

"To help meet our energy efficiency targets, 3M has now installed ECO-MAX lighting optimisers at four of our UK sites, which last year reduced our annual electricity consumption by 820,640kWhrs, and saved us £32,313.00 in electricity charges. The environment also benefited from a 352 tonne reduction in the level of harmful carbon emissions released in to the UK's atmosphere, by needless electricity generation" - **Group Leader, Facilities Engineering, 3M UK PLC.**



**Reference:** 031023-1200

**Client:** 3M United Kingdom PLC - Newton Aycliffe Site

**Type Of Building:** Modern Manufacturing Facility

## A Case Study

### Introduction

3M, founded in 1902 is today a diversified technology company, employing more than 67,000 employees, in more than 60 countries. One of its core values is to respect the physical and social environment, and over 25 years ago, 3M was the first major manufacturing company worldwide to publish its environmental policy, establishing it as a world-recognised leader in responsible environmental management.

### Existing Lighting

The Newton Aycliffe facility is split roughly in to two main production areas and a storage area. The production areas are illuminated by high pressure metal halide luminaires to give 500lux. The storage area which had recently under gone a lighting refit is illuminated by high frequency fluorescent strip lights. This case study focuses on the two production areas, as potentially these would offer a larger energy reduction with an acceptable return on investment.

**Type Of Lights:** 250/400W Metal Halide  
**Total Lighting Load:** 88kW  
**Annual Operating Hours:** 8760  
**Lighting Electricity Spend:** £29,459.00

### Trial

The energy-saving capabilities of the ECO-MAX system were demonstrated in a "with and without" scenario, in order to verify the level of energy reduction and financial benefit to 3M and to ensure that the existing system had no detrimental effect on light levels.

### Trial Results

The trial which included approximately one half of the production area lighting, demonstrated a 23.7% reduction in the electricity consumption of the existing lighting with the ECO-MAX optimiser connected. Unfortunately due to the age of a number of existing lamps the effect on light levels was initially unacceptable. However after replacing a number of "tired" lamps, and "fine tuning" the ECO-MAX internal settings, light levels were increased to well above the levels that were present before the introduction of the ECO-MAX optimiser.

**Electrical Load Of Lighting:** 40.1kW  
**Reduced Electrical Lighting Load:** 30.6kW  
**Lux Level Measured:** 684 lux  
**Reduction in Electricity Consumption:** 23.7%

### Energy and Financial Benefits Across Site

Because the light fittings employed across the two areas are identical, and site conditions remain relatively constant, this data could be extrapolated across the remaining production area lighting, in order to calculate the overall energy and financial savings that could be made by implementing ECO-MAX technology.

**Annual Reduction In KWhrs:** 177,643  
**Annual Financial Benefit:** £7,481.00



### Return On Investment (ROI)

At today's electricity tariffs, 3M would fully recoup the capital investment required in just 13.7 months, by opting for the Silver service level, i.e. fully installed and commissioned, (the figures are detailed below).

In addition to the reduction in energy and maintenance costs, ECO-MAX optimisers also qualify for Enhanced Capital Allowance, (ECA), due to their inclusion on the Carbon Trust Energy Technology List, (ETL), currently the only equipment of this type that is listed. The ECA scheme provides companies with a welcome cash flow boost in the financial year that the investment is made. A free publication, (PFL188), which details the effects of the ECA scheme is available from the Carbon Trust by calling, **0800 585794**, or alternatively it can be downloaded from their website [www.eca.gov.uk](http://www.eca.gov.uk).

Capital Investment Required £12,230.00

### First year financial benefits

Enhanced Capital Allowance (@ 30% tax rate) £3,669.00  
 Financial benefit from reduced energy consumption £6,982.00  
 Financial benefit from reduced maintenance costs £500.00

### Year on year financial benefit

Financial benefit from reduced energy consumption £6,982.00  
 Financial benefit from reduced maintenance costs £500.00

**ROI in Months 13.7**

### Carbon Trust Interest Free Loans

SME's that implement ECO-MAX optimisers may also qualify for a Carbon Trust Energy-Efficiency Loan. The repayments for these loans, which are Interest Free and without arrangement fees, are structured to be less than the energy saving made, allowing companies to benefit immediately from an improved cash flow. Further information can be obtained from the Carbon Trust by calling **0800 585794**, or at [www.thecarbontrust.co.uk](http://www.thecarbontrust.co.uk)

For larger companies that fail to meet the criteria of the Energy-Efficiency loan scheme, but would also prefer to see the financial benefits of the ECO-MAX transferred almost immediately into an improved cash flow, then lease purchase may be a better option, as cash flow for many companies can be positive in just a few months.

Written testimonials, site visits, or further information from the Carbon Trust can be provided by contacting Gw Energy directly.

