

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.



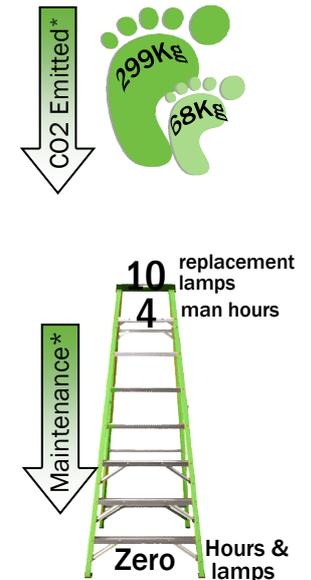
Solution

The solution installed utilises two CeilingStar5 IC LED luminaires in a warm 3000K light output, illuminating instantly without flicker or warm up time. The operational lifetime is not reduced by turning them on and off thus allowing for a maintenance free solution.

The CeilingStar5-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 CS5-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 CS5-IC runs cool it does not represent a fire hazard with any insulation type.

The generation 3 CeilingStar5 requires 6.45W/m² to achieve 153 lux at the work plane in this application, compared to an MR16 which would require 28.2W/m². The LED Luminaire has a projected 80,000 hr operational lifetime (L70), backed by a 5 year guarantee. With no lamp changes for over 5 years, maintenance costs are dramatically reduced.

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

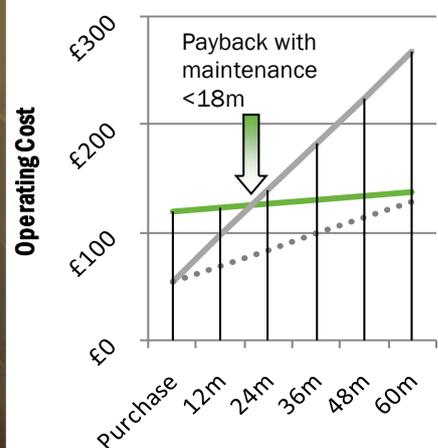


- Key Features**
- IP65—Zone 2, IP67 driver
 - 5 year guarantee with 80,000hr projected LED lifetime
 - Shallow recess (50mm) - suitable for insulated ceilings
 - 75mm cut out—no structural changes when replacing MR16 downlighters
 - Instant On
 - Suitable for use with insulated ceilings for further cost and CO₂ reduction
 - Payback period less than 18 months with maintenance, 60 months with electricity costs alone.
 - Bright light with high CRI
 - Application saves £58 in electricity costs & 231Kg in CO₂ over 5 years
 - Efficacy improved from 18.5W/m²/100lx(MR16) to 4/21W/m²/100lx (CS5)
 - Part L compliant



Payback

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

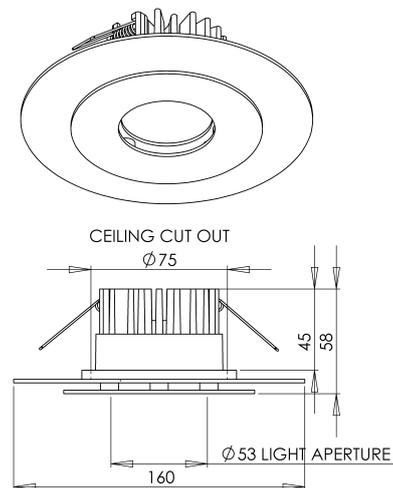


*Based on energy cost of 0.10 per kWh, 0.4Kg CO₂/kWh, savings over 5 years based on 6 hrs per day.

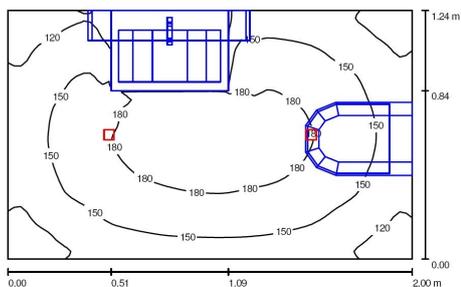
CS5 IC

Insulated or non-insulated ceilings

The innovative CeilingStar5 (CS5) range can be used in residential and commercial new builds, refurbishments or retrofit. The CeilingStar5-IC is an energy efficient and zero maintenance light fitting which is a superior replacement for MR16 and GU10 ceiling downlighters or incandescent downlighters. As one of its state of the art design features, all the thermal management of the LED is at the front of the product, so the fitting can be used in fully insulated ceilings. It is IP65 compliant and fire rated. These light fittings make changing light bulbs a thing of the past. The CS5 is constructed of materials that are designed for long life and is 100% recyclable. In addition it contains the most efficient, ultra bright, long life (50,000hrs) LEDs available today. The CS5 range offers equivalent illumination to 20W, 35W and 50W halogens consuming just 4W, 7W, and 10W of power. (The 7W unit is featured in this example)

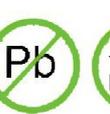
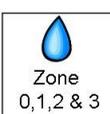
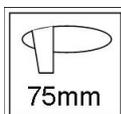
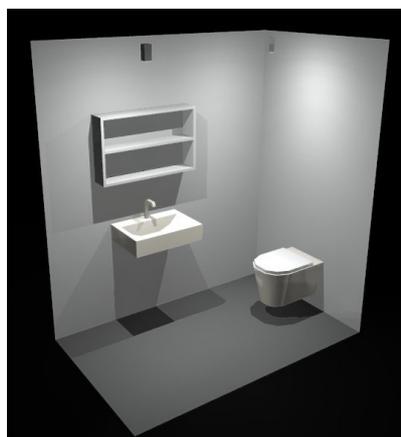


Lamp Type (emitting equivalent output in lumens)	Number of Lamps	Power per lamp	Total Power of all Lamps	Energy Cost over 80,000hrs operation	Relative energy saving over 80,000hrs operation	Annual Energy Cost	CO2 (kg) emitted over 80,000hrs operation	Relative CO2 (Tons) saved over 80,000hrs operation
65W BR30	2	65W	130W	£1,040	£0	£28	4160	0
35W MR16	2	35W	70W	£560	£480	£15	2240	2
35W PAR30	2	35W	70W	£560	£480	£15	2240	2
14W CFL	2	14W	28W	£224	£816	£6	896	3
CeilingStar 5	2	8W	16W	£128	£912	£3	512	4



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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