



Application

The corridor areas of hotels are often required to be lit 18 to 24 hours per day. As a very high use area, efficiency and performance is equally as important as style, meeting branding requirements for the hotel. In this example, the high use corridor was previously lit by 100 35W MR16 halogen downlighters. Each unit consuming 10W/m² to achieve an average 78lx at floor level. The brief for refurbishment included an 80% efficiency improvement, reduction in failed lamps, and styling to fit with a nautical theme.

The incidence of failed halogen lamps had resulted in complaints to the hotel. Accessibility issues in replacing the lamps were both a health and safety concern and the sight of ladders in public areas was not conducive to the quality brand image.

Solution

PhotonStar supplied a solution utilising 100 CS5 7W downlighters— requiring only 4.6W/m² to achieve the same average 78lx at floor level, offering an 80% reduction in power consumption. The 80,000 hour (L70) lifetime of the CS5 resulted in the incidence of failed lamps bulbs being eliminated. With no bulbs to change for approximately 12 years in this 18 hour per day application. The added benefit of eliminating bulb failure was all part of the quality brand that the St Michaels Hotel represents. A further benefit is dramatically reduced maintenance costs.

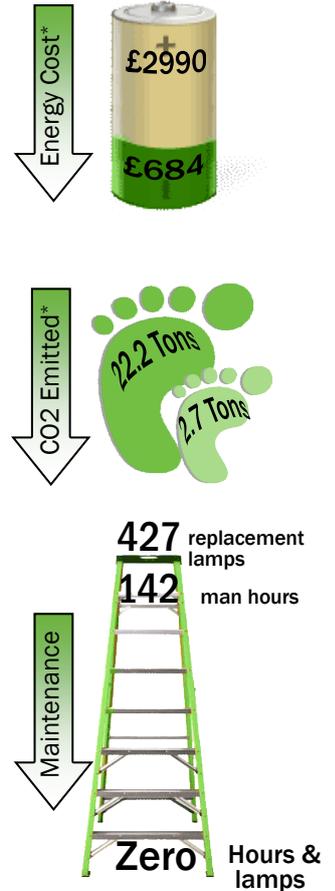
Replacing the 100 35W MR16 halogens, operating for 18 hours a day 7 days a week upgraded to the PhotonStar CS5 operating at 7W, reduced electricity usage from 27,000kWh per year to just 6,400kWh per year – without sacrificing the quality and amount of light. Efficacy was dramatically improved to 2.8W/m²/100lx. Total savings over the project lifetime are £21,600 in electricity, £26,000 in labour and £32,000 in replacement bulbs. The expected saving per individual fitting over it's lifetime is £796 (216 electricity, 40 lamp changes including 20 mins labour and cost of 1 lamp) Utilising the “instant on” feature of the CS5, installing occupancy sensors would result in further savings and extended life.

The area required a number of emergency lights. Taking further advantage of the ultra low power requirements of the CS5 TT, integrated emergency packs were installed, maintaining the design concept and providing a fully illuminated emergency solution eliminating the need for bulky plastic emergency fittings. As the CS5 TT requires so little power, safe NiMh batteries were able to be used in preference to highly toxic NiCad as an environmental decision.

The aesthetics of the project were further enhanced with the benefit of the TT's low glare feature, and a gentle 3000K warm white light. The wide bezel makes installation simpler, covering any damage remaining from the previous MR16 installation.

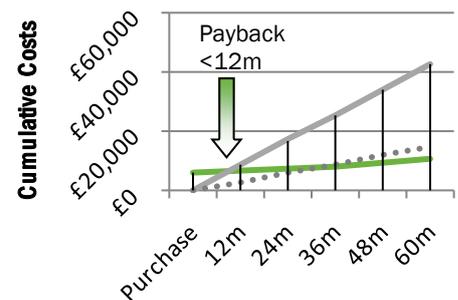
Key Features

- 80,000hr maintenance free lifetime
- In this project achieving 2.8W/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
- Integrated low cost NiMh emergency pack will run multiple fittings
- Simple installation with cutout size the same as standard MR16 fitting.
- Wide bezel to cover any damage from existing halogen cutout.
- Payback less than 12 months



Payback

- PhotonStar CS5 (all costs)
- MR16s (all costs inc. Maintenance)
- MR16s (energy costs only)



CS5-TT at St. Michaels Hotel



CS5-TT at St. Michaels Hotel

*Based on energy cost of 0.10 per kWh, 0.4Kg CO2/kWh, savings over 1 year based on 18 hours use per day. Existing fitting assumed to have no cost. A typical cost would be £30 per unit.

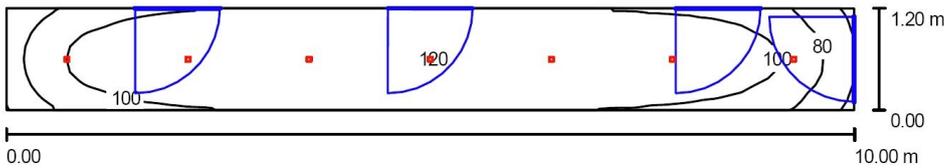
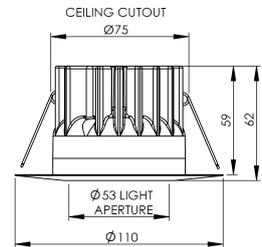
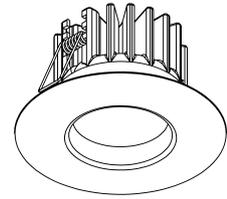
CS5 TT

Thin Trim and Low Glare Downlighter

The innovative CeilingStar5 TT (CS5 TT) can be used in residential and commercial new builds, refurbishments or retrofits. The CeilingStar5-TT is an energy efficient and zero maintenance light fitting which is a superior replacement for MR16 and GU10 ceiling downlighters or incandescent downlighters. It is IP65 rated, making it suitable for zones 1, 2 and 3. These light fittings make changing light bulbs a thing of the past.

The CeilingStar5 is constructed of materials that are designed for long life. It contains the most efficient, ultra bright, long life LEDs available today. Keeping LEDs cool is essential to efficiency and long life. The CS5-TT has a high performance die cast heatsink with integral spring fixings employing proprietary surface treatment technology, providing improved lifetime, efficiency and an increased ambient temperature operation in a durable Matt Black finish.

The CS5-TT Range offers equivalent illumination to 35W and 50W GU10 halogens consuming 7W and 10W of power combining recessed low glare lighting with a stylish thin bezel. To create a calm relaxing environment we have WarmWhite (CCT 3000K) with a colour rendering index (CRI) of 83 offering excellent quality illumination. For a pure, invigorating feel we have pure NeutralWhite (CCT 4000K, CRI 86)



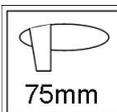
Height of Room: 2.800 m, Mounting Height: 2.800 m, Maintenance factor: 0.80

Values in Lux, Scale 1:72

| Surface | ρ [%] | E_{av} [lx] | E_{min} [lx] | E_{max} [lx] | $u0$ |
|-----------|------------|---------------|----------------|----------------|-------|
| Workplane | / | 105 | 58 | 120 | 0.549 |
| Floor | 20 | 78 | 45 | 90 | 0.568 |
| Ceiling | 70 | 32 | 22 | 174 | 0.681 |
| Walls (4) | 50 | 59 | 19 | 115 | / |



| Lamp Type (emitting equivalent output in lumens) | Number of Lamps | Power per lamp | Total Power of all Lamps | Energy Cost over 80,000hrs operation | Relative energy saving over 80,000hrs operation | Annual Energy Cost | CO2 (Tons) emitted over 80,000hrs operation | Relative CO2 (Tons) saved over 80,000hrs operation |
|--|-----------------|----------------|--------------------------|--------------------------------------|---|--------------------|---|--|
| 65W BR30 | 100 | 65W | 6500W | £52,000 | £0 | £5,554 | 208 | 0 |
| 35W MR16 | 100 | 35W | 3500W | £28,000 | £24,000 | £2,990 | 93 | 115 |
| 35W PAR30 | 100 | 35W | 3500W | £28,000 | £24,000 | £2,990 | 93 | 115 |
| 14W CFL | 100 | 14W | 1400W | £11,200 | £40,800 | £1,196 | 45 | 163 |
| CeilingStar 5 | 100 | 8W | 800W | £6,400 | £45,600 | £684 | 25.6 | 182.4 |



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