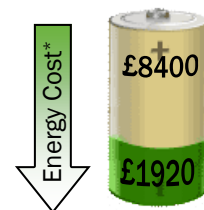


#### Application

PhotonStar were invited to supply an energy efficient solution to replace the halogen downlighters in the pool area of the St. Michaels Hotel Falmouth as part of a larger LED refurbishment project. Previously lit by 26 x 35W halogen downlighters, and 4 x 35W halogen pool lights, failed bulbs had been a problem, and the area needed to be brightly lit for 18hrs per day. The underwater halogen lights in the pool were costly and inconvenient to service. Wet slippery floors added to the health and safety problems with maintenance. The area is classed as zone 2 and also required an additional emergency light fittings.



#### Solution

The solution was achieved using 26 x CeilingStar TT LED luminaires each consuming 7W of power. Easily installed into the existing cutouts (75mm), the installation required no major refurbishment work with the wide bezel of the TT covering the minor damage left from the MR16s. The new installation provided an 80% efficiency saving over the previous halogen downlighters (and 40% more efficient than the alternative CFL Downlighters).

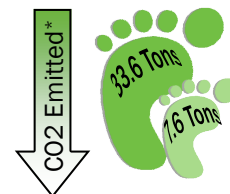
Fitted with a glass diffuser and emitting light at 4000K it provides clean crisp feel, distinctive and effective illumination.

The CS5 TT is IP65 rated and was installed with an IP67 driver, as the area is classed as Zone 2.

The LED 80,000 hr operational lifetime has eliminated maintenance for 12 years. Each unit during it's lifetime will eliminate 27 lamp changes, each taking 20 minutes, saving £351 in maintenance costs. It will also eliminate the risks of working on a ladder with electricity in a wet slippery area.

Additional decorative LED fittings were installed for a total maintenance free solution, including the underwater pool lights (7W blue MR16 replacements). Offering not only an 80% reduction in energy but the considerable expense and inconvenience of draining the pool to replace the lamps will be prevented for over 12 years.

In the previous installation, a separate plastic unattractive emergency light had been installed. All PhotonStar LED luminaires are available with an integrated emergency pack, eliminating the need for a non integrated unit that would detract from the interior design.

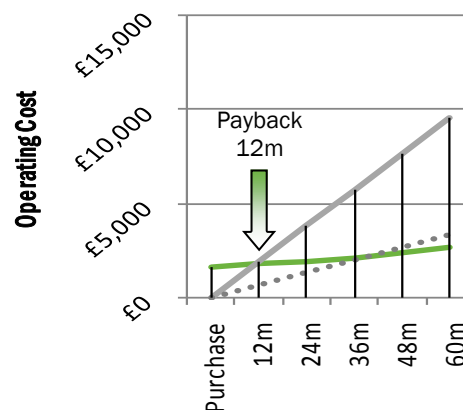


#### Key Features

- IP65—Zone 2, IP67 driver suitable for wet and humid areas.
- 80,000hr maintenance free lifetime
- Shallow recess (50mm) - suitable for insulated ceilings
- 75mm cut out—no structural changes when replacing MR16 downlighters
- Wide bezel design covered damage from previous MR16 installation
- No failed lamps
- Payback period approximately 12 months
- Integrated emergency pack option

## Payback

- PhotonStar CS5 (all costs)
- Previous MR16s (all costs inc. Maintenance)



\*Based on energy cost of 0.10 per kWh , 0.4Kg CO2/kWh, savings over 80,000hrs operational lifetime. 18 hrs use per day.



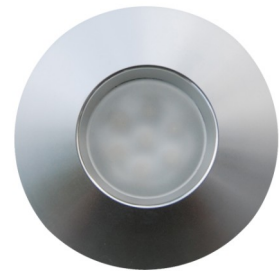
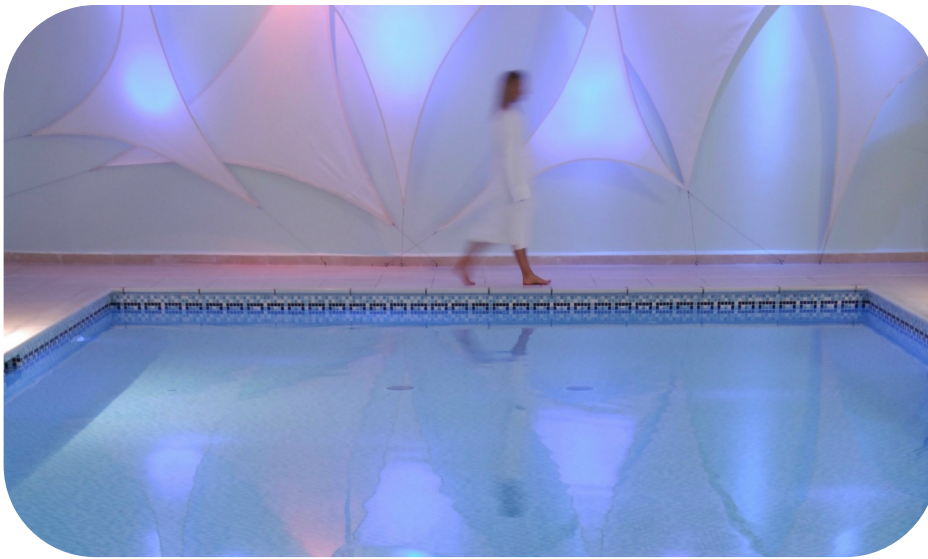
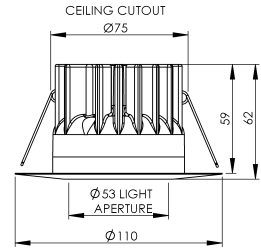
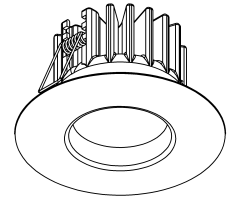
## CS5 TT

### 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.

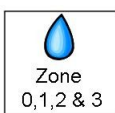
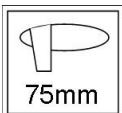
The CeilingStar5 is constructed of materials that are designed for long life. It contains the most efficient, ultra bright, long life LEDs available today. Keeping LEDs cool is essential to efficiency and long life. The CS5-TT has a high performance die cast heatsink with integral spring fixings employing 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)



Equivalent Output Lamps

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 (kg) emitted over 80,000hrs operation	Relative CO2 (Tons) saved over 80,000hrs operation
65W BR30	30	65W	1950W	£15,600	£0	£1,250	62400	0
35W MR16	30	35W	1050W	£8,400	£7,200	£673	33600	29
35W PAR30	30	35W	1050W	£8,400	£7,200	£673	33600	29
14W CFL	30	14W	420W	£3,360	£12,240	£269	13440	49
CeilingStar 5	30	8W	240W	£1,920	£13,680	£154	7680	55



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