

# Case Study

## The Background

**Metro operates 210 six carriage trains across 869 kilometres of track throughout Melbourne.**

**During a review of a 15km underground rail network that connects four stations in the Melbourne CBD, it was agreed that the emergency lighting technology installed along these tunnel networks were out of date, triggering a need to look at more current technologies in relation to testing capability, lighting performance, maintenance, and safety in the event of an evacuation being required.**

Metro worked alongside ARUP engineers to specify the required performance and placed the tender into the market for manufacturers to present solutions.

## The Challenge

The challenge to meeting the specification was ensuring that the following conditions were met:

- Emergency lighting was required to achieve a minimum duration of 4 hours in emergency mode
- The maintained light output needed a significant improvement compared to the existing lighting and therefore a likelihood that additional wiring and fittings would be required.
- The existing infrastructure with respect to the automatic testing was old telephone cable and this posed some risk with respect to providing a robust enough backbone communications for a new system.
- Every component installed within the tunnels had to be approved as Low-Smoke-Zero-Halogen
- The curved nature of the tunnel walls meant that the lighting had to be fixed at varying angles to disperse the correct light level to the ground surface 1,800 custom fittings had to be designed, manufactured, installed, and commissioned in less than 12 months to meet Metro Trains' project management timeline.

### Project Name

Melbourne Underground Rail Link

### Location

Melbourne, VIC, Australia

### Industry Application

Transport

### Project Type

New Emergency Lighting Installation

### Year

2015

### Number of Fittings

1800

### Engineers

ARUP

### Product Range

L10 Lithium Nanophosphate

### Testing System

Zoneworks XT

### Products Featured

Custom Fittings

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Our main reason for choosing the Clevertronics solution was due to the system being modular, which means we can replace failed components as needed.”

# The Solution

Clevertronics, along with two other emergency lighting companies placed a bid for the project, however, only Clevertronics was able to provide a comprehensive solution to meet all the specifications, quality, installation, and logistical challenges. The Clevertronics solution, proposed and accepted by Metro was based on the L10 Nanophosphate range, which met the required lighting and emergency lighting performance and minimised the need for any large-scale maintenance for at least a decade.

The trademark L10 Nanophosphate product features a world first: Lithium Iron Nanophosphate battery. The patented chemistry of L10 batteries is proven to provide three or four times the life of economy Nickel Cadmium or Nickel Metal Hydride batteries and 50% longer battery life compared to any other Lithium product on the market. Further, the light fittings were networked via the electrical power line, the existing telephone cable infrastructure, and Metro Trains' LAN/WAN ICT network to automatically perform and diagnose results from the six-monthly testing regime under the Australian standard AS2292.

## The Result

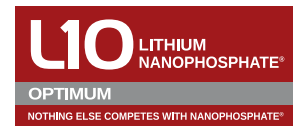
Clevertronics engineers developed an initial set of ten working prototypes for Metro to trial within two weeks of discussions about the specifications and required performance. These initial fittings were then tested on-site, and some small mechanical modifications were made before the final fitting was ordered. The fittings were ordered in January 2015 and were supplied from March to June 2015.

A strict deadline had to be met to ensure Metro did not incur additional costs due to downtime in the tunnel networks. Once installed, the fittings were commissioned to the head end virtual server on the Metro ICT network. At commissioning, all the fittings successfully communicated with the software to record 100% of the fittings pass the test with run times recorded to exceed 255 minutes (the software only measures run time to 255 minutes, however, it is likely the currently run times for these batteries under discharge conditions to be closer to 8 hours).

"The team from Clevertronics provided great support for the upgrade of emergency lighting within Melbourne's 'City Loop' railway tunnels. Around 1,800 LED emergency light fittings were installed throughout the approx. fifteen kilometres of tunnels during 2015. So far, the lights have performed well beyond expectations and are successfully being remotely monitored via the 'Zoneworks XT system. Clevertronics manufactured and delivered light fittings either on or ahead of schedule and have provided quality support since the works reached practical completion in Feb 2016. I thank the Clevertronics team for their involvement in the delivery of this upgrade and its operational success to date." Regards Hayden Owens – Project Manager, Metro Trains – April 2017

## Find Out More

**The Melbourne Underground Rail Link is another quality project delivered by Clevertronics. If you would like further information about this case study or are interested in understanding more about Emergency and Exit lighting within your building, contact Clevertronics for a site audit, demonstration, and cost analysis report.**



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