6am	6am to midnight
Total before (kWh)	11,807.93	2,495.21	9,312.71
Total after (kWh)	10,789.57	2,201.43	8,588.14
Reduction (%)	8.62	11.77	7.78
Reduction (kWh)	1,018.36	293.79	724.57
Extrapolated (kWh)	371,700.36	15,318.83	37,781.22
Annual Saving	**£ 29,736**		

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How does PowerStar® compare with other systems?

London Stock Exchange

3,000kVA PowerStar® System

"After a comprehensive review of the existing Voltage Optimisation systems Sold in the UK, PowerStar® ticked every box, from quality of manufacture to technical support. This is why we have chosen PowerStar® to power our Critical services" London Stock Exchange.

London City Hall

1,500kVA PowerStar® MAX System

A full independent evaluation of the PowerStar® system and a competitors Japanese Imported system was carried out by GLA. PowerStar® was identified as the better system in relation to Efficiency and potential savings. The City Hall is installing a 1,500kVA MAX System.

ASDA

Installing PowerStar® to all the existing and new supermarkets

After a direct head to head installation of the PowerStar® system with the Japanese imported System, PowerStar® was chosen to be installed in all the ASDA supermarkets (existing and new).

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GUOMAN HOTELS thistle

"We carried out a full investigation of all systems in the UK. PowerStar® came up with pretty much all the right answers." David Hannah. Head of Properties.

"A Voltage Optimisation Project is similar to an Open Heart Surgery for a Building. I would prefer that the operation was done by the best qualified Surgeon not the one that can talk the most.

Powerstar® is definitely the Best Technology with the best engineering background and support."
Tony Baccenta – Chief Engineer
Guoman-Thistle Hotel Group

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Confederation of British Metalforming

Hi Gentlemen,
We have now reached the 18 months 'post-installation' point. I can confirm that the unit is helping to deliver an average saving of 23% over this period, across the full range of external temperatures and building utilization.
We now have push button taps being installed which should reduce water consumption and the use of 'on-demand' boilers feeding the hot taps. We have been keen to minimize the use of air con units but realistically I think that a large portion of the saving is the Powerstar unit.
I take pride in driving efficiency here and hope that ongoing measures will continue to deliver benefit. Lighting makes up 20%-25% of our consumption so please keep me abreast of any developments that we could apply.
Cheers,
Alan

Alan Arthur
Commercial Director

Tel: 0121 601 6350
Mobile: 07866 425 481

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But to David Hannah, Head of Property at Guoman Hotel Management (UK) Ltd, reducing the company's impact on the environment, including cutting back on energy consumption, comes high on his list of priorities. Guoman Hotel Management (UK) Ltd has an established public commitment to driving down its energy costs and reducing the size of its carbon footprint.

Nine months ago, David Hannah set in train the process to identify the right source of expertise to help him fulfil his obligations at Guoman Hotel Management (UK) Ltd. Following calls to specialist contractors for their input and detailed research the name **PowerStar®**, came conspicuously to the fore.

PowerStar®, which is the only voltage optimisation system wholly designed and manufactured in the UK, is produced by EMSc (UK) Limited in Rotherham.

David Hannah, explained:

> *"In commercial terms **PowerStar®** came up with pretty well the ideal solution. They struck just the right balance between finding a means of installing a fail safe system that would significantly reduce our energy bills while achieving the hurdle rates for capital investment.*
>
> *"From the outset, the **PowerStar®** team was pro-active, commercially aware and able to demonstrate a high level of competence in both analysing our technical & subsequent installation requirements within a live hotel environment. They promised technical support, professionalism and minimum fuss and that was precisely what they delivered!"*

He continued:

> *"We were more than confident that the calculated savings in terms of energy consumption were realistic however, we are delighted to learn that the savings have in some cases exceeded our expectations.*
>
> *"So far the **PowerStar®** installations in our hotels have achieved as much as an amazing 26.1% saving in total electricity consumption at our Thistle Hyde Park Hotel and elsewhere, never less than an 11.5% saving. That's what I call a real result!"*

Real Time Savings

In addition to the direct savings achieved as a result of the PowerStar® installation, the online real time savings is excellent and has started to have significant effect on our consumption.

We are hoping that we can save an additional 10% of our total electricity consumption through the online Monitoring and Targeting System as provided as standard with the PowerStar® system. This can be clearly seen on the graph above where our non-productive consumption has been reduced from 5Kw per hour to less than 1Kw. We simply look at the PowerStar® data and shut down anything which is not essential.

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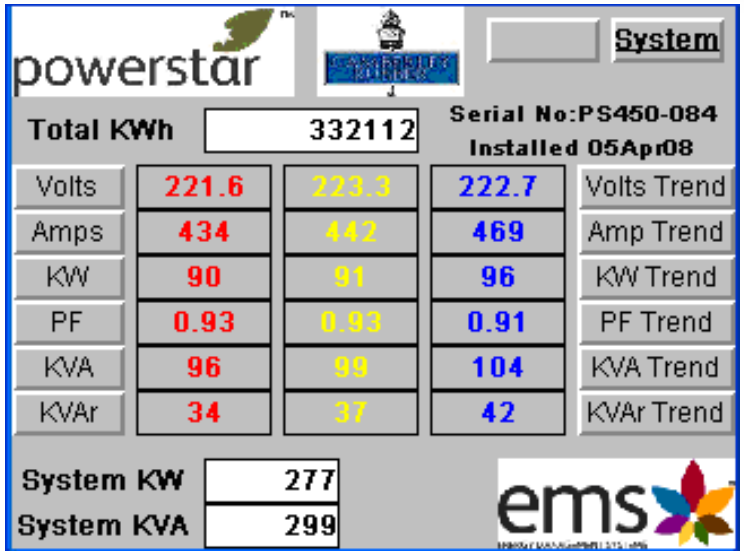
Real Time Monitoring



In addition, the system stores the following information (every 10 minutes and has a storage capability of 194 years):

- KVA per phase
- kWh per phase
- KVar per phase
- Total Kwh (this will match your main meter reading if PowerStar® is installed to control the main incoming supply)
- Total kVA
- Current per phase
- Voltage per phase
- Power Factor per phase
- Harmonics (both Voltage and Current) 3rd, 5th, 7th, 9th, 11th, 13th and 15th

The PowerStar® system can be viewed on-line and/or through an internal network and has its own IP address.

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Warranty and Savings Guarantee

- **PowerStar comes with a 15 year warranty with every PowerStar® system and 10 years with every PowerStar Max ® system.**

  Our Warranty includes Parts and Labour (It excludes damage due to overloading the PowerStar® system i.e. if your company purchases and installs a 250kVA PowerStar® system and loads it to 300kVA, this will damage the system)

- **We guarantee the minimum savings as per our proposal.**

  Our guarantee comes in two forms. If the minimum savings are not achieved, your company has the option to ask us to remove our PowerStar® system.

  We will do so, fully refund all costs and put the supply to its original condition.

OR

- Instead of achieving, say 10% savings as the minimum on our proposal, your company achieves only 9% but still wants to keep the PowerStar® system. Then we will provide a single payment to compensate for the loss.

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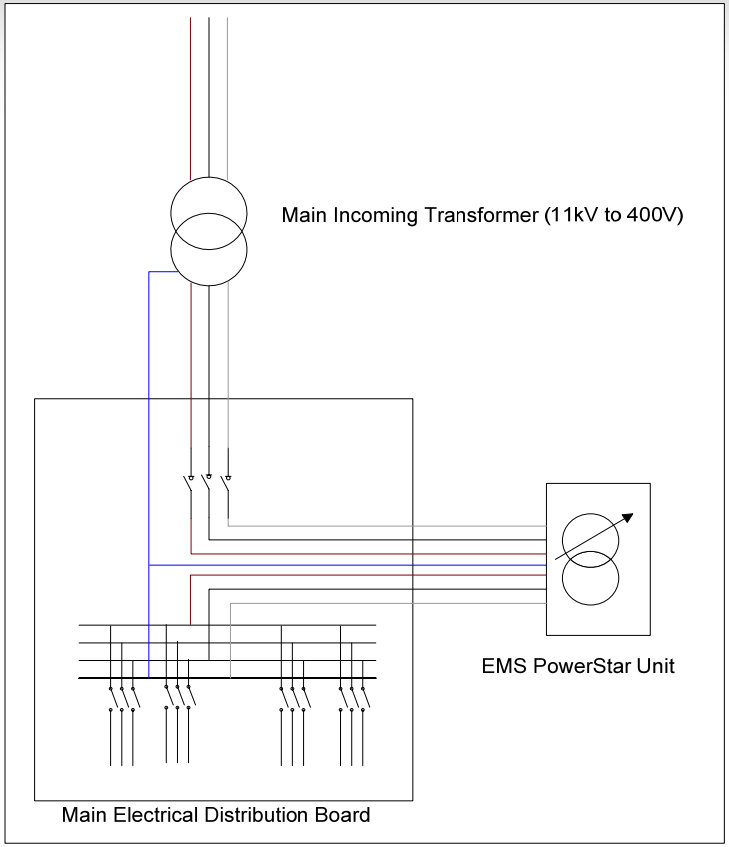
Connectivity



PowerStar® on-line installed at various locations

PowerStar® Max On-Line

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10 DOWNING STREET

defra
Department for Environment Food and Rural Affairs

francis pegler

Stephenson College
Excellence and Innovation in Learning

UNIVERSITY OF SURREY

Home Office

INTERCONTINENTAL HOTELS & RESORTS

L F B
LONDON FIRE BRIGADE

stanmore college

TEV Ltd

FOUR SEASONS
Hotels and Resorts

London Stock Exchange

ISG

department for children, schools and families

Sheffield Hallam University

Langside College
GLASGOW

Holiday Inn
HOTELS · RESORTS

Richard Huish College
Shaping your Future

Sheffield City Council

thistle

STORK Brothers Ltd
Established 1863

CAMBERLEY RUBBER

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SANDVIK

CHESTERFELT Group

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International

WESTEX
FINEST QUALITY CARPETS

W. Brewin & Co. Ltd
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euro cell

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Environment Agency

Claverham Community College

CAPARO

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TDG

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HOTELS AND CONFERENCE VENUES

OXLEY THREADS
THREAD MAKERS SINCE 1870

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RIETER

MERSEYSIDE POLICE

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Isle of Man Government
Reiltys Ellan Vannin

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Glasgow
CITY COUNCIL

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YES, we can…
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