

powerstar[®]



**Solving Energy Pressures for
Food and Drink Manufacturers**

About us

ENABLING THE ENERGY TRANSITION WITH RESILIENT POWER SOLUTIONS

Empower clients to **decarbonise** and take back control of their on-site power, delivering energy management solutions that enable clients to **achieve their innovation and growth ambitions.**

From concept to completion, we design and deliver power solutions that drive decarbonisation, enhanced energy security, and generate **cost savings.**





Minimising the impact of elevated energy prices and finding ways to make a business more energy efficient are vital in managing costs and protecting increasingly narrow profit margins.

Food and drink manufacturers face unprecedented pressure when it comes to cost reduction, as food price inflation presents an ongoing challenge.

With energy accounting for around 15% of the total costs for the average Food and Drink manufacturer, minimising the impact of elevated energy prices and finding ways to make a business more energy efficient are a vital way to manage costs and protect increasingly narrow profit margins.



**EMPOWER CLIENTS TO REALISE SUSTAINABILITY GOALS,
OVERCOME INFRASTRUCTURE CONSTRAINTS, OPTIMISE AND
PROTECT POWER QUALITY AND ACHIEVE COST REDUCTION**

Increasing pressure to reduce carbon emissions:

Consumers increasingly factor sustainability into their
purchasing decisions

Growing expectation from major retailers for their suppliers to
demonstrate net zero commitments.

Achieving this without increasing costs can be extremely
complex and difficult to achieve.



1 Tonne of Carbon



1 tonne of carbon dioxide gas would fill a cube 8.13 metres high. You can see what this might look like in comparison to a semi-detached house.

It is also equivalent to driving around 3,800 miles in a diesel car

or

from Lands' End to John O'Groats 4.5 times.



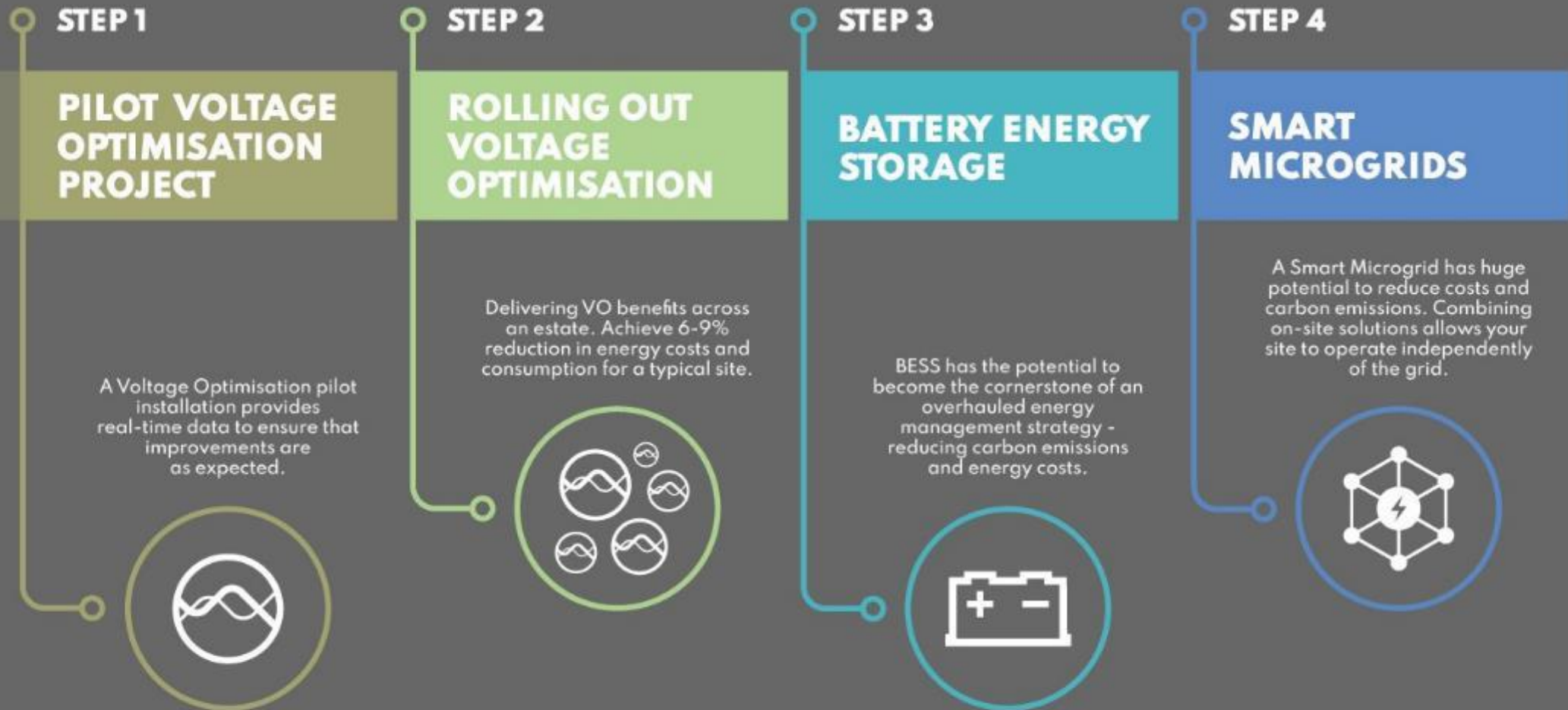
Environmental, Social & Corporate Governance

Energy efficiency can improve ESG credentials, delivering a substantial improvement to environmental governance alongside tangible financial and operational benefits.



JOURNEY TO ENERGY EFFICIENCY

Intelligent energy management solutions to reduce costs, energy consumption and carbon emissions.



Technology



Voltage Optimisation

Reduce carbon footprint and the cost of energy.

THE BENEFIT

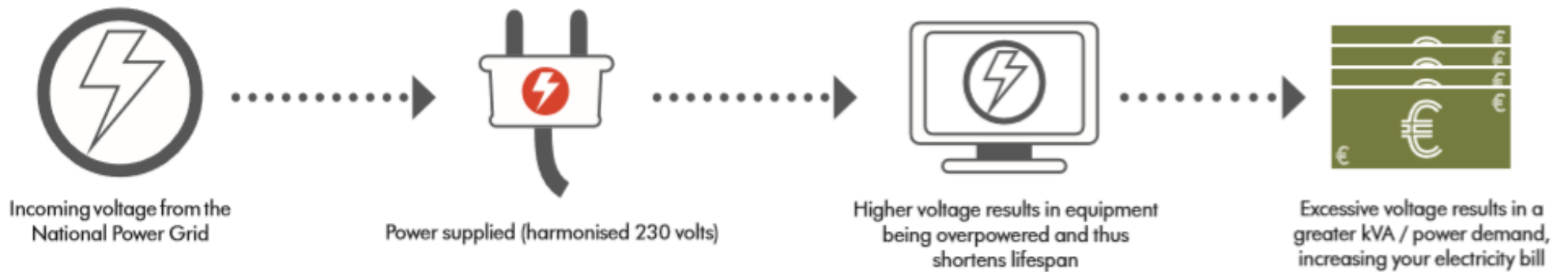
Optimises incoming voltage, reducing your energy consumption and associated energy costs

Every 1.5V reduction saves ~1% energy, CO2 and £.

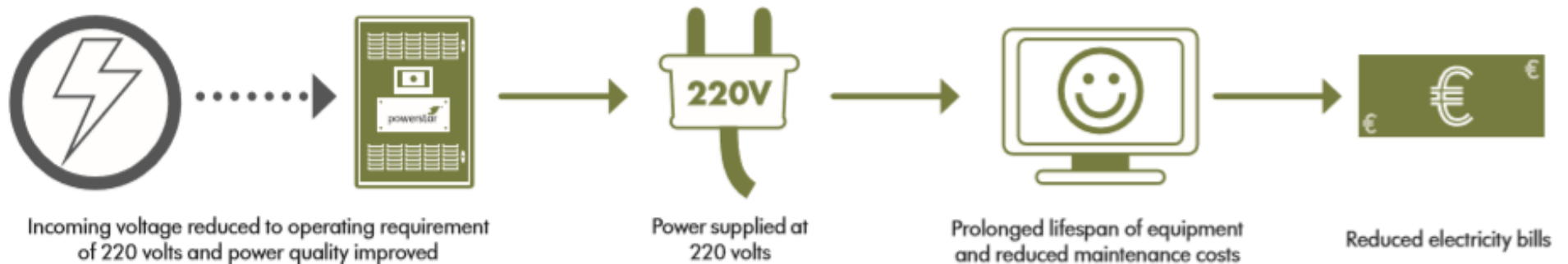


Voltage Optimisation – how it works

NORMAL ELECTRICITY CONSUMPTION



powerstar[®] CONTROLLED ELECTRICITY CONSUMPTION



VO roll-out: project example

With energy spend forecast to double over the next 3 years, the client faced **increasing price pressures** from the market.

The goal: **eliminate energy wastage** and **decarbonise** our **manufacturing** process, without impact to operational efficiency.

Site feasibility study: selection of a **pilot site** to **prove the concept** of VO technology

Year 1 cost savings are projected at almost £18k.

Long-term strategy: VO roll-out across the wider estate and investigate other technologies

Achieve 3-year payback on the initial outlay and guaranteed further saving over the life of the asset

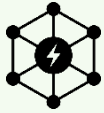
19 tonnes

CO₂
EMISSION
SAVINGS

9%

REDUCTION
IN ENERGY
COSTS

Technology



Microgrids & Smart Microgrids

Small-scale electricity systems that can function on their own, or alongside the main power grid

WHAT ARE THE ADVANTAGES OF A MICROGRID?

- ✔ Reliability and security
- ✔ Resilience
- ✔ Energy Efficiency
- ✔ Cost savings
- ✔ Environmental benefit
- ✔ Flexibility



Smart Microgrids

A smart microgrid can be the most effective way to ensure **power resilience**, **reduce costs** and **resolve complex energy infrastructure challenges**

By combining energy storage, on-site generation and intelligent control software, a smart microgrid can allow a site to operate independently of the grid, ensuring that a data centre continues to operate correctly even in the event of a prolonged power outage

Smart microgrids also play a vital role in facilitating vital infrastructure upgrades, that otherwise risk being turned down over grid constraint concerns or that would result in costly new connection works

**enabling your energy transition
with resilient power solutions**

-  **decarbonise**
reduce your carbon emissions
-  **cost reduction**
reduce your energy bills
-  **resilience**
protect your site from power failures
-  **grow**
overcome grid constraints
preventing growth

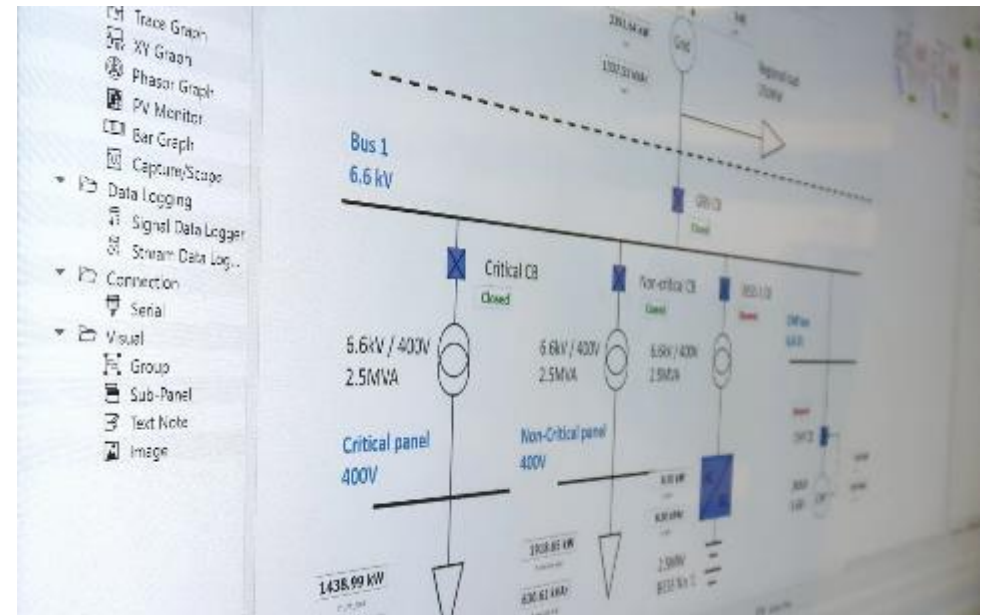
Feasibility Studies

An accurate and comprehensive feasibility study should be the first step taken before and significant energy infrastructure project

- Mitigate risks
- Ensure the project delivers as expected
- Resilience assessment:
 - system/scheme will ensure continuity under varying conditions

Studies allow for a range of factors that will influence timescales, costs and end results to be properly assessed and reported on

- Customer needs
- Site and infrastructure
- Permissions –grid constraints or other permissions
- Costs and funding – Provides a complete picture of available grants, funding and total costs



Digital Modelling

Digital twins are a comprehensive replica of a site created in a digital space

Any proposed solution can be comprehensively tested, providing a full understanding of how it will interact with existing electrical infrastructure and perform across a wide range of different external factors

Ensures that a proposed battery energy storage and UPS solution will operate as intended, well before any manufacturing, installation or commissioning works are carried out



Battery Storage

A BESS UPS forms the cornerstone of an intelligent energy management system and infrastructure

Allows energy to be stored for use when needed later, as well as providing site-wide power resilience to prevent if grid connection is disrupted.

Battery storage supports a wide range of energy management objectives and plays a key role in maximising the return on investment of renewables, without exceeding agreed supply capacity on the site's grid connection.

One vital outcome of a feasibility study will be an accurate sizing of the battery energy storage system that meets the needs of a site

- cost effectiveness
- capacity to provide emergency power in the event of disruption
- supporting existing on-site generation



Energy Control Systems

At the heart of an effective energy management strategy that delivers on cost-effectiveness, carbon reduction and power resilience

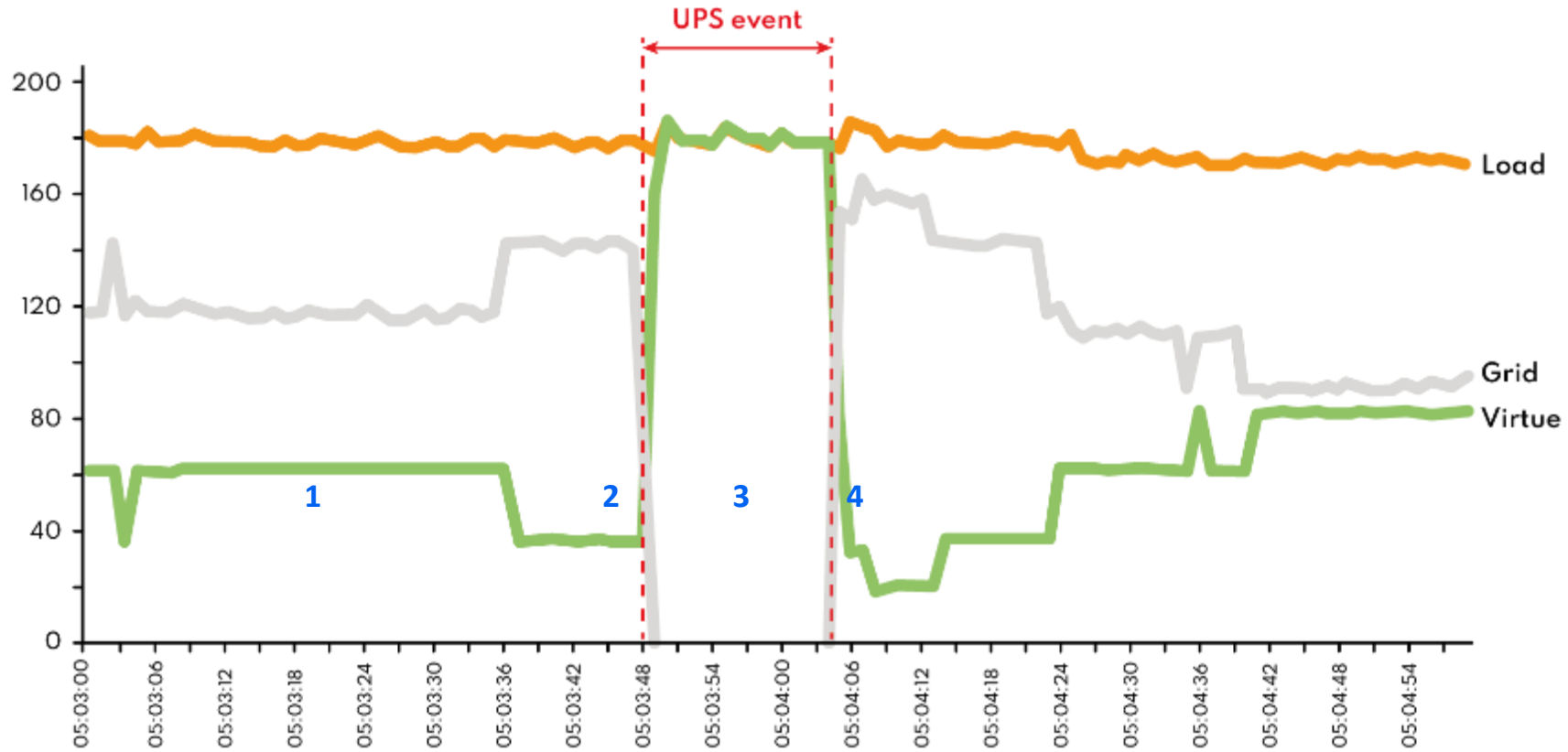
Neural network-based artificial intelligence for asset prioritisation, to make intelligent decisions on the optimal way to use power across a site at any given time

The more technology and assets on site that are connected to this power control system, the quicker the microgrid control software can monitor, learn and improve





BESS UPS in practice



1 – BESS discharging in grid mode

2 – UPS event happened at 05:03:48

3 – BESS successfully supported load for 15 seconds

4 – BESS switched back to grid mode after synchronisation

Rotherham Hospital

Improving Sustainability

Maximising energy efficiency has become increasingly important with rising energy prices.

With efficiency, clients also benefit from improving sustainability and reducing scope 2 emissions

For optimal results, vital to understand current energy consumption.

Fundamentally, energy efficiency supports you to eliminate energy waste.

Energy management software provides a real-time view of how a site is operating. Allows potential improvements to be readily identified and enables you to make informed decisions.



Quorn Foods Case Study

Challenge: net zero emissions by 2030, as part of their Supply Chain Sustainability Strategy

- Production processes as efficient as possible
- Reducing energy costs, without impact to operations and reputation for excellence
- Reduce carbon emissions

Approach: Site feasibility study.

Installation of voltage optimisation and low loss transformers: ageing transformers identified as a potential for power failure.

- 10.2% annual reduction in energy consumption
- £71,000 annual energy bill savings
- 365 tonnes annual reduction in carbon emissions



Customers



We have now installed more than 400 Powerstar systems in our estates and the carbon savings are fantastic. It is the equivalent of removing the emissions of 24,000 UK households from the National Grid. A Great result for our company, and for the environment."

Chris George, Head of Energy and Environment at Whitbread hotels and restaurants

From explaining how the technology worked, throughout installation and into verifying the savings we were making. A great company to partner with if you're looking to reduce your energy consumption.

Chris Hayman, Managing Director, M I Dickson



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Q&A

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