Three-phase and single-phase voltage optimisation systems

Save Electricity - Save Money - Save the Environment
What is a VO4 voltage optimisation system?

The premise behind voltage optimisation is simple. There is a discrepancy between the voltage supplied to a building by the National Grid – on average 242V – and the optimum voltage required by electrical equipment – only 220V.

Overvoltage leads to sites using more electricity than needed, and as a result incurring higher electricity bills. The overvoltage is not only costly but can also be detrimental to equipment. Excess voltage produces additional noise, heat and vibration, causing stress on internal parts - especially to motors which are vulnerable to overheating and wear out more quickly.

A VO4 voltage optimisation system ensures that a building only receives and pays for the voltage that it actually needs, and no more. It achieves this by optimising the incoming voltage to the level required for the site. This reduces electricity consumption, cuts electrical bills and lessens the wear and tear on appliances and equipment.

Without VO4...

- Incoming voltage from the National Power Grid
- Power supplied (average 242 volts)
- Higher voltage results in appliances being overpowered and thus shortens lifespan
- Excessive voltage results in a greater kVA / power demand, increasing your electricity bill

With VO4...

- Incoming voltage reduced to operating requirement of 220 volts and power quality improved
- Power supplied at 220 volts
- Prevents wear and tear on appliances
- Reduced electricity bills

Helping homes and businesses save money and reduce their carbon footprint.

VO4 Voltage Optimisation

A range of British designed single and three-phase voltage optimisation systems for use in homes and small commercial premises.

About our Company

VO4 systems are fully designed and manufactured by EMSc (UK) Ltd, the company behind the award winning range of commercial voltage optimisation systems, Powerstar.

The company’s vision focuses on helping clients to make their premises more energy efficient through cutting edge technology solutions.

The company’s clients include:

- NHS
- The co-operative
- ASDA
- BT
- Npower
- Barristers
- PwC
- Carlsberg
- Sheffield University
- Holiday Inn
- Londis
- Hawes & Currie
Benefits of VO4 Voltage Optimisation

- Reduces energy bills by an average of 12%
- Operates on all circuits, 24 hours a day, 7 days per week
- Quick and simple installation – no change to electricity supplier needed
- Extends lifetime of electrical equipment
- Works with and improves efficiency of heat pumps and PV systems
- Compatible with energy saving and generation systems such as PV and wind power
- No maintenance required
- Guaranteed savings

Who can benefit?
Customers with sites using up to 300,000kWh per annum. These typically include:

- Residential
- Retail outlets
- Funeral parlours
- Hotels
- Restaurants
- Laundrettes
- GPs
- Small industrial units
- Office facilities
- Coffee shops & cafes
- Gyms & health clubs
- Garden centres

Installation

is quick and simple between your meter and consumer unit

10% savings

guaranteed on all single phase VO4 systems

Please visit website for full terms and conditions

SAVE £££’s

with voltage optimisation

VO4 and solar working together

Many properties fitted with solar PV panels have found that the installation of a VO4 unit is a valuable addition. The key advantages include:

- A reduction in the overall energy use of the property
- As systems use the solar PV generated electricity first resulting in a reduced bill for imported electricity
- Reduced voltage to the inverter, thus reducing heat build up in the inverter
- Increased lifespan of the inverter
- Reduced cut-out frequency
- Reduced wear and tear on appliances, resulting in longer service life especially when using the power from the PV array which is higher than the mains voltage
- Simple retrofit process for solar PV systems
- Reduced build up of heat and consequent losses
- Reduced overall electricity use

“Voltage optimisation is one of the key new business opportunities for electrical contractors. The range, types and size of buildings that can benefit from the savings voltage optimisation can deliver, makes it a great opportunity for our members.”

NICEIC
Single-phase VO4 systems

The single-phase voltage optimisation system from VO4 is designed for use in residential properties. The 60 Amp unit is easily fitted by electrical installers as it simply requires 2 wires in and 2 wires out to make it fully operational. A process that only takes around one hour.

Another attractive feature of the VO4 domestic voltage optimisation system is that, unlike smart meters, it does not require a complete change in behaviour, and unlike solar and wind power it is not focused on renewable energy production, but rather on reducing energy consumption.

Single-phase installation

The unit requires a 230V (nominal) single-phase supply, which is fed from the incoming mains to the home. The supply to the VO4 unit must be fitted with suitably rated protection and isolation to allow maintenance (if required) and to conform to current international standards.

Features and Specifications

Full product specification for 60 Amp (single-phase) VO4:

- Temperature range -10°C to 60°C
- Humidity up to 90%
- Altitude to 1,500m
- Choice of 4 voltage reduction settings for torroid unit (-10v, -15v, -20v, -25v)
- Choice of 3 voltage reduction settings for T-frame unit (-10v, -15v, -20v)
- Voltage is set by the installer at the time of installation
- 5 year warranty
- Can be installed internally or externally
- 99.9% Efficient
- Low impedance
- 60A

Savings Guarantee

VO4 guarantees a minimum 10% saving on annual electricity consumption with all single-phase systems. If 12 months after installation you do not achieve a saving of 10% on your electricity consumption, we will refund you £100 of the unit price.

Dimensions

- W 265mm
- H 310mm
- D 148mm

Weight

- 14.5kg
Three-phase VO4 systems

The three-phase voltage optimisation system from VO4 uses award winning technology that has been widely utilised successfully for large commercial properties, and adapts this for use in smaller business and industrial sites. The three-phase system is suitable for businesses with a typical annual electricity consumption of up to 300,000kWh per year. The 100 Amp unit allows users with three-phase installations to achieve substantial energy, carbon and financial savings by balancing the three-phase supply. In addition, it provides the optimum incoming electrical voltage for all loads at any given time, without affecting the businesses operational capacity.

Three-phase installation

The unit requires a 415V (nominal) three-phase supply which is fed from the incoming mains to the premises. The supply to the VO4 three-phase unit must be fitted with suitably rated protection and isolation to allow maintenance (if required) and to conform to current international standards.

THREE-PHASE ISOLATOR
100AMP YYPE C/D MCCB
100 AMP THREE-PHASE VO4 UNIT
THREE-PHASE DISTRIBUTION BOARD

Application

Previously many businesses may have found commercial, three-phase voltage optimisation too large and costly for their site, and smaller, single-phase or domestic voltage optimisation systems not suitable for their three-phase supply. The VO4 three-phase voltage optimisation system has been designed and engineered specifically to address these underlying extremes between small and large installations to open up the benefits and savings of voltage optimisation to SMEs in a range of industries.

Features and Specifications

Full product specification for 100 Amp (three-phase) VO4.

- Temperature range: -10°C to 60°C
- Humidity up to 90%
- Altitude to 1,500m
- Simple voltage optimisation solution
- 5 year warranty
- 10V, 15V and 20V drop
- 100A capacity - matching incoming fuse
- 70kVA capacity
- 99.9% Efficient
- Suits loads up to 300,000kWh per annum
- Low impedance

Dimensions

- Weight: 44kg
- Dimensions: Width 384mm, Height 454mm, Depth 305mm
Residential Case Studies

SOCIAL HOUSING

Working with Stroud District Council VO4 has been rolled out across 800 homes in their social housing stock. The installation teams have been working with tenants to ensure they have as little disruption to their daily routine as possible.

A tenant of a 2 bedroomed bungalow, commented:

“Our monthly bills have been reduced by 20%, this has made a big difference. The unit has been trouble free and is totally silent, I am not aware it is even there.”

SEMI DETACHED HOUSE - 4 BEDROOMS

Following the installation, VO4 has eliminated significant damage to electrical equipment, including correcting failing light bulbs as well as reducing electricity consumption by 14% and providing a payback period of under 3 years.

The client commented:

“VO4 does what it says on the tin – it has reduced my electricity bills by around 10% and I have been most impressed by the service I have received from VO4.”

LAVENDER LODGE

An award winning seven bedroomed, modern architect designed property. The installation of the VO4 three-phase system has resulted in immediate savings of 13% in electricity consumption. The system is working in conjunction with a solar panel array, two large solar thermal panels, heat recovery systems and a ground source heat pump.

The client commented:

“The installation of VO4 took barely an hour. We monitor the energy use of the property and could immediately see a 13% saving. The high voltage we had made much of our equipment vulnerable to overheating. VO4 has radically reduced that risk.”

SEMI DETACHED HOUSE - 3 BEDROOMS

Installed in a family home with three young children, VO4 has remained an unobtrusive energy saving appliance, going unnoticed aside from the 18% saving in electricity consumption achieved following the installation.

The client commented:

“I think VO4 is great. I didn’t notice any change and my appliances ran as usual. I was wondering if we would see any benefit, then my electricity statement arrived and I was so pleased and surprised to see the big dip in my usage. Thank you VO4!”

Business Case Studies

CO-OPERATIVE

The Co-operative has installed a number of VO4 units in convenience stores in the South West. A key parameter for the Co-operative is a payback period of less than 3 years, and this has been readily achieved across the VO4 installations.

The client commented:

“When we became aware of the VO4 voltage optimisation offering it became immediately evident that, for the smaller stores in our portfolio a device such as this could make a great contribution towards our Carbon Reduction targets.”

IN TO LUNCH

In To Lunch is a business specialising in catering for events, functions, business buffets, working lunches and conferences. VO4 was provided for all key parts of the kitchen and resulted in a reduction in annual electricity usage of 11.1%.

The client commented:

“In a business such as ours controlling costs is crucial. It was great to be able to reduce costs through a reduction in our overall electricity demand. The installation was simple and the energy reduction was immediate and permanent”

LONDIS

An independent investigation by MJ Energy Services was carried out on a VO4 installation at a Londis store, 12 months after the install. The report highlighted how the store was benefiting from a 10% reduction in electricity consumption, with savings close to £1k per year.

The client commented:

“We can say that installing a VO4 in a small store like this, where refrigeration is a big part of the electricity bill has shown to save around 10%-14% in electricity use”

WERN WATKIN GUEST HOUSE

A 5-Star Welsh guesthouse that accommodates up to 30 guests has benefited from a 17% reduction in electricity consumption following the installation of a VO4 unit. VO4 is working alongside solar panels and heat pumps to deliver a total 32% annual consumption reduction for the facility.

The client commented:

“By installing VO4 the power quality has improved and we have seen a marked reduction, not only in electricity consumption, but also in the failure of electrical components”.

The units are straightforward to install either in combination with Solar PV or Wind generation, or without. They can provide fantastic savings where their use has been correctly applied.
VO4 and EMSc (UK) Ltd have been granted a number of accreditations in relation to the product and for the manufacturing processes, operational procedures, systems and supply chains used in relation to VO4.

For an up-to-date list of VO4 stockists please visit our website - www.vo4.co.uk