



Application

PhotonStar were invited to supply an energy efficient lighting solution for a major redesign of the reception area of the St. Michaels Hotel Falmouth (as part of a whole hotel LED lighting upgrade). As the important first impression, the high profile area is illuminated 24 hours per day, 365 days per year. A higher ceiling made bulb changes difficult in this busy area, and blown bulbs would damage the important first impression. Lamp changes using ladders would be inconvenient and potentially dangerous to hotel guests.

Solution

The solution was achieved using 18 CeilingStar TT LED luminaires with a Mercury 630 light engine each consuming 7W of power. The project required 5W/m² to achieve 165lx at the work plane (desk level) to create a bright and welcoming reception area. This results in an 80% efficiency saving over the alternative halogen downlighters, and 40% more efficient than the alternative CFL Downlighters, with the equivalent light output.

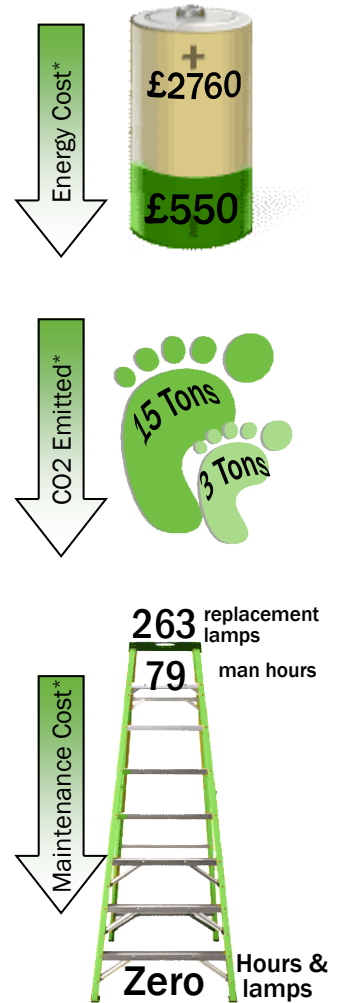
The stylish CeilingStar TT is fitted with a glass diffuser and emitting light at 3000K it provides gentle, distinctive and effective low glare illumination and giving a warm welcoming feel to this family run hotel.

The CS-TT has a lifetime (L70) of 50,000 hrs eliminating the cost and inconvenience of maintenance for over 5 years. 100% functioning fittings at all times with no blown bulbs gives a favourable impression to the hotel visitor on arrival that the hotel is well maintained. Over a five year period, with the lights in operation 24 hours a day, both energy costs and CO2 emitted are reduced by 80%.

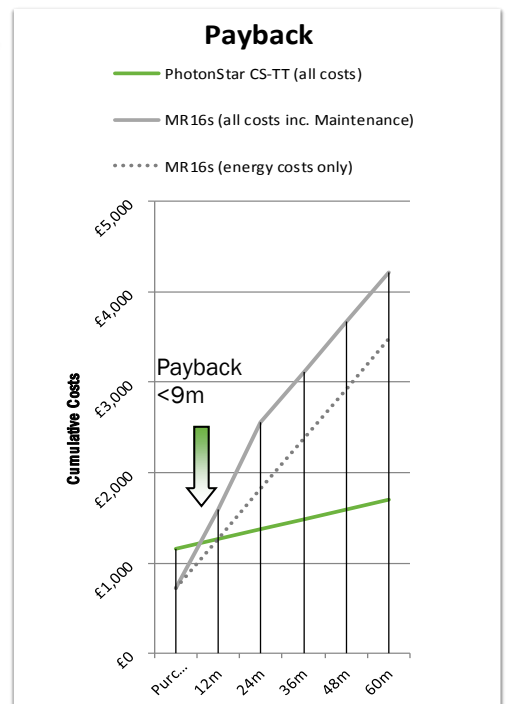
The area required a number of emergency lights, but due to the ultra low power requirements of the CS-TT, the project was fully backed by integrated emergency packs, allowing the stylish CS-TT to be used throughout.

Key Features

- 50,000hr maintenance free lifetime
- In this application reducing power consumption from 15.5W/m²/100lx to 3W/m²/100lx
- 80% more efficient than equivalent output Halogen in similar fitting.
- 40% more efficient than equivalent output CFL in similar fitting.
- Excellent colour rendering
- Payback period less than 9 months
- No unattractive failed lamps
- Low Glare



*Based on energy cost of 0.10 per kWh
Based on 0.544Kg CO₂/kWh. Savings shown over 5 years operation, 24 hrs use per day



CS-TT

Thin Trim and Low Glare Downlighter

LED downlight to replace 35W and 50W halogen in zones 1 & 2

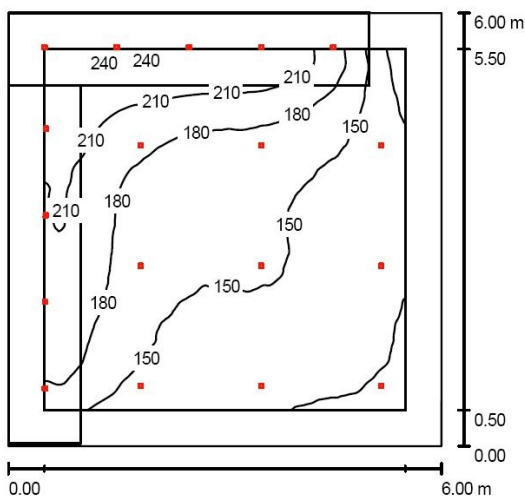
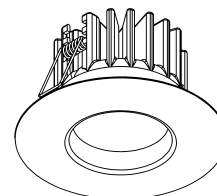
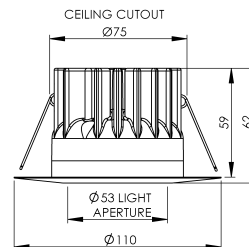
Available in standard and tuneable light engines

IP65 for use in multiple locations

Wide trim covers ceiling damage when retrofitting

Machined aluminium bezel

In this example, featuring the Mercury 630 light engine delivering 503lm at 70.7lm/cW



Height of Room: 3.000 m, Maintenance factor: 0.80

Values in Lux, Scale 1:78

| Surface | ρ [%] | E_{av} [lx] | E_{min} [lx] | E_{max} [lx] | $u0$ |
|-----------|------------|---------------|----------------|----------------|-------|
| Workplane | / | 165 | 99 | 242 | 0.599 |
| Floor | 20 | 122 | 41 | 172 | 0.336 |
| Ceiling | 70 | 38 | 6.26 | 190 | 0.167 |
| Walls (4) | 50 | 78 | 7.59 | 188 | / |

| Lamp Type (emitting equivalent output in lumens) | Number of Lamps | Power per lamp | Total Power of all Lamps | Energy Cost over 50,000hrs operation | Relative energy saving over 50,000hrs operation | Annual Energy Cost | CO2 (kg) emitted over 50,000hrs operation | Relative CO2 (Tons) saved over 50,000hrs operation | Hours used per year | Hours used per day |
|--|-----------------|----------------|--------------------------|--------------------------------------|---|--------------------|---|--|---------------------|--------------------|
| 65W BR30 | 18 | 65W | 1170W | £5,850 | £0 | £1,025 | 31824 | 0 | 8760 | 24 |
| 35W MR16 | 18 | 35W | 630W | £3,150 | £2,700 | £552 | 17136 | 15 | 8760 | 24 |
| 35W PAR30 | 18 | 35W | 630W | £3,150 | £2,700 | £552 | 17136 | 15 | 8760 | 24 |
| 14W CFL | 18 | 14W | 252W | £1,260 | £4,590 | £221 | 6854 | 25 | 8760 | 24 |
| CeilingStar TT | 18 | 7W | 126W | £630 | £5,220 | £110 | 3427 | 28 | 8760 | 24 |



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