

powerstar[®] HV MAX

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POWERSTAR SYSTEMS

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powerstar[®] AUSTRALIA 100% GUARANTEED RESULTS HV MAX

ELECTRONIC-DYNAMIC
HIGH VOLTAGE OPTIMISATION WITH
GUARANTEED SAVINGS



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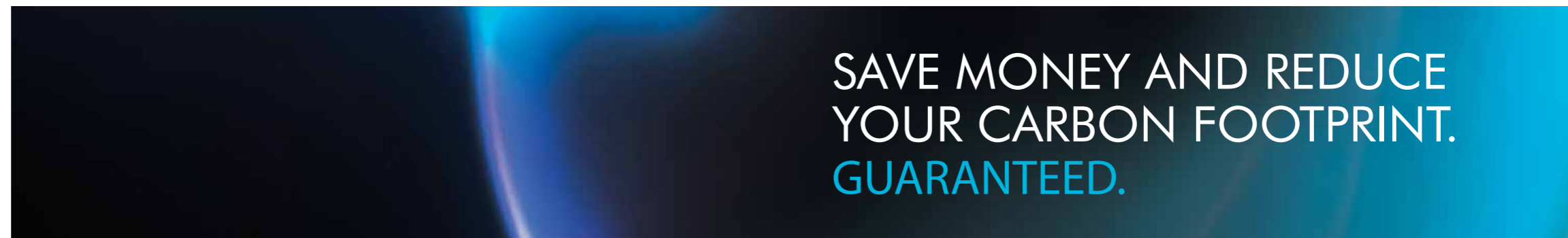


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Powerstar is traded in Australia through EMSc (Australia) Pty Ltd



WHAT IS POWERSTAR HV MAX?

Powerstar HV MAX is a HV transformer with an amorphous metal core. It utilises the Powerstar MAX electronic-dynamic intelligent technology to provide a variable voltage output which will achieve high efficiency and save huge amounts of energy for a site.

Older transformers have high levels of standing losses and the majority of modern transformers used on commercial sites use Cold Rolled Grain Oriented steel (CRGO) within their core, which still provide significant losses for buildings in comparison to amorphous steel.

Powerstar HV MAX can be used to replace older transformers on existing sites or be included in new build projects in order to provide the optimum voltage output for sites, reduce standing losses by around 75% and lower the electricity bill costs by reducing on-site energy consumption.

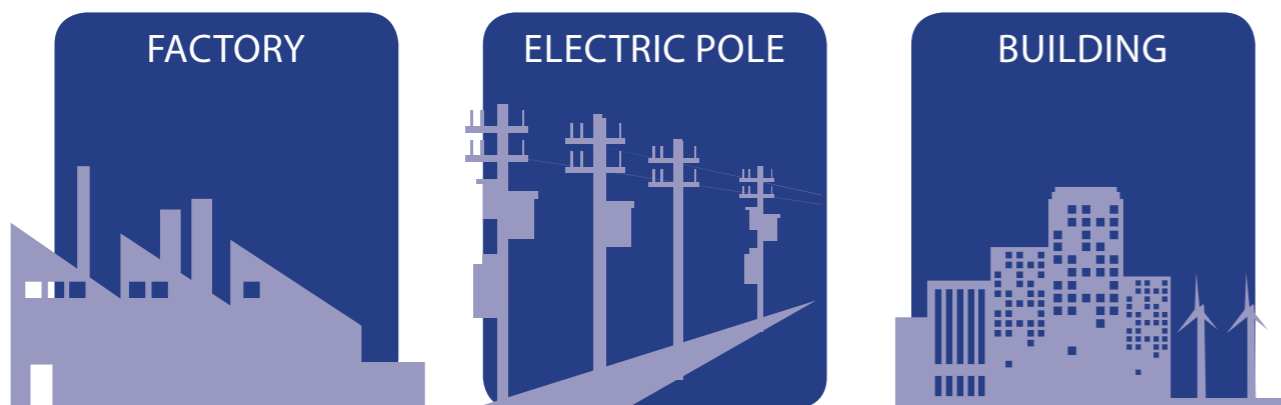
WHO WILL BENEFIT FROM POWERSTAR HV MAX?

HV MAX should be considered for any site that has their own HV distribution transformer. Powerstar HV MAX is ideal for new build developments, sites with older transformers and those who have previously been faced with physical space restrictions which make voltage optimisation installations difficult to implement.

Powerstar HV MAX is a technology that can be implemented in new build projects to achieve sustainability marks and high energy efficiency ratings through accreditations such as BREEAM / LEED.

How Powerstar HV MAX assists companies in BREEAM / LEED rating:

- Along with savings in energy efficiency, BREEAM / LEED also measures the characteristics of the products installed within a building. Powerstar HV MAX is a product manufactured to the highest standards using high quality components.
- Powerstar HV MAX has also been designed so that over 98% is recyclable (another BREEAM / LEED measurement).
- A further important BREEAM / LEED measurement is the energy monitoring. Powerstar HV MAX comes with a Real Time Monitoring and targeting system which enables companies to monitor energy usage as well as target further energy reductions.



Powerstar HV MAX is a flexible application that can be adapted for inside or outside installation in numerous commercial building sites such as factories, storage, warehousing, manufacturing and production sites.

The system can also be adopted by utility companies and for installation in general building premises such as office buildings, hotels, hospitals, supermarkets and education facilities.

SAVE MONEY AND REDUCE YOUR CARBON FOOTPRINT. GUARANTEED.

AMORPHOUS METAL CORE TRANSFORMERS

Conventional transformers generally utilise CRGO steel within their core. It is usually supplied by the producing mills in coil form and it has to be cut into "laminations" which are then used to form a transformer core, which is an integral part of any transformer.

Amorphous metal contains ferromagnetic elements alloyed with a glass former.

These materials have high magnetic susceptibility, with low coercivity and high electrical resistance.

The high resistance leads to low losses when subjected to alternating magnetic fields. This results in transformers that use amorphous metal at its core – such as Powerstar HV MAX – reducing standing losses, delivering greater efficiency and increasing savings.



POWERSTAR HV MAX REDUCES STANDARD LOSSES, DELIVERING HIGHER EFFICIENCY AND SAVING COSTS.

WHAT IS THE ELECTRONIC-DYNAMIC MAX TECHNOLOGY?

Powerstar HV MAX technology ensures that voltage is supplied to a site at a constant level regardless of the input instability.

Many of our clients use the Powerstar HV MAX technology because when the grid voltage varies (often throughout the night as the load on the grid disappears), the HV MAX technology is able to hold the site voltage at the optimum level and maintain a higher level of savings.

The stabilised voltage output offered by the HV MAX technology is a vital feature for sites with critical loads, secure data and important operations that require high levels of reliability and security.

Example sites include supermarkets, data centres, hospitals, hotels, education facilities and retail outlets.

ADVANTAGES OF POWERSTAR HV MAX

- Savings of up to 75% more than conventional steel core transformers
- Average annual energy consumption savings of 12%
- Payback periods commonly under 5 years
- Reduced carbon emissions
- Simple installation which can be completed in 6-8 hours
- Guaranteed savings
- Designed and manufactured in the UK
- Utilises Electronic-Dynamic MAX technology to optimise voltage output

MARKET LEADING VOLTAGE OPTIMISATION SYSTEMS FROM EMSC (AUSTRALIA) PTY LTD, WITH **GUARANTEED** SAVINGS.

POWERSTAR HV MAX SPECIFICATIONS

Specification	
Technology	Electronic, dynamic
Capacity	500 kVA to 2000 kVA
Efficiency	99.90% to 99.93%
Response Time	Adjustable to suit site supply
Input voltage range	11,000V Nominal
Output accuracy	+ - 1.25V single phase LV output
Frequency	50Hz
Conductor insulation class	Class A/A
Temperature class	H
Operating temperature	-10C +40C
Operating humidity	90%
Ingress protection	IP 54
Standards	BSEN60076, BS2562
Expected service life	50 years
Warranty	10 years
Options	
Manual bypass	N/A
Auto bypass	MAX Side only
High level surge protection	Y
Remote monitoring system	Y

Features	
Patented design	Y
Electronic Dynamic Optimisation	Y
Incorporates intelligent & modern technology	Y
Not an off the shelf product	Y
Reduction in maximum load demand	Y
Voltage stabilisation	Y
Manufactured in the UK	Y
Protection against voltage spikes, surges and a reduction in harmonics	Y
Intelligent interface	Y
Verified savings	Y
Retrofit available	Y (by replacement of existing 11 KV Distribution transformer)
Suitable for new builds	Y
Adjustable voltage	Y

Powerstar HV MAX



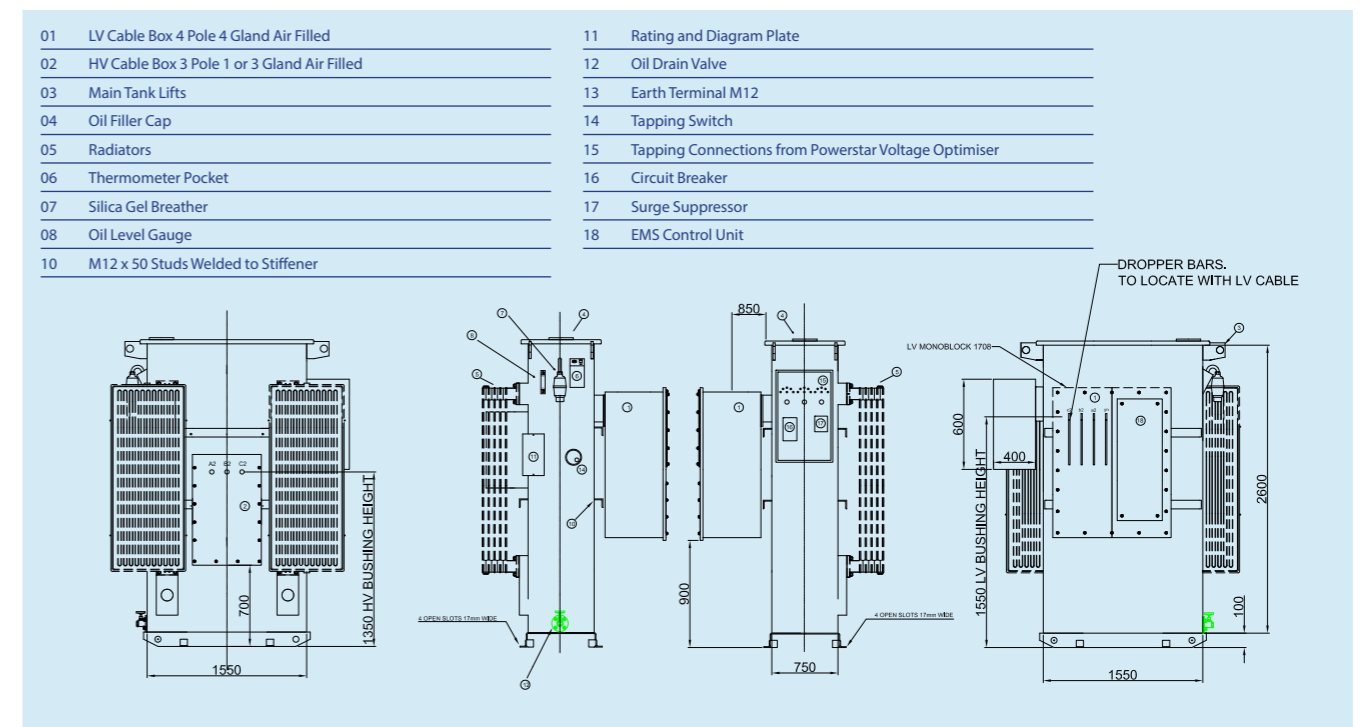
Voltage Graph



Powerstar MAX uses the uniquely designed and patented triple-wound Powerstar transformer which boasts efficiency of 99.91%.

The red line shows the incoming voltage (low voltage side) and the green line shows the regulated output voltage. The regulated output voltage remains at 223V (the set voltage) ± 1.25V. Therefore, regardless of the HV voltage variation, the output remains constant.

Powerstar HV MAX technical illustration



OPTIMISING POWER TO SAVE MONEY AND REDUCE CARBON FOOTPRINT. GUARANTEED.



Dr Alex Mardapittas
BEng, PhD, CEng, MIET, MEI
Managing Director and
Powerstar designer.

Alex studied at Kings College London and then at Brunel University.

On completing his research fellowship for Manufacturing Metrology in 1993, he went on to work in professional computer software training and development. As an experienced Chartered Engineer, with a research doctorate, he possesses extensive knowledge of software programming and innovative engineering design, which has allowed him to provide award-winning solutions to the marketplace.

COMPANY PROFILE

- EMSc Australia Pty Ltd is the registered office of EMSc in Australia
- Market leaders in voltage optimisation.
- At the forefront of technological advances in energy management.
- Engineering company formed in 2001.
- More than 150 years combined experience in design and manufacturing.
- Powerstar is exported overseas to more than 15 countries, including South Africa, United Arab Emirates, Spain, Malta and Greece. This is supported by EMSc offices in the UK, Cyprus and Australia.
- Project-led approach fully supported by our team of professional engineers.
- Powerstar systems are designed, engineered and built in the UK under BS171 IEC60076.
- Powerstar is manufactured in line with ISO9001 therefore all components are traceable.
- Powerstar sizes range from 315kVA to 2500kVA.
- Winners of the UKTI exporter of the year award 2013

"Powerstar voltage optimisation has been a major part of our comprehensive energy efficiency programme. It is perhaps the simplest and most effective way to instantly save energy and therefore we would highly recommend Powerstar systems."

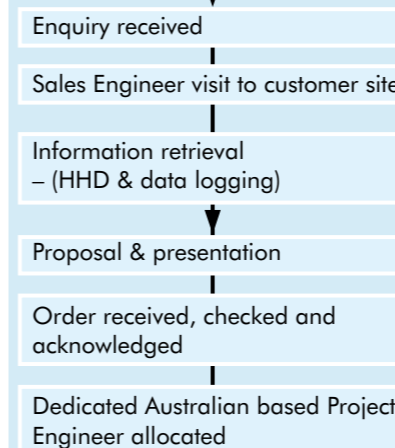
Mark Orpin,
Head of Energy Management,
ASDA Supermarkets



OUR CLIENTS INCLUDE



How we work



Draft Project Installation Plan (PIP) presented to client and installation team representative and, if applicable, amended as agreed

All parties go through the installation and responsibilities, availabilities and timescales are agreed on

The Project Engineer:
Arranges a site meeting with the client and HV installation team – the Project Engineer is in attendance

Issue of the 'Official' PIP to all parties

All progress in the PIP is tracked and timescales are adhered to

All parties involved are kept informed of the progress and any agreed upon changes

Project Engineer attends site during installation and commissioning, if required

Necessary documentation issued after the installation (i.e. O&M manuals, certificates, as fitted drawings, etc)

PROJECT IMPLEMENTATION & CAPABILITY MANAGEMENT

Powerstar installations range from one off installations to multi-site roll out programmes. An engineering led, project driven approach is always adopted to ensure the best solution is offered to the client as per the needs of the site. Installations occur at the convenience of the client.

YES, WE 100% GUARANTEE HOW MUCH YOU WILL SAVE

Powerstar HV MAX comes with up to 10 years warranty, this includes parts and labour.

We guarantee savings as a percentage of kWh, as per our proposal. Where proposed savings are not achieved – for example 10% is proposed but you achieve 9% – we will provide a one-off payment to compensate the loss.

HOW TO START SAVING

The installation of Powerstar HV MAX will prevent you from wasting money while reducing your building's overall impact on the environment.

It is easy to start saving with Powerstar through our simple step evaluation and installation process:

- 1) Contact us with basic information on your site
- 2) We'll survey your site and provide a free non-committal proposal
- 3) Delivery and installation