

Gull Kingsland – changing lighting systems saves money and cuts emissions

Replacing the lighting systems at one of their Auckland service stations with LEDs has shown fuel retailer Gull how it can achieve significant energy savings and out emissions.

A technical audit of the Gull Kingsland station's energy and light levels in early 2010 showed that replacing the metal halide forecourt lighting with new Crossover CRO2 light fittings was well worthwhile.

The audit revealed that the new light-emitting diode (LED) lighting system reduced the energy consumption by 283W per fitting – a massive 72% less than the previous metal halide lighting. This translates to a cut in annual energy use of about 18,000kWh simply by changing the existing site's forecourt lighting.

The change improved the light levels and it has also been good for the environment – with an estimated annual CO₂ emission reduction of about 3.6 tonnes.

About Gull Kingsland

Gull is an independent fuel retailer which has operated successfully in New Zealand for more than 10 years. Since its first retail sales of petrol in 1999, the company has expanded the network to 40 branded sites, with more planned.

Keen to improve the lighting levels

The initial aim was to improve the lighting underneath the Kingsland station's canopy. The forecourt needed a lighting upgrade as some of the lights were getting old and there had been some complaints regarding lighting levels. Additional lights were also required down the centre of the canopy. Given that lighting is the station's biggest energy expense, it made sense to seek an energy efficient option.

Gull's experience in Australia had demonstrated that LED lights were efficient and required less maintenance.

How it was done

Gull considered a number of LED manufacturers and chose three to trial on site. Once evaluated, the Crossover Ambient Canopy Light (CRO2) was chosen. The installation was relatively easy, as the replacements fitted the existing openings and it was not necessary to cut further holes into the canopy.

The CRO2 is a fitting with 100 individual LEDs. This model is designed for under-canopy applications such as service station forecourts. Its properties include:

- light output of 9,000 lumens per fitting
- rated lamp life of 60,000 hours+ (For a daily use of 13.5 hours a day, this gives a rated life of around 12.2 years. By comparison metal halide lamps last about 4.1 years.)
- power consumption of 115W per fitting
- instant lamp strike/restrike
- luminous efficacy of 78 lumens/watt.



The installation of LED lights has improved lighting levels (top - before installation; below - after installation).



✓ Key features

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- rated lamp life of 60,000 hours+
- power consumption of 115W per fitting
- instant lamp strike/restrike.

✓ Key benefits

The new Crossover CRO2 LED lighting system had a number of benefits at Gull Kingsland including:

- cutting the energy consumption per fitting by 72% or more than 18,000kWh a year.
- cutting annual CO₂ emissions by about 3.6 tonnes.
- improving lux levels overall, particularly in the central forecourt.

✓ Sector relevance

- Retail, especially supermarkets
- Conditioned spaces, like offices and coolstores

Better lighting, lower costs

The change of lights brought significant benefits – it improved lighting levels and quality, saved energy and maintenance costs and was better for the environment. In the case of the Kingsland service station, improving the existing light levels while reducing the electrical load by 72% has more than tripled the overall lighting efficiency (a 260% increase).

Gull Kingsland is saving approximately \$3,600 per year in energy costs. The project cost \$23,000 - giving a simple payback of 6 years. It is expected that the cost of the lights will drop as LED lighting becomes more mainstream, thus reducing the payback period of similar projects in the future.

The new lighting levels are slightly higher overall, particularly in the central forecourt area near the pumps. Gull reported that the LEDs also provided a 'much better' kind of light which reduced glare and light-spill on to neighbouring properties. Additionally, the forecourt lighting was improved by the replacement with LEDs as the metal halide lighting was in poor repair.

Impact on Gull's lighting policy and practices

Gull is now considering the use of LED lights at other service stations. They are already going in to the Matakana site and are likely to be used at any new builds and specified for upgrades at existing sites as necessary.

Gull is also re-considering its general lighting policy after it found the lux levels provided by the LED lights were at an appropriate level and reduced glare, despite being slightly lower than the industry norm.

Key personnel

Karl Mischewski (Sustainability Manager, Gull)
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Gull's perspective

**Karl Mischewski,
Sustainability Manager**

The lighting project at Gull Kingsland was a win-win situation, said Gull Sustainability Manager Karl Mischewski. "It improved the lighting, it saved us energy and maintenance and it's better for the environment. It's just the sort of technology we would like to see more of."

Further conversions to LED lighting were being considered by Gull and other companies should also consider the advantages, Mr Mischewski said. "It's important to evaluate the different products to see what best suits your site, rather than simply choosing the cheapest."

The LED lights provided a different kind of light – 'a nicer, whiter light' – which reduced glare and light-spill on to neighbouring properties.

That discovery was challenging Gull's and the industry's usual industry lighting policies, Mr Mischewski said. "It shows that service stations don't have to be lit up like Christmas trees just to meet a theoretical standard, when this kind of light is quite sufficient and saves energy."

AUGUST 2010/EEC1514

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