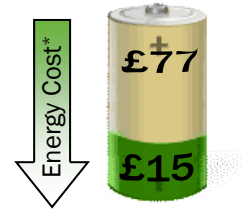


Application

When you enter a bath room you want the lights to turn on instantly without flicker this is typically achieved using low voltage MR16 down lighters, there are many on the market that offer IP65 ratings making them suitable for Zones 1,2 and 3 in a bathroom. However these bulbs are not very efficient and have a relatively short life.

Although compact fluorescent lamps (low energy bulbs) are more efficient and have a longer life than halogen, they offer poor colour rendering for makeup application and have problems with slow warm up time and flicker.

Both halogen and CFL suffer with reduced lifetime when repeatedly switched on and off, requiring more maintenance and costs.



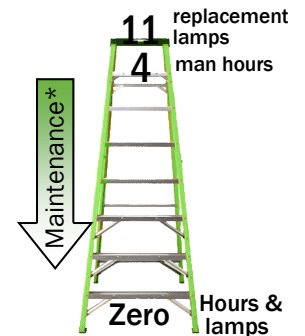
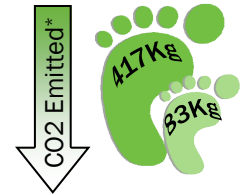
Solution

The solution installed utilises two CeilingStar IC LED luminaires in a warm 3000K light output, illuminating instantly without flicker or warm up time. The LED 50,000 hr operational lifetime is not reduced by turning them on and off thus allowing for a maintenance free solution.

The CeilingStar IC is IP65 rated and does not compromise the insulation by requiring large gaps in the insulation around them like MR16 or GU10 downlighters do. This is because the CS-IC has all the cooling it needs from the distinctive front bezel of the fitting allowing insulation to be placed over the back of the fitting. As the CS-IC runs cool it does not represent a fire hazard with any insulation type.

The CS-IC requires 6.45W/m² to achieve 153 lux at the work plane in this application, saving £456 per fitting in electricity costs over the 50,000hr lifetime compared to an MR16 which would require 28.2W/m².

The solution efficiently produces a good level of illumination combined with excellent colour rendering and colour quality for makeup application and beauty routines.

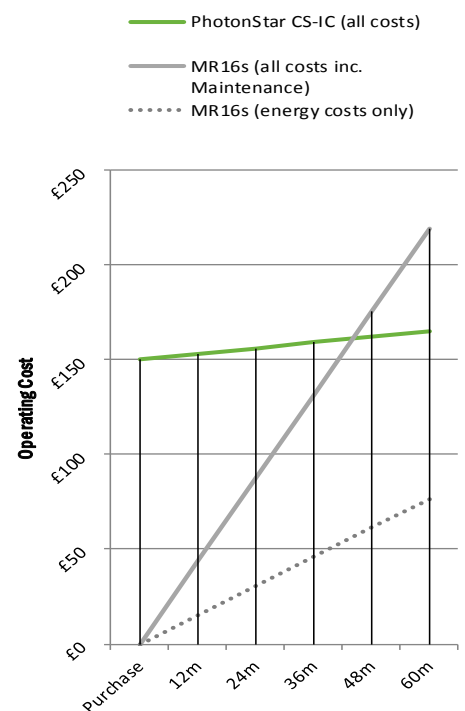


Key Features

- IP65—Zone 2, IP67 driver
- 50,000hr maintenance free life-time—no failed lamps
- Shallow recess (50mm) - suitable for insulated ceilings
- 75mm cut out—no structural changes when replacing MR16 downlighters
- Instant On
- Suitable for use with insulated ceilings for further cost and CO₂ reduction
- Payback period less than 48 months with maintenance.
- Bright light with high CRI
- Application saves £61 in electricity costs & 334Kg in CO₂ over 5 years
- Efficacy improved from 18.5W/m²/100lx(MR16) to 4.21W/m²/100lx (CS-IC)
- Part L compliant



Payback



*Based on energy cost of 0.10 per kWh , 0.544Kg CO₂/kWh, savings over 5 years.

CeilingStar IC

Insulated ceilings

Suitable for use in Insulated Ceilings

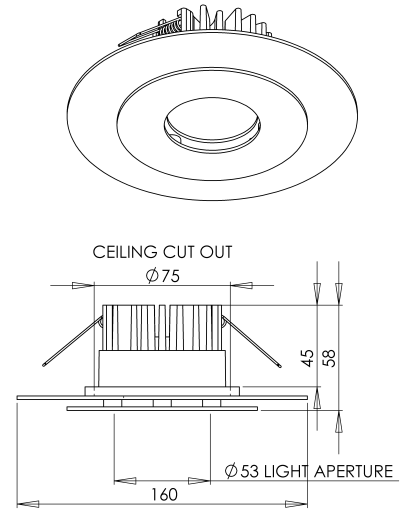
Produces halo effect

IP65 for use in multiple locations

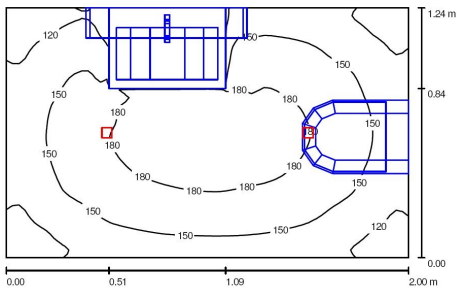
Available in standard and tuneable light engines

Outputs up to 730lm

Up to 73.4lm/cW

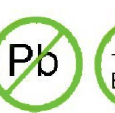
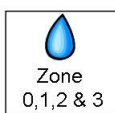
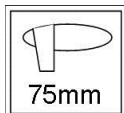


Lamp Type (emitting equivalent output in lumens)	Number of Lamps	Power per lamp	Total Power of all Lamps	Energy Cost over 50,000hrs operation	Relative energy saving over 50,000hrs operation	Annual Energy Cost	CO2 (kg) emitted over 50,000hrs operation	Relative CO2 (Tons) saved over 50,000hrs operation
65W BR30	2	65W	130W	£650	£0	£28	3536	0
35W MR16	2	35W	70W	£350	£300	£15	1904	2
35W PAR30	2	35W	70W	£350	£300	£15	1904	2
14W CFL	2	14W	28W	£140	£510	£6	762	3
CeilingStar IC	2	7W	14W	£70	£580	£3	381	3



Height of Room: 2.200 m, Mounting Height: 2.200 m, Light loss factor: 0.80 Values in Lux, Scale 1:16

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$
Workplane	/	153	94	196	0.61
Floor	20	81	11	111	0.14
Ceiling	80	44	32	50	0.73
Walls (4)	50	74	3.51	162	/



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