

Food warehouses save cost and energy with Carbon Trust funded LED lighting

Introduction

For the last three years Managing Director Paul Cope of UK based March Foods had been looking for a way to reduce energy consumption in his warehouses. After rejecting voltage controllers as old technology, he began to examine LED lighting as a potential smart solution. In January 2010 he knew he had found the answer when installer Tom Klimes of Interior Control Ltd presented him with an LED High Bay unit from Dialight, a UK based company specialising in applied LED technology.



March Foods warehouse lit by HPS on left and then by LED on right.

The lighting challenge

Paul Cope describes the problems he wanted to solve: "We had two 3,250 square metre (35,000 sq ft) warehouses with a total of 84 x 450W HPS lamps operating 24/5 and Saturdays. Even though we are not constantly in and out of all bays in the warehouse all the time, the old lamps couldn't be switched off as they took 10-15 minutes to re-strike, so I wanted a more energy efficient solution. And to be honest, the lighting was getting so that Lord Lucan could have hidden in our warehouse!"

About March Foods

March Foods is one of the UK's leading food contract manufacturers and packing businesses, specialising in providing timely and high quality production services. This privately owned UK business operates from its 11,000 m² (120,000 ft²) purpose built premises in Cambridgeshire, offering its brand owning customers individually tailored production cells, warehousing, laboratory facilities, engineering workshops, offices and an extensive range of blending, filling and packing equipment. The company's dedicated Continuous Improvement team is focused on examining all lines new or established and looking to see how it can improve every aspect of its operation including process reliability, quality and efficiency aimed at improving service and product.

"Lord Lucan could have hidden in our warehouse." *Paul Cope, March Foods*

"Then there's the maintenance problem. With 15 metre high ceilings (49 ft) you need to bring in a cherry picker to replace failed lamps and you can't have people working underneath. That means we'd typically wait until 4-8 lamps had failed before hiring the scissor lift over a weekend to replace them. This was costing about £2,000 annually."

"On top of that the HPS lamps are fragile and hang about 4-5 feet from the ceiling, so that just puts them in the range of an extended pallet truck. It was quite common to lose a few of them that way."

How the challenge was overcome with LED lighting

Interior Control replaced the 84 x 450W HPS lamps on a one-to-one basis with Dialight's DuroSite™ Series LED High Bay. This highly robust 150W fitting features eight arrays in a compact oval pattern that enables it to direct light efficiently with less wastage and delivers an immediate saving in power of 66%.



221 lux was measured at floor level in the aisles under LED lighting

Unlike HPS, the LED lighting has instant-on ability, so it works well with occupancy sensors and this has further increased energy saving to 72% as well as reducing carbon emissions by over 100 tonnes per year. The oval pattern of the arrays also means less wasted light on racking and more directed at floor level in the aisles where 110 lux was measured under the HPS, which had dimmed over time, increasing to 221 lux after the installation of the LED High Bays.

Tom Klimes comments: "We've removed the maintenance burden by fitting LED lighting, as these High Bays are warranted for five years of continuous performance and you can expect them to last ten or more if they're not in use 24/7. Also, they hang only two feet from the ceiling and are very robustly constructed, so the lights are no longer vulnerable to being clipped by extended pallet trucks. With LED lighting you really can 'fit and forget'."

Dialight LED benefits:

- 5-YEAR warranty = maintenance free
- 80% lumen maintenance after 60,000 hours
- 77l/w certified
- Significant energy savings
- Instant on/off
- Superior light quality
- IP66 rated to withstand dust and moisture
- Polycarbonate glaze
- No heat or UV
- No hazardous substances

"A guy in the warehouse said that the first night the LED lights were on he had to keep checking the back door as it was so like daylight they thought the door had been left open. " Tom Klimes, Interior Controls

He adds: "We could probably have got away with fitting two LED for three HPS rather than one-for-one, but chose instead to avoid the cost of rewiring. As a result you might think we've over-lit, but the March Foods warehouse workers love it. One of them even says that now he feels noticeably less tired at the end of a night shift."

Why we chose Dialight

Tom Klimes explains his choice: "For this job we went straight for an LED solution and Dialight's High Bays were the only ones we liked. You can see the quality – they're solidly built, durable and they come with a five-year warranty from a £77 million UK-based company rather than a three-year warranty from somewhere in China. They also incorporate top quality Cree LEDs and the drivers are well built to a good specification. All in all a sound product and their customer service people are great to work with."

Funding and payback

As a British SME, March Foods was able to have its LED installation funded by a 4-year interest-free loan of £38,000 from the Carbon Trust which offers a £1,000 loan for every 2.5 tonnes of CO₂ saved, so the capital expenditure is effectively funded by the energy savings. Having originally underestimated the energy savings to be made from using occupancy sensors Paul Cope now estimates that payback will take less than three years and may even be six months sooner than that when movements in electricity prices are taken into account. He reasons that with this sort of payback period it makes sense to retrofit LEDs even if you have a lease of 5 years or less on your building.

Looking ahead

"March Foods are so pleased with this solution that they're happy to be a reference site," said Tom Klimes, "and we've already taken a couple of other customers to see the installation who were very positive about it. They both operate 24/7 and can immediately see the benefits of LED lighting for companies like them." He adds, "This is our first experience of having the Carbon Trust provide the loan for a customer, but now we're finding lots of people wanting to take advantage of it to help them deploy energy saving technologies."

Paul Cope says: "We're delighted with our LED lights and the five-year guarantee is very important for us. I insist on a spotless warehouse, so I really like the brightness. In fact we're now thinking of going LED in the loading bay between the warehouses and even in the offices."

Carbon Trust funding

0% interest business loans of £3,000 - £100,000 are available from the Carbon Trust to help organisations finance and invest in energy saving projects like this.

Installation snapshot

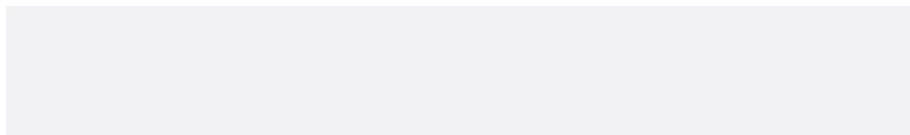
- 6,500 square metres/70,000 sq ft
- Number of fixtures – 84
- Replaced – 450W HPS
- Illuminance level – 221 lux
- Mounting height – 15 metres
- Energy reduction – 70%



Typical applications

- Warehouse
- Manufacturing
- Cold storage
- Canopy
- Gymnasium
- Tunnel

Dialight's DuroSite Series LED High Bay



About Dialight

Dialight (LSE: DIA.L) defines the current state of LED lighting technology with continuous innovations in light output, efficacy and reliability for their complete line of high-specification lighting fixtures specifically designed for industrial, commercial, hazardous location, transportation & infrastructure applications. These results are directly related to the company's ongoing commitment to advancing solid-state lighting products that vastly reduce maintenance, improve safety, ease disposal, and are more environmentally friendly – thereby helping to reduce CO₂ emissions, the dominant GHG contributor to global warming. The company is headquartered in the UK with operations in the USA, UK, Denmark, Germany and Mexico. More information about the company, its LED products and solid-state lighting technologies can be found at www.dialight.com

About Interior Control

UK based Interior Control Ltd is an experienced professional team of engineers, designers, environmentalists and process improvement practitioners, providing energy metering and saving solutions that include LED lighting. They are proud to be an official agent for the Dialight range of industrial LED lighting products. For the built environment they supply intelligent room automation systems, particularly for the hotel, and student accommodation markets. The MACH® system utilises well-proven technology and controls 1,000s of rooms worldwide. For energy metering they supply a range of smart meters providing socket and distribution board level smart metering with live data capture, a simple web based interface and comprehensive management and reporting features. More information about the company and their product range can be found at www.interiorcontrol.co.uk



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