

Energy Reduction

REDUCING ENERGY CONSUMPTION



Minimising your carbon footprint whilst improving your work environment and reducing costs.

AES energy reduction services deliver a huge multitude of benefits for industrial and manufacturing companies. Our energy reduction services cover four main areas, all of which significantly reduce energy consumption:

Low Energy Lighting

Voltage Optimisation

Variable Speed Drives

Energy Efficient Motors



Energy Reduction

Energy consumption has become an area of close scrutiny over the last 10 years, and companies are becoming more mindful of energy usage and its subsequent impact on the environment.

To help you understand where you can make the most significant impact, we offer a **free energy reduction audit of your operations**. A full report will be provided, detailing energy consumption savings and the real cost savings to your business which can be added back to your bottom line. If you are a multi-site operation, the cost savings and return on investment in energy reduction can be realised within a much shorter time.

Low Energy Lighting

Energy efficient lighting utilises more advanced technologies such as **LED, T5** and **induction lighting**. Not only do these products have a **much longer life span** (with a much slower Lumen depreciation), they are much **more efficient** in terms of Lumen per Watt. Plus, they outperform previous commonplace solutions such as incandescent, CFL and halogen bulbs. The latest products utilise an efficient electricity conversion system and **reduce the amount of energy wasted on heat**.



An investment in low energy lighting will **significantly reduce your operational running costs** and deliver a **positive return on investment** long term. Typically, these returns are achieved within a 3-5 year period.

Presence/movement sensors, daylight sensors, and automated lighting can **further reduce operational costs** by utilising lighting only when necessary. We include lighting control with our initial site assessment to identify where additional energy is being wasted.

Five Things to consider when choosing lighting

1. **Cost** – Light fittings can be expensive so make sure the sums add up and will provide ROI.
2. **Working Environment** – Test lighting levels to ensure it is good enough and within HSE recommended levels.
3. **Evidencing impact** – to validate predicted savings it is worth installing a fixed, permanent or temporary energy meter.
4. **Is there a warranty?** – Always check whether there is a warranty on the light fittings proposed (AES offer a 5 year warranty).
5. **Are they fit for purpose?** – A food factory must use light fittings that have no glass, or use T5 lights with food-grade shrink-wrapped tubes.



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Voltage Optimisation

Electricity suppliers in the UK are allowed to provide electricity to commercial properties at 230v, with an allowed -5/+10% tolerance. This means that the **voltage input into a business can be much higher than is actually required.**

All equipment is designed to run at the most efficient levels, but **poor control over the incoming voltage (and tolerances) can significantly reduce efficiency.** For example, a 230v filament lamp should run for 1000 hours; however, if the voltage input is 240v (still within the tolerance), it will fail after 550 hours and will have used an additional 9% energy.

Multiply the example above across every single component requiring electrical input, and you can see the **impact voltage optimisation can have in reducing costs and energy consumption.**

Voltage optimisation could cut your energy consumption by up to 20%, increasing your maximum output by 10%, and prolonging the life and reliability of all your equipment.



Variable Speed Drives

While some machinery needs to run a fixed speed within a production environment, many motor applications, fans and pumps have different processes. This is where a VSD is beneficial.

VSDs convert the incoming electrical supply of fixed frequency and voltage into a variable frequency and voltage output to the motor, with a corresponding change in speed and torque. Most are controlled automatically.

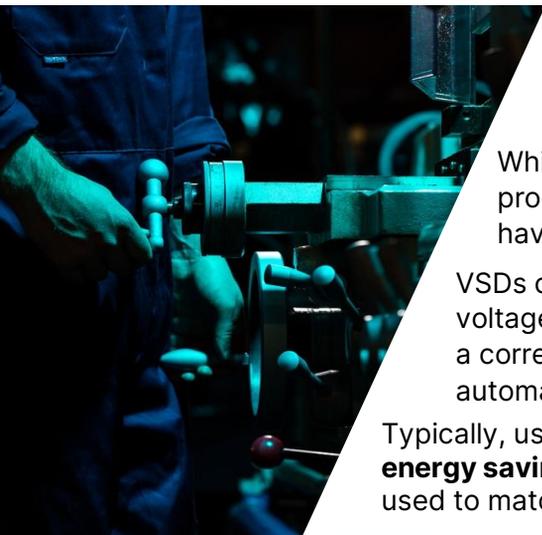
Typically, using a VSD to slow a pump motor or fan by 20% can make an **energy saving of around 50%.** By running at a slower speed, the electricity used to match this new requirement is significantly reduced.

Energy Efficient Motors

A key area where industrial, engineering and manufacturing businesses can realise significant gains in energy reduction is replacing old plant machinery motors with modern, energy efficient motors.

Efficiency is very simply the ratio of the mechanical power delivered by a motor to the electrical power supplied. E.g. an 83% efficiency ratio means that a motor is successfully converting 83% of electrical energy into mechanical energy, with 17% being lost – most commonly through heat dissipation.

Modern-day energy efficient motors have a significantly improved motor design, are made with high-quality materials which minimise losses, generate less heat and offer significantly reduced noise output.



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