

## The achievement

When a major petrol station operator with over 800 sites in the UK upgraded one of its urban sites in the south east, it replaced existing external light fittings with a modern, energy efficient alternative. This step was taken in order to reduce electricity consumed in lighting by 67%; the projected payback was just 2.25 years. The new fittings also improved the quality of the forecourt's lighting, a known significant factor in customers' choice of stop, and at the same time much reduced the cost and inconvenience of lighting maintenance.

# Energy efficiency in petrol station lighting



Savings Summary	No of fittings	Circuit Watts	Running Hours pa	Annual kWh	Maintenance Cost pa	Total Cost pa
250 Watt HQI + manual switching	18	4950	8760	43,362	£750	£2711
Endurance + Autoflux	18	2700	5309	14,334	£0	£635
Savings		45%	39%	67%	£750	£2076

## Key benefits

- total savings of 29,028kWh per annum, representing a forecast load saving of 67%
- savings of 12.48 tonnes of CO<sub>2</sub> emissions
- lifetime cost reduction of 53% (in energy consumption, lamp replacement and maintenance)
- improved quality of lighting, providing
  - greater security and safety for staff and customers
  - enhanced trade.



— BUILDING SERVICES —  
CONSTRUCTION BEST PRACTICE  
[www.bsbpp.org.uk](http://www.bsbpp.org.uk)  
0845 606 5704

Theme of case study:  
**sustainable construction/  
culture and people**

Sector represented:  
**retailing/building  
services**

**Construction Best Practice  
Programme**  
PO Box 147 Bucknalls Lane  
Garston Watford WD25 9UZ

Tel: 0845 605 55 56  
Fax: 01923 664690

Email: [helpdesk@cbpp.org.uk](mailto:helpdesk@cbpp.org.uk)  
Website: [www.cbpp.org.uk](http://www.cbpp.org.uk)

**dti**

Department of Trade and Industry

RETHINKING



CONSTRUCTION

## Energy efficiency in petrol station lighting

### Background

Electricity consumption in lighting represents a substantial cost for petrol station operators. When, in April 2001, the British Government introduced a climate change levy, the commercial incentive to cut energy consumption and simultaneously make a real environmental contribution by reducing greenhouse gases was even greater than before. In 2002, cost reduction and sustainability are not the only business drivers in choice of lighting products, for lighting plays a key role in the visual appeal of petrol stations. Good lighting design is indisputably a crucial component of good forecourt design.

### Success step by step

#### 1 Plan a replacement programme

With long experience of operating a national network of petrol stations, the client is aware that a well lit, attractive site boosts sales, as well as providing greater safety and security to customers and staff after dark. The company therefore carries out lighting improvements as part of its ongoing programme of upgrading the appearance of its sites.

#### 2 Build good client relations

For the last decade, Chalmor, a supplier of energy saving products, systems and services, has targeted its marketing efforts at petrol station operators. As a result Chalmor has been one of the client's approved suppliers for several years; so when the opportunity to revamp the Windsor site arose, Chalmor could put forward a proposal based on its knowledge of the client's operations.

#### 3 Include supplier in the planning

Chalmor's work for this particular client had previously been on the basis of a 'retrofit', whereby energy efficient products were applied to existing lighting schemes. The Windsor site, however, was scheduled for a major upgrading as part of the client's corporate identity programme and called for a new lighting design. To maximise energy efficiency in this design, the client decided to consult Chalmor in the early planning stage.

#### 4 Demonstrate lifetime cost benefits

Chalmor produced detailed studies of the benefits of installing a complete system of induction lighting (a product introduced in the late 1990s) with automatic controls in petrol stations. The studies demonstrated that initially higher capital outlay on modern lighting systems would produce lifetime cost savings by reducing energy consumption and minimising maintenance.

The supplier proposed replacing the forecourt canopy lighting with a low-maintenance product, which guaranteed a 10-year lamp life before scheduled lamp changes. In contrast traditional lighting requires lamp replacements every two years.

## Key management issues

- be prepared to demonstrate that the initial high investment in energy efficient products results in a long-term overall cost saving
- include energy efficiency issues in the initial planning and design
- a client who involves a supplier at an early stage gets the most out of the supplier's input.

The lamps supplied by Chalmor are fitted in a sealed unit, which protects them from dirt and insects which normally affect performance. The lamps are weatherproof and can be cleaned by jet washer without requiring access equipment, therefore saving the cost of the provision of that equipment. Sites with traditional lighting, on the other hand, have to be cleaned annually. The cleaning and maintenance tasks involve a partial closure of the forecourt to allow safe access. This essential precaution discourages customers and disrupts trade. Consequently a lighting scheme with much reduced maintenance requirements has less impact on sales.

On the basis of the financial and performance data supplied by Chalmor, the client decided to proceed. A total of 18 fittings were installed and immediately achieved a 45% reduction in lighting load from 4.95KW to 2.7KW. Under this scheme, the existing traditional 250W lamps were replaced with modern 150W lamps.

In addition, the installation of a lighting management system, based on ambient light level and programmed time control, ensures that lighting is switched on only when required. The system also records the running time of the lighting: a reduction of 35% in running hours was forecast for the year ending July 2002. (The installation was completed early in July 2001.) With previous light fittings, a total of 8760 running hours were recorded, compared with a forecast of 5309 running hours with the new fittings.

The total cost of the lighting improvements was £9,175, including the lighting control system, representing an outlay greater than for traditional lamps and fittings. The forecast payback, however, was 2.25 years.

#### 5 Adopt as standard

The client has adopted the light fittings used on its site in Windsor as its national standard for all forecourt lighting and has contracted Chalmor to supply and fit these fittings as required.

### Outlook

Chalmor is working to adjust the specifications of its induction lighting systems to meet the requirements laid down by the government when in 2002 it introduced a 100% Enhanced Capital Allowances clause in its Climate Change Programme. The ECA is a tax break for investing in energy saving technology, including lighting controls.



CONSTRUCTION BEST PRACTICE  
**0845 605 55 56**  
[www.cbpp.org.uk](http://www.cbpp.org.uk)

### Possible next steps

For information on Building Services Best Practice Programme contact  
**Tony Matthews,**  
The Building Services Research and Information Association,  
Old Bracknell Lane West,  
Bracknell, Berkshire RG12 7AH  
Tel: 0845 606 5704  
Email: [Tony.matthews@bsria.co.uk](mailto:Tony.matthews@bsria.co.uk)

The Construction Industry Environmental Forum holds **workshops, seminars and visits** regularly to explore sustainable construction topics  
Tel: 020 7222 8891  
Fax: 020 7222 1708

You can book **visits to companies** to discuss a range of best practice business topics, by contacting the IUK team.  
Tel: 01730 235015  
Website: [www.iuke.co.uk/construction](http://www.iuke.co.uk/construction)

**Workshops** on a range of best practice business topics are held regularly by the Construction Productivity Network  
Tel: 020 7222 8891  
Fax: 020 7222 1728  
Website: [www.ciria.org.uk](http://www.ciria.org.uk)

You can book **training days**, organised as part of the Learning by Doing initiative, covering business improvement methods  
Tel: 01242 577 277  
Fax: 01242 228 285  
Email: [lbctraining@camargue.pr.com](mailto:lbctraining@camargue.pr.com)

**Fact sheets** on a range of best practice topics are available from the Construction Best Practice Programme  
Website: [www.cbpp.org.uk](http://www.cbpp.org.uk)

**Guidance notes** on preparing your own case study are provided on the website

For further information on this project contact **Steven Henry,** Managing Director, Chalmor Ltd,  
1 Albert Road Industrial Estate,  
Luton LU1 3QF  
Tel: 01582 748700  
Fax: 01582 748748  
Email: [info@chalmor.co.uk](mailto:info@chalmor.co.uk)  
Website: [www.chalmor.co.uk](http://www.chalmor.co.uk)