

RAIL INDUSTRY LED TOILET LIGHT



McGeoch LED Technology has developed a highly cost effective, environmentally friendly, range of specialist LED lights for the rail industry.

Adding style and aesthetic influences to a lighting system with LED technology is never straightforward. Attention to colour, glare, thermal management, longevity, electronic drive, EMC and IP all need to be considered carefully.

McGeoch LED has developed an LED Toilet Light solution, understanding the rail environment and designing within these parameters to give an aesthetically pleasing yet robust and compliant lighting solution. Light measurements are taken throughout the design phase ensuring the customer is assured their criteria and group standards are met.

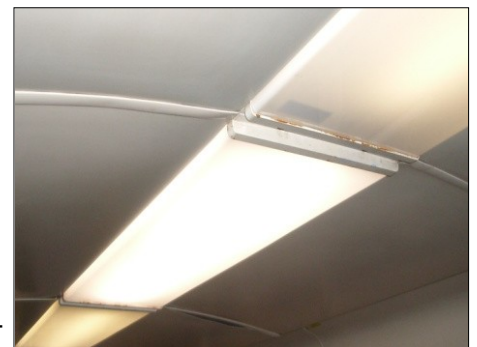
McGeoch is now able to provide a fluorescent lighting replacement solution based upon LED technology. Although this technology is already common

for the replacement of such items as halogen down lights, indicator bulbs, illuminated signs, traffic lights, and portable lighting, the use of LED technology for mainstream interior illumination of railway carriages has not been achieved until now.

Below Right: The brighter output from the McGeoch LED replacement ceiling light in situ between two existing fluorescents in a railway carriage is clearly visible.

Key Features

- Pay Back is possible within 3 years
- Energy efficient rail lighting (less power, less heat, equivalent light output) to fluorescent
- Consistent 'warm' light temperature
- Fewer components – one integrated module, no voltage inversion 'ballast' unit, more reliable due to less components
- Service life is not affected by switching cycles (as with fluorescents) - operating hours = 100,000
- Much improved crashworthiness rating – robust AV/ST9001 based design¹
- Improved safety interiors - no glass or other hazardous materials within the design
- Disposal cost reduction - no hazardous waste products over service life
- Lower routine maintenance cost benefit plus nil diffuser cleaning costs (with the right luminaire design)
- Improved luminaire trough sealing arrangement. IP 5X
- Fit and forget – in excess of 100,000 hours maintenance free² service life
- Option for a built-in (self contained and independent) automatic emergency lighting system on failure of power
- Much improved emergency lighting duration provision - low power consumption.



¹ Design complies with all hazardous and harsh environmental requirements.

² Maintenance free service life is the operational lifetime before the light level falls to below 70% of its original design output and applies to non-emergency units only. Emergency equipped light units will require an in-situ battery change at 5 years but otherwise offer an identical maintenance free service life.



Approvals

During development Specialist Approval and Certification houses were engaged for approvals and testing guidance to ensure all necessary applicable standards were achieved³.

These include:-

Design and Manufacturing Compliance

- Reliability, availability, maintainability and safety
- Operating voltage range
- Clearances and creepage distances
- Earth bonding
- Lighting levels
- Dielectric testing
- Warning signs and labels

Type Testing

- Shock
- Vibration
- Ingress protection
- Damp heat
- Dry heat
- Low temperature
- EMC
- Fire and smoke

McGeoch LED Technology has the unrivalled advantage of being able to offer a complete solution to meet the demanding requirements of the lighting industries. Whilst being fully cost aware, McGeoch only offers quality LED Lighting Systems.

McGeoch LED Technology has developed an industry leading LED luminaire. Projects are approached from the ground up with an on-site visit to accurately measure the fluorescent light output. McGeoch then utilises its Research & Development Centre to replicate and enhance the amount and quality of light using the latest LED technology.

The light engines used in McGeoch LED Technology products are of the highest quality and are exclusive to the company's products.

Energy and Other Specifications data

LED lighting solution offers significant energy saving over current fluorescent solution⁴

³ Standards identified through industry consultation.

⁴ Energy options are available which offer flexibility of light output against energy saving from 20% to over 50%.

