

ECO-MAX-POWER OPTIMISERS



Reference: 090713-1433
Client: Holiday Inn
Type Of Building: Hotel

A Case Study

Introduction

The Carbon Trust surveyed the hotel, with a view to identifying and prioritising up to 6 actions to reduce energy consumption. It was highlighted that voltage optimisation and power factor correction would be beneficial in reducing the hotels energy consumption. GWE were contacted as a potential supplier, and it became apparent that GWE were the only company that could supply a single solution to handle all of the specific site issues. Data logging was provided to measure consumption and provide baseline figures. During this process it emerged that the site suffered from large voltage swings which made it unsuitable for standard forms of fixed voltage optimisation.

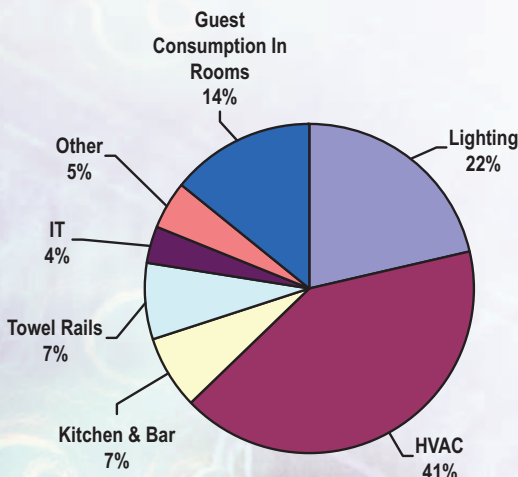
The Solution

GWE's ECO-MAX-POWER optimisers are used to optimise the voltage to a single piece of equipment, localised area or an entire building. They can be supplied with fixed or variable outputs, with or without power factor correction.

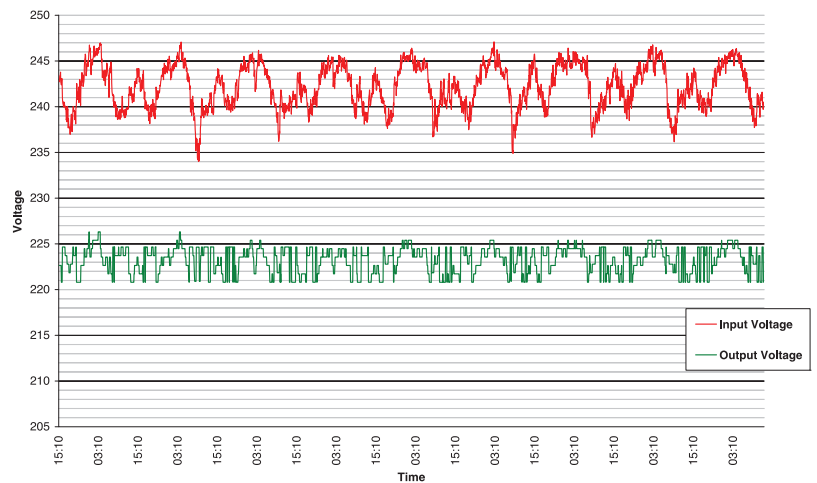
In this instance a three staged optimiser with power factor correction was designed to deal with the specific issues identified, and to achieve the maximum possible energy saving. The unit was installed and further data logging carried out to measure the savings. Historical data was used to exclude seasonal variations in energy saving calculations.

Existing Load Profile

The chart below shows the hotels electrical consumption proportioned to the different types of electrical equipment used (the electrical load profile). Because different types of electrical equipment return differing levels of energy saving for the same reduction in voltage, with a load profile such as the hotels, it makes more sense to optimise the voltage to the entire building using an ECO-MAX-POWER optimiser. In this instance this approach will typically reduce the overall electricity bill by 9-16%.



Holiday Inn - 15th - 24th March



The ECO-MAX-POWER optimiser provides a stabilised reduced voltage to the hotel, whilst ensuring it remains above 221v, and the integral power factor correction improves the power factor from 0.86 to 0.97.

Energy & Financial Summary of Project

Previous twelve months electricity consumption	475,059 KWh
Previous twelve months electricity cost	£36,484
Reduction in electricity consumption, per annum	42,755 - 76,009 KWh
Reduction in electricity cost per annum Exclusive of VAT	£3,283 - £5,837
Saving from improved power factor (by removing reactive power charge)	£600
Total project cost	£13,349.25
Payback period	41.3 - 24.9 months
Reduction in CO2 emissions, per annum	78.6 - 139.7 tonnes

Carbon Trust & Salix Funding

The full cost of this project was funded by a Carbon Trust interest free loan. The repayments were structured to be less than the financial gain made from the monthly energy saving, so cash flow is positive from day one. Private companies can visit www.carbontrust.co.uk for further information, information on a similar scheme for the public sector can be found at www.salixfinance.co.uk.



ECO-MAX-LIGHTING OPTIMISERS



Reference: 050720-1000
Client: Caterpillar Logistics Services - Manchester
Type Of Building: Distribution Centre

A Case Study

Introduction

The lighting in the main warehouse of the distribution centre operates 24 hrs/day 6 days/week, and represents 65% of the sites electrical consumption, so is a major operating cost. The existing Metal Halide light fittings are less than two years old, there are no maintenance issues and light levels are far higher than are actually required. CAT were keen to reduce their energy consumption without the creation of unnecessary waste, disruption to their operations and the high cost associated with needlessly replacing the existing light fittings. GWE was approached by CAT to assess the feasibility of retrofitting a suitable lighting control system.

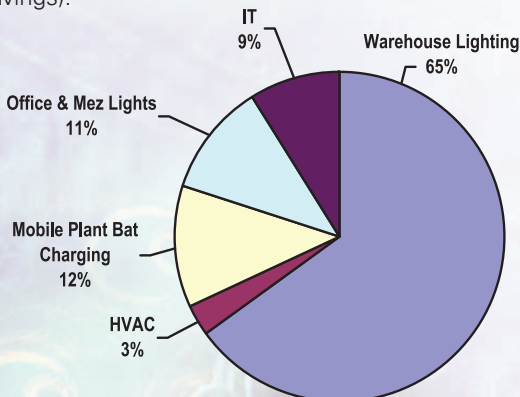
The Solution

GWE's ECO-MAX-LIGHTING optimisers are a centralised lighting control system specifically developed to control all high pressure discharge lamps, including Metal Halides, by using a combination of voltage optimisation and conventional off control strategies.

In this instance, five daylight linked lighting optimisers were designed specifically to control each area of lighting, in order to achieve the maximum possible energy savings. These units were quickly installed with no disruption to CAT's operations, followed by further data logging to verify the energy saving at 29%. Over the following twelve months the sites electricity bills were closely scrutinised and it emerged that ECO-MAX had reduced the sites overall electrical consumption by almost 20%.

Existing Load Profile

The chart below shows CAT's electrical consumption proportioned to the different types of electrical equipment used on site (the electrical load profile). In CAT's case it made more sense to optimise the voltage to only the lighting, rather than the whole building, because the lighting accounted for 65% of the sites electrical consumption, as shown. In fact, there would be very little additional saving gained by applying voltage optimisation to the remaining electrical equipment, which comprised of, high frequency office and mezzanine lighting, (no saving), mobile plant battery charging, (no saving) and HVAC equipment, (some savings).



Energy & Financial Summary of Project

Current annual lighting electricity Cost Exclusive of VAT	£72,794.50	
Reduction in electricity consumption per annum	261,140 KWh	
Reduction in electricity cost, per annum Exclusive of VAT	£20,891.17	
Total Cost of Equipment Excluding installation cost and VAT	£22,336.00	
Payback period in months, without ECA	Supply Only 12.8	Installed 17.7
Payback period in months, with ECA**	9.2	12.8
Reduction in CO² emissions	140 tonnes	

**Based on 28% corporation tax as the control system was configured to meet the requirements of the ECA scheme.

Enhanced Capital Allowance (ECA), Scheme

The Energy Technology List (ETL) forms the criteria of the Governments Enhanced Capital Allowance (ECA) scheme which allows companies to claim 100% tax relief on ETL compliant projects. ECO-MAX-LIGHTING optimisers can be configured to meet the ETL criteria, so are eligible for ECA.

This means that the full costs of a project can be offset against the companies corporation tax, providing a tax saving and cash flow boost in the year in which the project is completed. Full details of the process can be found at www.eca.gov.uk/etl/claim/non-listed.htm.

