

## LED lighting helps Forth Ports win green award

In March 2013 Forth Ports was named Edinburgh's greenest company in awards that recognise the city's best businesses. Lighting innovations at Leith docks were among the initiatives that helped the UK port operator clinch the prize at the Edinburgh Chamber of Commerce Business Awards. There was more to the lighting improvement, however, than just its green credentials.

### The Challenge

Even in daylight in Shed 3, a bulk store at Forth Ports' Leith facility, the 400W SON high bays were struggling to provide adequate illumination. The heat they generated was burning cargo dust onto the polycarbonate lenses and greatly impairing their performance, but lamp replacement was a great challenge as it could only be carried out when the shed became empty. That could mean a wait of just a few days or even a year in a specialist bulk store like this which is used to store food commodities. Clearly, when there is product stored, the areas above cannot be accessed for maintenance, so the replacement had to be with fittings that require limited maintenance and have longevity of life. To make it worse, the inefficient SONs were actually drawing around 440W each.



Forth Ports Shed 3 lit by thirteen 400W SON floodlights

In the nearby engineering workshop the twelve 400W HPS high bays were causing work delay by taking up to 30 minutes to re-strike after switching off. They also had to be replaced regularly, requiring the floor to be cleared of plant being worked on so that a scissor lift could be used to access the fittings.

Replacing similar lamps in the adjacent cruise ship terminal involved a team of three men, as the scissor lift had to be taken there via a public highway with a two-vehicle escort, then dismantled to get it through the door and re-assembled inside the building. This procedure had to be managed to accommodate cruise ship timetables and staff scheduling, so failed lights could end up waiting for a while to be replaced, quite apart from the cost of replacement.

### The Solution

In such an environment as a bulk food store, where spontaneous ignition is possible, it was essential to select a food product safe luminaire that would avoid dust build up and comply with food regulations. To meet this need and the other multiple challenges, the thirteen 400W SON high bays in Shed 3 were replaced by eight of Dialight's energy-efficient DuroSite® Series 172W LED high bays while the 400W HPS in the workshop and cruise ship terminal were replaced with 150W LED high bays.

### Installation snapshot

- 400W SON and HPS replaced by 150/172W LED high bays
- Maintenance burden and cost eliminated
- No more failed lamps or re-strike delays
- 60-75% reduction in lighting energy use
- Improved colour rendition
- CO<sub>2</sub> emissions cut by 0.4 tonnes per light annually
- Options to introduce presence and daylight detection to further improve efficiency



Shed 3 lit by eight of Dialight's 172W LED high bays

## The Result

The change to LED lighting resulted in over 75% energy saving in Shed 3 and over 60% in the other areas with equivalent reduction in carbon emissions in each area. Additionally the burden of maintenance has effectively been eliminated, as each LED high bay carries Dialight's 5-year performance warranty. Further to that, their instant-on ability removes the re-strike delays, allowing them to be switched off when not required, rather than left on 'just in case'.

The most obvious impact, however, is in the light quality, and particularly in Shed 3. The vast improvement in colour rendition makes it much easier to monitor product quality in the store.

The workshop has also benefited from the improved colour rendition, with the LED lighting's similarity to daylight especially appreciated by workers on the night shift. It is also particularly beneficial for electrical works, making it easier to determine different colours when working on complex wiring. The cruise ship terminal is also efficiently lit with a full set of welcoming white lights as passengers enter the security hall.

"As one of the UK's largest ports groups, we take our environmental responsibilities seriously. We are delighted with the reduction of energy consumption achieved with the added benefit of elimination of maintenance and the associated disruption. Together these help us to operate more efficiently and deliver operational benefits while we are also minimising our impact on the environment. We are now actively examining other areas of the business which could benefit from this technology."

Dr. Derek McGlashan, Environment and Energy Manager, Forth Ports Limited

## Product Comparison - HPS vs LED

### HPS

- Voluminous body
- Fragile
- Total power consumption 440W
- Sensitive to voltage change
- Slow warm-up
- Accumulation of dirt
- Contains dangerous and harmful gases
- High CO<sub>2</sub> emissions
- Low energy efficiency



### LED

- Small and compact body
- Resistant to shock and vibration
- Total power consumption 150-172W
- Non-sensitive to voltage change due to its wide voltage range
- Instant on/off ability
- Doesn't accumulate dirt, easy to clean
- Contains no harmful gases
- Low CO<sub>2</sub> emissions
- High energy efficiency

Dialight reserves the right to make changes at any time in order to supply the best product possible.  
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