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GWE Group Ltd, ECO-MAX Works, Orgreave Road, Sheffield S13 9LQ ☎ 0114 293 9935

Agenda

- Why GWE Group Ltd
- What is Voltage Optimisation
- eco-max Product Range

Who are GWE?

- GWE is a privately owned Electrical Engineering and manufacturing company founded in 1994.
- GWE design and manufacture the ECO-MAX range of Voltage Optimisers distributed worldwide

Who are GWE?

- Eco-max Voltage Optimisation technology, was developed by us in back in 2002, as a “one-off” solution for the steel industry, it has evolved over the years in to what is now the largest range of voltage and power optimisation equipment available in the UK today

Who are GWE?

- Every eco-max optimiser carries the prestigious “Made In Sheffield” mark of origin and quality
- GWE are the original manufacturer of voltage optimisation equipment in the UK

MADE IN SHEFFIELD

Why GWE ?

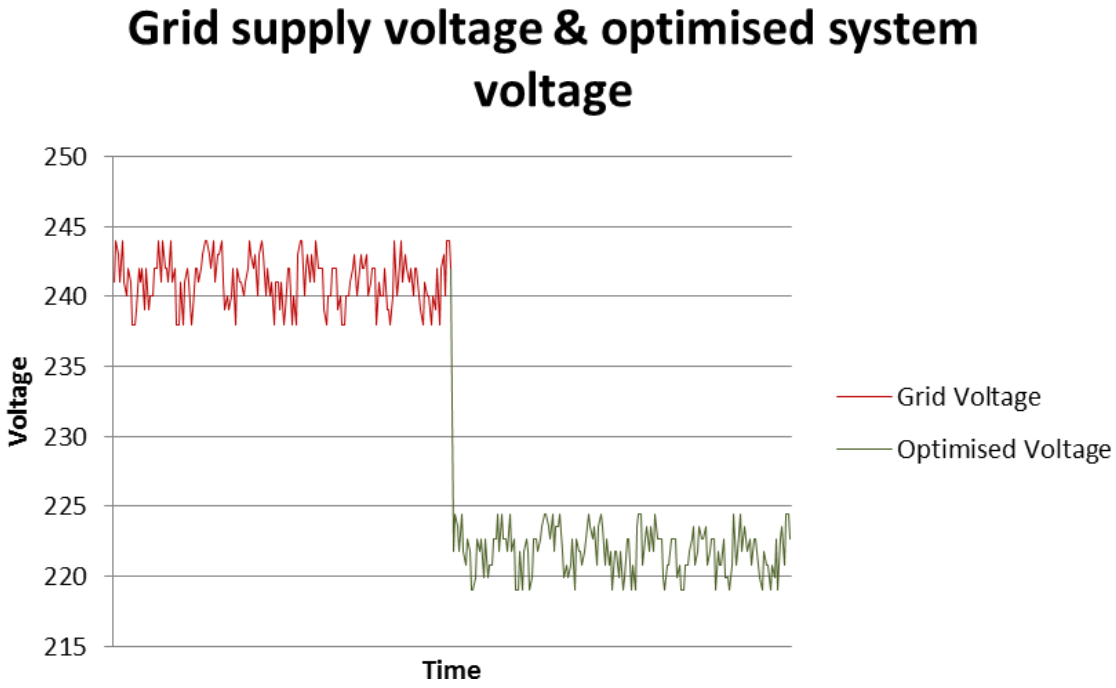
- GWE is an engineering-led organisation
- Original UK Manufacturer of Voltage Optimisation
- GWE are members of beama
- GWE's Eco-Max units are designed to BS61439 Low Voltage Switchgear & Controlgear Assemblies
- GWE are accredited by BSI to the latest ISO9001:2015 Quality Management Systems

bsi. ISO 9001 Quality Management FM 643707

Existing Clients:

What is Voltage Optimisation?

- Quite simply its reducing Voltage applied to electrical equipment to make an Energy Saving



HOW DOES VOLTAGE OPTIMISATION WORK?

YOUR ENERGY CONSUMPTION

Incoming voltage from the national power grid

Power supplied to sites in the UK at an average 242 volts

High voltage has negative effects and shortens equipment lifespan

Excessive voltage leads to higher demand, consumption and energy bills

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ENERGY SAVING PRODUCTS

Incoming voltage from the national power grid

ECO-MAX Voltage Optimser

Power supplied to sites at 220 volts

Prolonged lifespan & reduced maintenance costs

Lower demand, consumption and energy bills

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What is VO?

- If the reduction in supply voltage is carefully matched to the needs of the electrical equipment, it is possible to make a substantial energy saving and extend the equipment's life expectancy.

Benefits of VO

- Reduces Energy costs
- Reduces Carbon footprint
- Prolongs the life of Electrical Equipment
- Reduces maintenance costs
- Lights stay brighter and last longer

Why can voltages be reduced?

- European legislation was introduced in 1993 to standardise the supply voltage across Europe in order to provide two major benefits.

  1.It allowed electricity to be generated and supplied from one country to another.

  2.It allowed electrical equipment manufactures to design one appliance that could be used throughout Europe. Prior to this, equipment was manufactured for use at two different voltages, one for the UK and one for continental Europe.

Why can voltages be reduced?

- The European harmonised supply voltage was initially agreed at:

230V -4% +6%

(220V-243V)

Why can voltages be reduced?

- But after much lobbying by UK generating & Distribution companies the supply tolerance was extended and finally agreed at:

230V -6% +10%

(216V-253V)

Why can voltages be reduced?

- As a result, actual voltages here in the UK remain significantly higher than on the continent:

220-230V in Europe

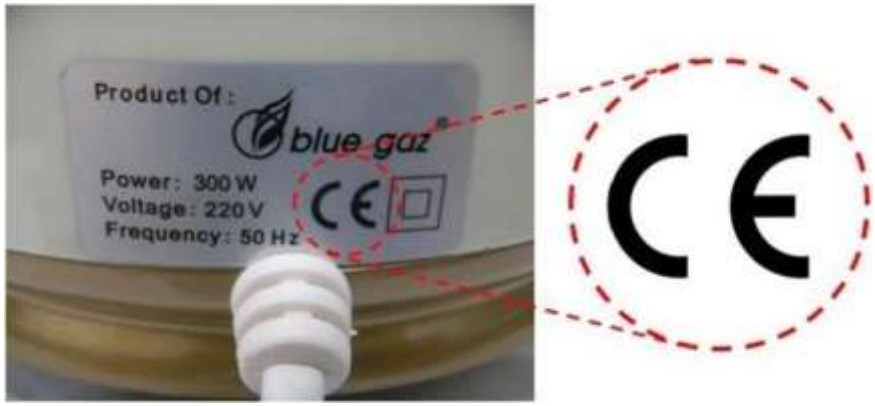
238-248V+ in the UK

(242V UK National Grid Supply Average)

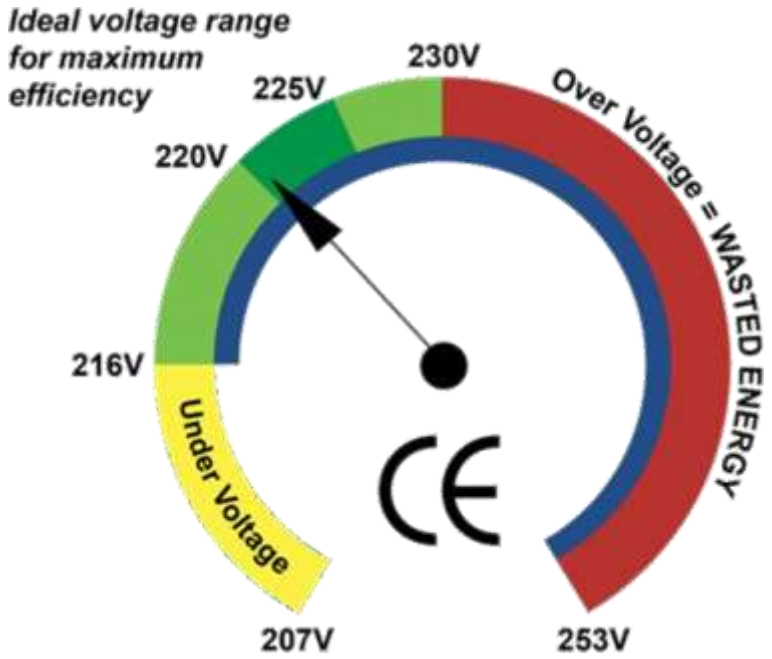
Why can voltages be reduced?

- The onus for voltage harmonisation was placed on the electrical equipment manufacturers.
- All electrical equipment intended for use in Europe must carry a **CE** mark to show that it complies with the relevant harmonised standards.
- Most importantly this means that the equipment is designed to operate within the harmonised voltage tolerances.

230v +/-10% (207-253V).



Why can voltages be reduced?

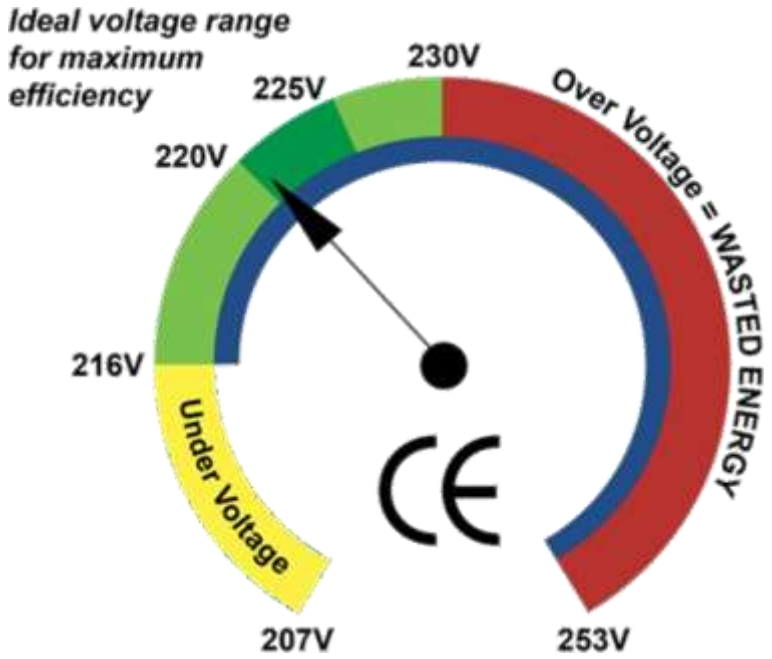


Therefore a large proportion of electrical equipment consumes more energy the higher the supply voltage applied to it.

Because of this it makes more sense to reduce the supply voltage nearer to the lower end of the CE voltage range.

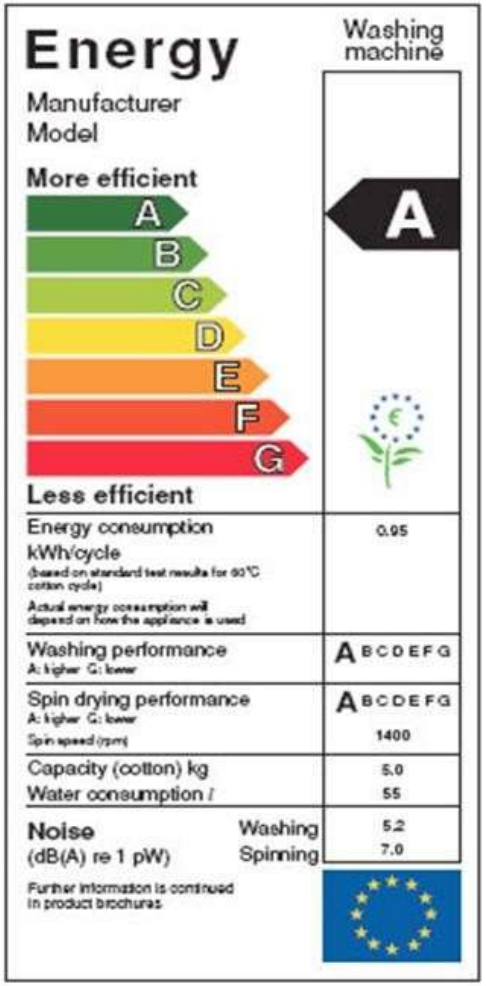
eco-max products are designed to provide a supply voltage of around 220V-225V

Why can voltages be reduced?



At 220-225V the equipment is operating well inside CE equipment tolerances and at its most efficient and longest life expectancy

Why can voltages be reduced?

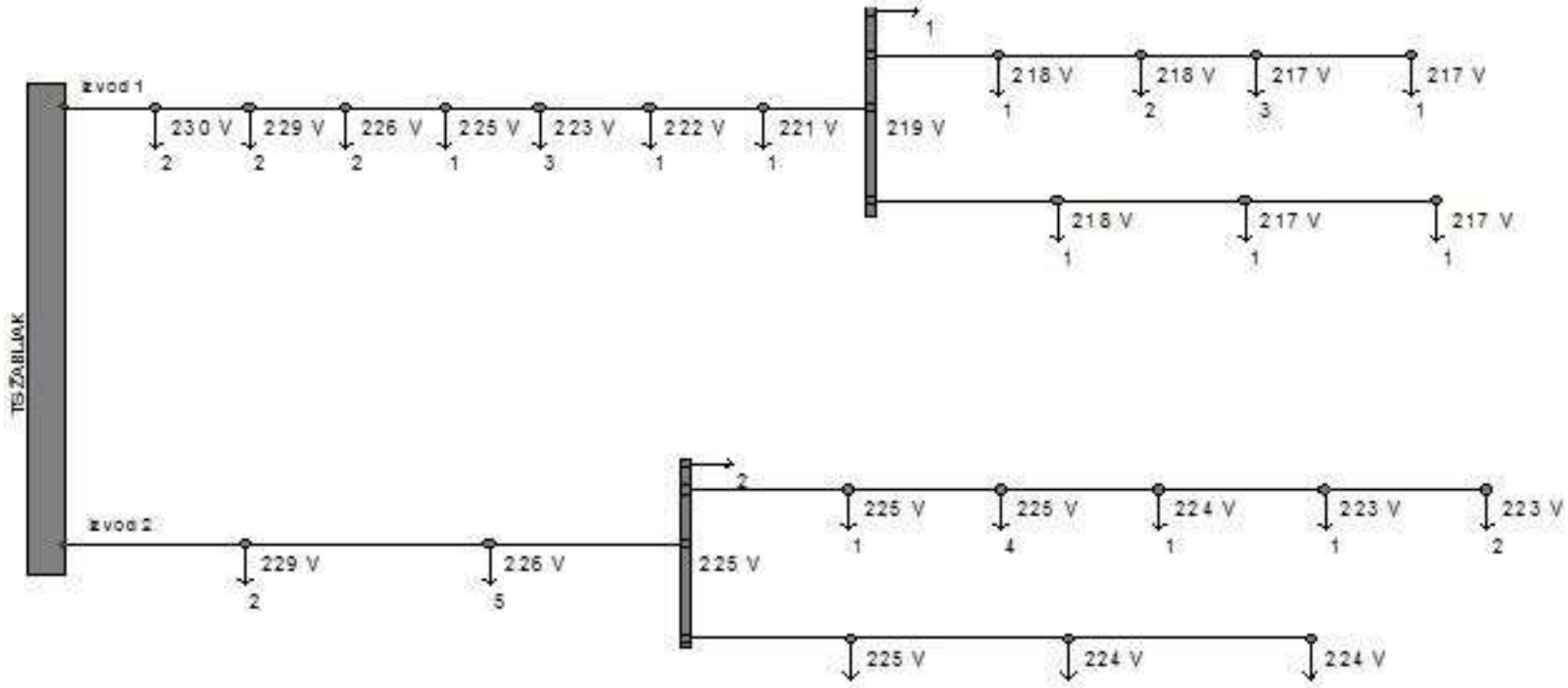


Because the European market is far larger than the UK market electrical equipment is predominantly designed to operate most efficiently at 220V

So a triple A rated appliances will only be AAA rated when laboratory tested at 220V rather than the 242V which we use in the UK where they might only be a 'D" rating for example!

Why can voltages be reduced?

- *Voltages reduce the further away from the main substation you are, eg along a street of shops or houses*



Why can voltages be reduced?

- *So to make sure the properties at the end of the line from the substation get the minimum voltage for the DNO to comply (216v) the ones closest to the substation will be receiving 240-250v+(253v max to comply)*

- Voltage Optimisers will solve this problem for everyone other than the ones right at the end of the line who don't have a problem!
- You will know if this is you, as your voltage will already be low. We generally don't optimise if your existing voltage is below 234V

Why can voltages be reduced?

- High density of local Renewable Generation, such as Solar PV can also lift the voltage in an area, as it local generation gives a ‘boost’ to the area substation so its voltages are not dragged down as much by the load and long cable runs.

- Fitting a Voltage optimiser to a property in these areas will stop this higher voltage affecting it and so reduce the properties electricity consumption & bills

Why can voltages be reduced?

- Eco-max Voltage Optimisers come with multiple optimising settings so the installer can choose what level suits your property, depending on where it is on the distribution line from the substation, and whether there is local renewable generation and so what the existing incoming voltage is.

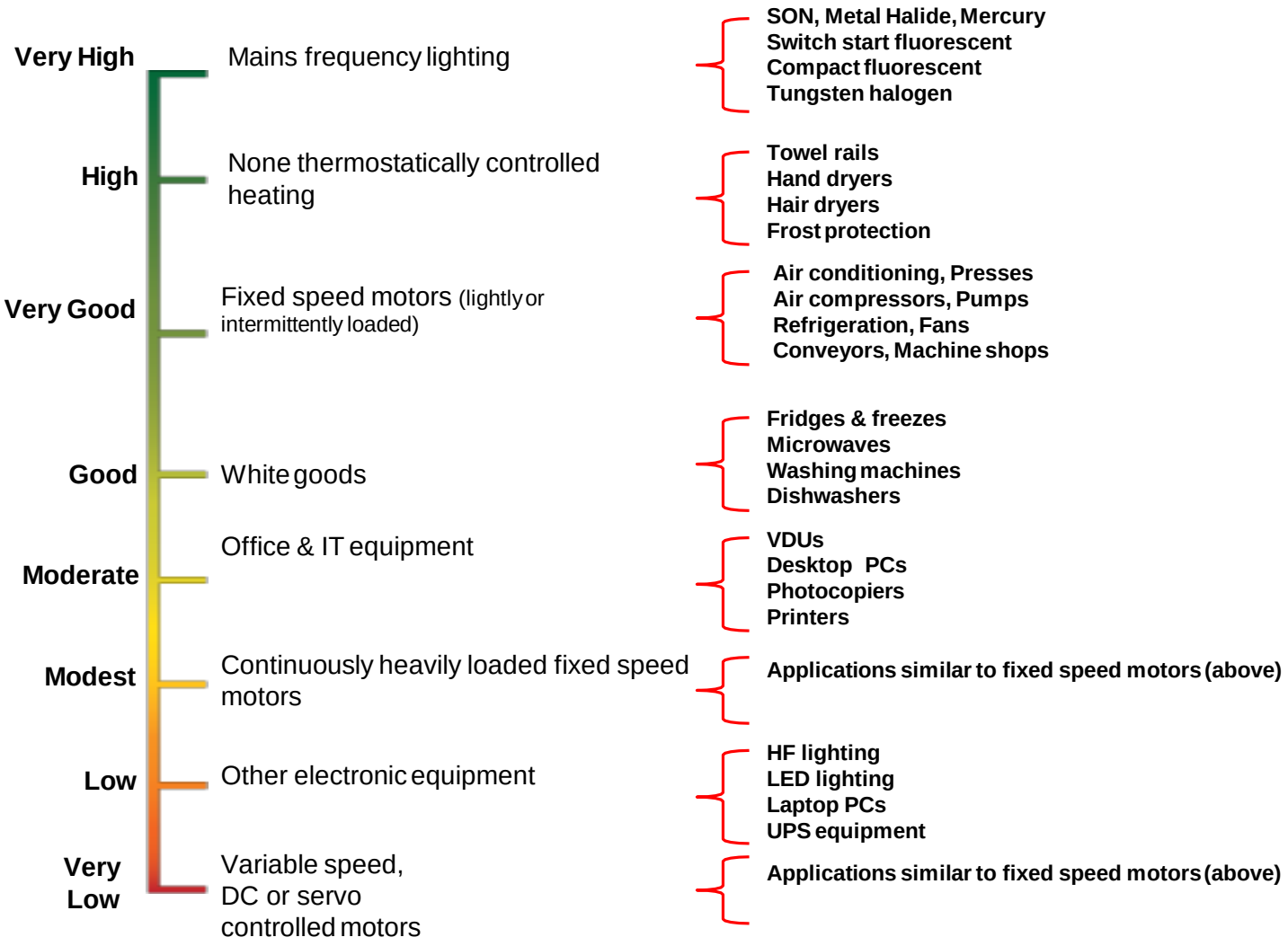
- The closest setting will be chosen to give an output voltage of 220-225v to maximise savings whilst ensuring all equipment operates properly and efficiently, and for the longest possible lifespan.

Voltage Reductions Vs Savings

- 234V+ 6% reduction = 8 – 12% cost savings
- 240V+ 8% reduction = 10 – 15% cost savings
- 247V+ 10% reduction = 13 – 19% cost savings

NB- £££ savings are dependent on what equipment is in use on site – see next slide

Hierarchy of Savings



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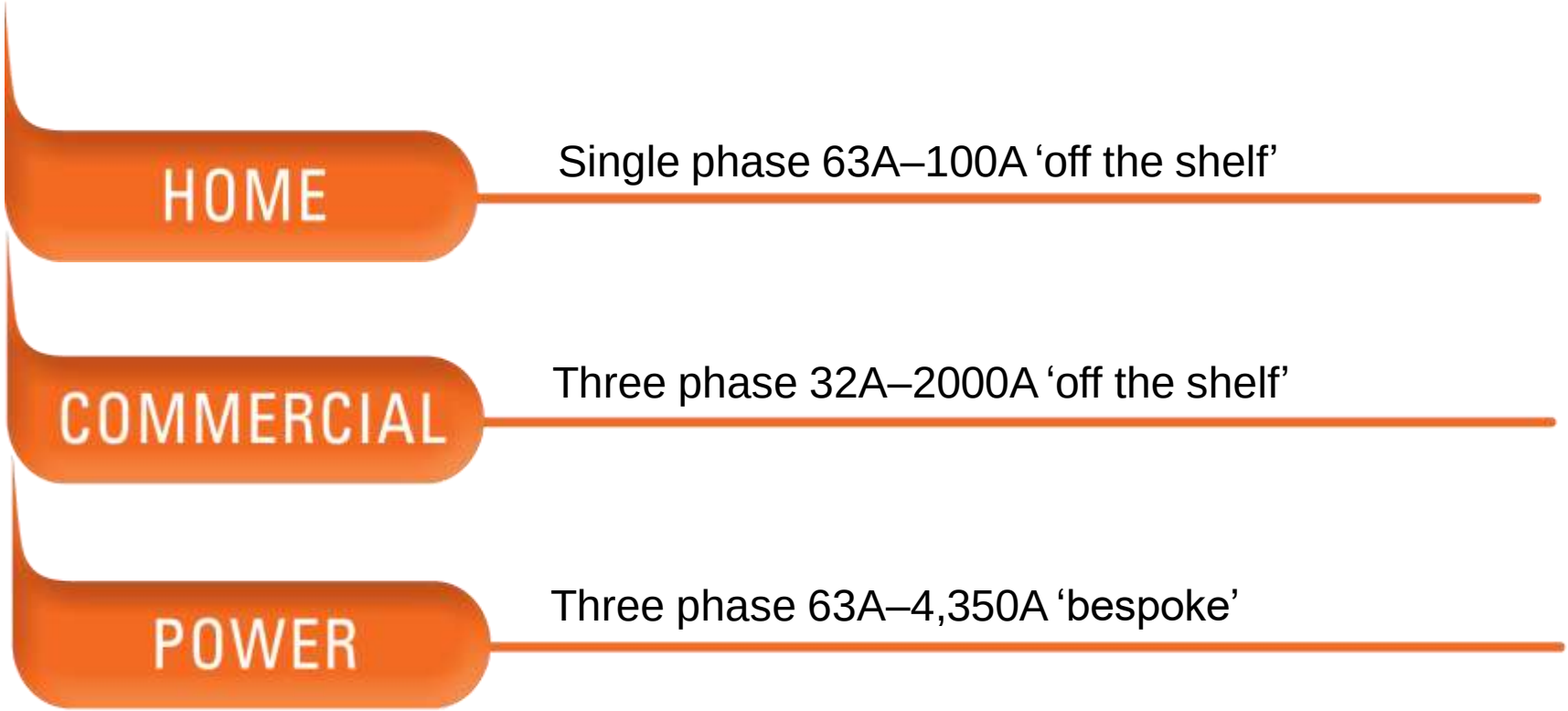
eco-max Product Lines

GWE have produced a range of optimisers which are suitable for domestic, commercial and industrial application:



- ‘**Off-the-shelf**’ range specifically for use in commercial and light industrial applications

  - Floor standing Option:
  - Three phase 100A (72kVA) – 400A (288kVA)
  - Typical energy savings of 8-19%
  - Typical payback 2-3 years
  - ***BrownOut***™ under voltage seamless inhibit
  - Metering and monitoring
  - Modular Custom features
    - Separate ***TrueBypass***™
    - Oversize cable extension/Terminal boxes

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Key features:

- Three adjustable savings settings
- No moving parts
- Very quiet
- Five year warranty
- Saves you money 24hrs/day, 7days /week
- Reduces your carbon footprint
- Your electrical appliances last longer
- Works with solar PV, wind power & heat pumps etc
- Easily installed by qualified electrician
- Made in the UK
- Fully Guaranteed
- Immediate savings
- Can operate continuously at the rated current (all rated to 110% of the load)

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- Target Markets:
  - Organisations with a large energy consumption
  - Manufacturing
  - Retail
  - Large offices
  - Large hotels /chains
  - NHS
  - Schools
  - Councils
  - Supermarkets
  - Large nursing homes

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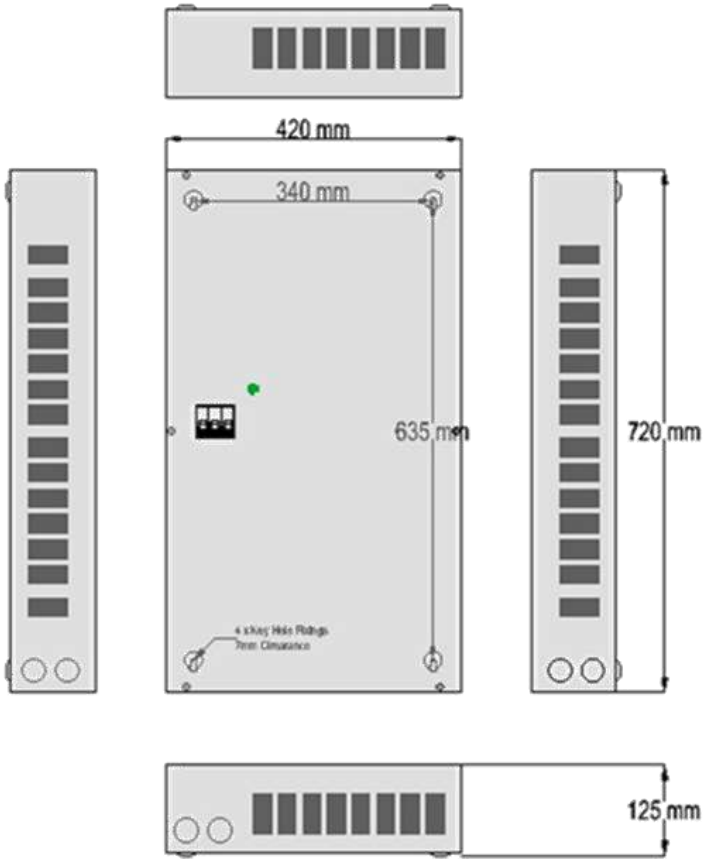
- Wall Mount Commercial

Key features:

- Three phase 32A (24kVA) – 100A (72kVA)
- Typical energy savings of 8-19%
- Typical payback 2-3 years
- 5 year manufacturers warranty
- Similar size to a 3 phase distribution board
- No moving parts
- Very quiet
- Three adjustable savings settings



Target Markets:

- Organisations with limited space
- Buildings with lower levels of energy consumption
- Pubs
- Cafes
- Fast Food Outlets
- Hairdressers
- Convenience Stores
- Small ambient warehouses
- Electrical wholesalers

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Commercial XL Range

- New larger rated floor standing options
- Three phase 500A(359kVa) to 2000A(1500KVA)
- Typical payback 2-4 years
- ***BrownOut***™ under voltage seamless inhibit
- **Metering and Remote monitoring**
- Modular option features:
  - Separate ***TrueBypass***™
  - ***EasyLink***™ ***Bypass***
  - Oversize Cable extension / Terminal boxes

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ECO-MAX Remote Monitoring features:

- **SEE YOUR SAVINGS IN REAL TIME – ANYTIME – FROM ANY DEVICE !**
- 30 times more information than your current Electricity meter
- View the status of the optimiser
- Review historical grid voltage, optimised voltage and current
- Review your half hour energy consumption
- Download data for analysis
- Alter optimiser settings
- Diagnose the optimiser or site operations
- Email notification facility for alarms or to auto send messages under pre-set conditions e.g.. high out of hours consumption

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Bespoke designed for specialist applications

- Organisations with a large energy consumption
- Premises where low power factor is problematic
- Companies who suffer from electrical harmonic distortion issues
- Buildings where there are space and installation constraints
- Locations where a special electrical configuration is required

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- Custom Enclosures

External Areas

Raised – flood defence

Tight Spaces

GWE & eco-max

Equipment Warranties:

- ECO-MAX-POWER
  5-15 Years dependant on model and servicing

- ECO-MAX-COMMERCIAL
  5-15 Years depending on model and servicing

- ECO-MAX-HOME
  10 Years

Case Study – BETFRED

- Saved £3,353 per year across 5 initial trial shops
- 15% savings achieved

Shop	Before Voltage	After Voltage	Model	Financial Saving
LINCOLN	242	223	EMH100	£705.95
THURNSCOE	246	222	EMH100	£708.45
BROMLEY	243	223	EMH100	£401.75
HEMSWORTH	246	221	EMH100	£1,119.57
YORK	241	222	EMH100	£597.48

Since the Installation:

Betfred have rolled out across all of its UK chain of shops, seeing significant savings and helping to meet Carbon Reduction targets.

Case Study – Kellogg's

- 1,250kVA (1,750A) voltage optimiser installed
- Voltage tracking technology
- Custom cable termination compartment
- 8% savings achieved on a £500,000 annual electricity bill
- 21 month payback period
- Total Project cost = £70,000

Since the Installation:

Kellogg's have reported a noticeable reduction in energy bills, as well as other positive effects on power quality in their premises.

Case Study – Garrisson Hotel

- 10% Energy savings achieved
- Saving £5,683 per year
- Payback under 2 years

Since the Installation:

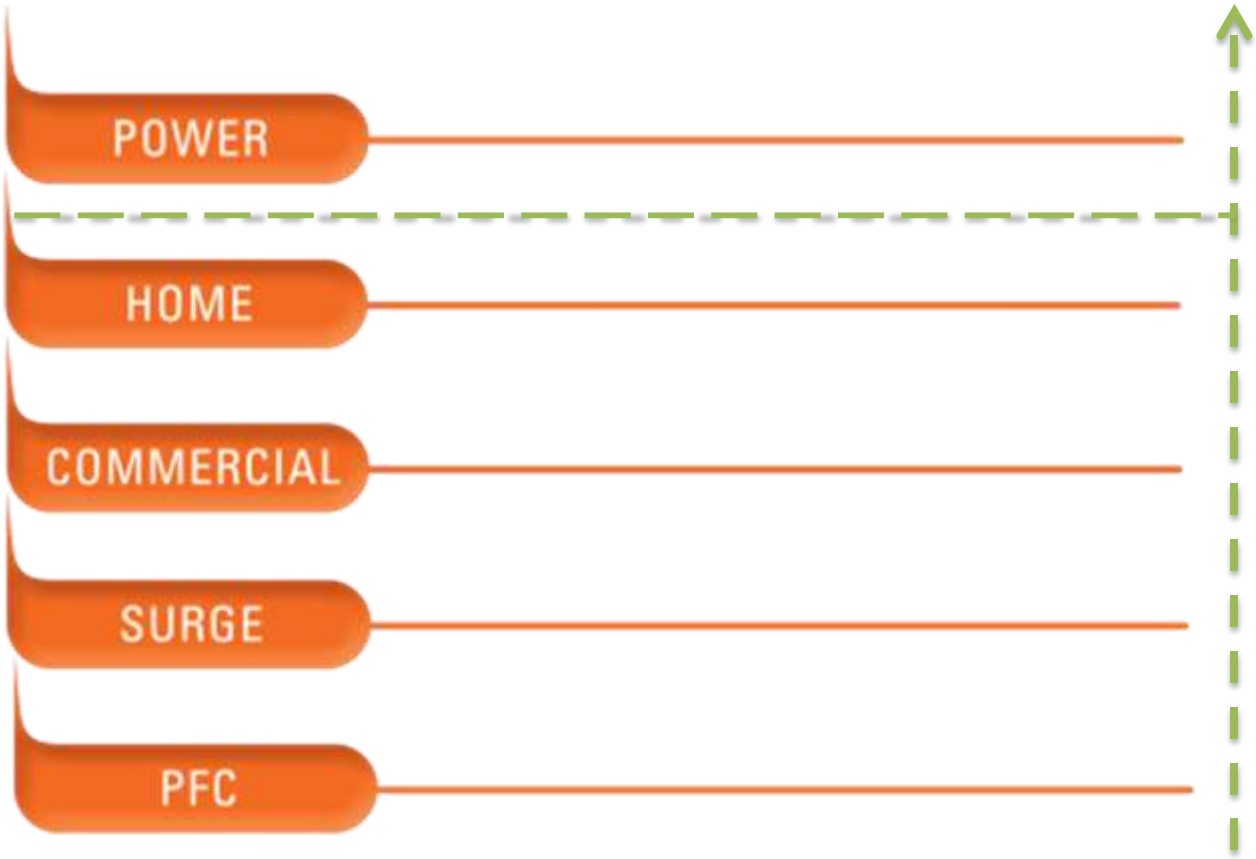
"We had an ECO-MAX optimiser fitted to reduce our energy costs, and it's done just that!"

Jonathan Ballington – Hotel Manager

gwe & eco-max VO Summary

- Largest range of Voltage Optimisers available from any manufacturer so one will suit your premises
- Off the shelf range designed with the electrical contractor in mind for quick easy installation
- The best quality products available – ISO9001:2015
- Experts with an excellent reputation in the VO industry
- Instant reduction in energy consumption and carbon emissions and Electricity charges
- Excellent return on investment – 2-4yr payback

Product Lines Reminder



Thank you for your time.

Any questions?

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