Exceptionally cost effective Voltage Optimisation solutions for LV applications.

Engineered to the highest standards, our Wilson VO units are manufactured to suite your individual site's needs. This means we can provide you with the equipment you actually require and can achieve impressive cost savings when compared with leading suppliers.

Payback under 12 months time – Working hard for you and the environment

What's more, our prices are based on the cost of manufacture and not the projected savings you make.

This way we help you achieve surprisingly short payback times of typically 18 and often less than 12 months. And because we don't compromise on quality you are safe in the knowledge that you made your budget work extra hard, both for you and the environment.

Honest, straight forward equipment

Our Wilson VO units are auto transformers with fixed voltage tappings to optimise your output voltage. In addition the units feature a closed loop delta winding to suppress any harmonics that appear in the system (typically 3rd, 5th & 7th). The Wilson VO windings are made from highly conductive copper and have cores from cold rolled grade orientated steel laminations. Nothing more and nothing less.

Quality Voltage Optimisation equipment at highly competitive prices: ***The engineers choice***

What is Voltage Optimisation?
See page 2 ➔

Benefits of Voltage Optimisation

from Wilson Power Solutions

- ***Cost effective solutions deliver optimised supply voltage***
- ***Payback typically achieved within 18 months***
- ***Equipment life prolonged and maintenance reduced***
- ***Measureable savings in energy consumption***
- ***Operating costs lowered by average of 13% per annum***
- ***Carbon footprint reduced through decreased CO2 emissions***
- ***Expertise of Wilson's power engineering team***

WILSON POWER SOLUTIONS *Responsible Power Engineering*

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Formerly Richard Wilson (Dencol) and Power and Distribution Transformers

WILSON POWER SOLUTIONS *Responsible Power Engineering*

CUT CO_2 SAVE £

Wilson VO – *the engineers choice*

What is Voltage Optimisation?

Put simply, Voltage Optimisation is an energy-saving technique that systematically reduces the supply voltage to a site in order to reduce the energy losses in equipment.

With increasing pressure to reduce energy consumption and minimise their carbon footprint, a significant number of businesses are starting to explore the benefits of Voltage Optimisation to help reduce energy waste.

How Voltage Optimisation can work for you

We keep our proposition simple, so it is easily understood by those of our customers who are not engineers but who we want to help understand more about the VO; the Wilson's 'no frills' approach, and our ability to help reduce both your energy costs and associated emissions on a budget.

Power in terms of Current and Voltage

Simply put P = I x V
Or Power = Current x Voltage
Alt. Watts = Amps x Volts

It follows that for a constant power situation then reducing voltage will cause the current to rise. If this is the case, how does the VO work to save you energy?

A common misunderstanding

The notion that electrical loads always have constant power is not correct. For example, if an input current or voltage should vary, it does not follow that the other quantity will variation to maintain the existing power level. Therefore the formula P = I x V means that the power used is the product of both current flowing and voltage applied. It depends on the NATURE or TYPE of load concerned.

An effective solution

Energy saving through Voltage Optimisation is based on the principle that the nameplate power of a device, such as 1kW for an electric fire, will be delivered at any voltage within an operating range. In the UK the range is 207V to 253V. However, above optimum voltage, any additional energy used will not necessarily improve performance. A device that has been designed to work anywhere in Europe, such as our electric fire, has an optimum operating point of 220V.

Above this voltage and at the UK supply average of 242V, the fire will deliver its heat output of 1kW plus some, but the additional power dissipated will increase running costs whilst the extra heat may not be required and will shorten equipment life.

The solution? Remove the difference between the existing supply voltage and the optimum design voltage, allowing the electrical device or equipment to operate at its most efficient level without affecting its performance.

Ohm's Law

Ohms law provides the relationship between **(E)** voltage, **(I)** current, and **(R)** resistance. Alternatively it can be stated one ohm is the resistance value through which one volt will maintain a current of one ampere. In a little more detail.

(I) Current flows through a wire or conductor like water flowing down a river. Current flows from negative to positive mainly on the surface of a conductor (metal). It is measured in amperes (a) or amps.

(E) Voltage is the difference in electrical potential between 2 points in a given circuit. It's the push or pressure causing the current to flow through a circuit. It is measure in volts (v).

(R) Resistance determines how much current will flow through any component. Resistors are used to control voltage and current levels in any circuit. A very high resistance allows a small value of current to flow; a very low resistance allows a large amount of current to flow for a given voltage. It is measured in ohms.

Finally we can include for completeness power from our other formula:

(P) Power is the product of quantity of current multiplied by voltage Level applicable at a given point. It is measured in watts.

Combining Ohm's Law with Power Formula for Voltage Optimisation

Reminder : **V = I x R** so that **I = V/R**

P = I x V so that **P = V2/R**

Here **(I)** is the current thro' a resistance in amps, **(V)** is the potential difference measured across the resistance in volts and **(R)** is the resistance of the conductor in ohms. Moreover Ohm's law states that **(R)** in this relation is constant – independent of the current.

This last formula is fundamentally important as it suggests that by reducing voltage, the power taken will also reduce as the square of the voltage resulting in a saving of energy.

Put another way - an 8% reduction in supply voltage from 240V to approx 220V. With a 20 ohm load will cause the utilised power to drop from 2880W to 2420W representing a 16% saving. Of course, not all real electrical equipment can be modelled as a simple resistance in AC circuits. Some equipment, particularly modern devices that use electronic power supplies, behave slightly differently.

So the overall saving from a typical installation is around 11 -13% for the given voltage reduction rather than the full 16% predicted by Ohm's law.

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CUT CO_2 SAVE £

Wilson VO – *the engineers choice*

Electrical characteristics and performance data

	Um	Data
Application		Voltage Optimiser
Rating Power – Air Cooling (AN)	kVA	1000
Secondary Winding	V	400
Max Current	A	1450
Primary Tappings	%	Minus (-) 7,8,9,10,11,12
Primary Connection		Star
Vector Group		Yn
Harmonic capture		Closed Loop Delta
Insulating Class	kV	1.1/3/-
Core Loss	W	600
Impedance @ 75°C (AN)	%	< 2%
Noise Emission Lpa	dB (A)	< 50
Supply Frequency	Hz	50
Partial Discharge Value	pC	< 10
Secondary Insulating Class		F
Temperature Rise	°C	155
Protection Class	IP	00
ENVIRMOENTAL & CONSTRUCTION DATA		
Vacuum Impregnated		Yes
Winding / Coil Material		Cu/Cu
Lamination Type		M5T30
Core Steel (Insulated)		CRGO
Ambient Temperature	°C	-25 to +40
Humidity	%	80
Installation	m	≤ 1000 a.s.l.
Climatic Withstand EN 60076		C2
Environmental Withstand EN 60076		E2
Dimensions A x B x C	mm	
Weight	kg	

WILSONVO
THE ENGINEERS CHOICE

Quick payback times and uncompromised quality: Our Wilson VO units are manufactured to suit your site's exact requirements and thus provide you with the highest quality equipment at convincingly low prices.

Wilson VO features

- ***Closed loop delta windings***
  to suppress harmonics
- ***Fixed Voltage tappings***
  to optimise output voltage
- ***No moving parts***
  = virtually maintenance free