MURL Fire and Life Safety System CMS

CLIENT

Metro Trains Melbourne

LOCATION

Melbourne

SYSTEMS

- Detailed design of hardware and software
- Factory acceptance testing and site acceptance testing
- Onsite installation without operational interruption
- Functional safety engineering
- Assessments of Reliability, Availability, Maintainability, and Safety (RAMS)
- Cyber Security assessments
- Virtual Machine ware (VMware)
- Integration of video surveillance, security systems, and fire systems
- Human factors engineering
- System engineering using the V-model
- Disaster recovery systems
- Simulation and training systems

TECHNOLOGIES

- WinCC OA
- Siemens S700 PLCs
- Linux OS - Redhat

PROJECT SUMMARY

Some of the concerns about the safety of the Melbourne Underground Rail Loop (MURL) were addressed by Synertec when engaged by Metro Trains to replace the Control and Monitoring System (CMS) of the Fire and Life Safety system.

The MURL consists of four single track tunnels over two levels and has three underground stations (Parliament, Melbourne Central, and Flagstaff). The loop is a critical piece of infrastructure forming a vital component of the beating heart of the City of Melbourne.

The purpose of the Fire and Life Safety upgrade was to reduce or eliminate the hazard to station occupants (passengers, staff, and emergency services workers) that may be caused by smoke in the event of a fire on a train or a platform in the MURL. Synertec's objective was to upgrade and enhance the control and monitoring of operational systems within the MURL, particularly to support improved incident management.

SCOPE OF WORK

The contract involved the design, supply, installation, testing, commissioning, and deployment of a new Supervisory Control And Data Acquisition (SCADA) system associated with the Fire and Life Safety system. This included a significant upgrade of the SCADA control system software and IT infrastructure.

The new SCADA system integrates several systems including programmable logic controls, internet protocol video surveillance, security systems, fire systems, rail information system, and building management systems. The primary purpose of the integrated system is to provide the operator with consolidated information to improve incident response and emergency management.

The project achieved compliance with key standards for safety, signalling, software, and rail systems including EN50126, EN50128, EN50129, AS61508, AS15288, and ANS/ISA-101.01.

A key challenge was delivering the project on a tight schedule with zero-downtime of critical infrastructure, with only 18-months from commencement to going live. The scale and critical nature of the project prompted Synertec to utilise the Systems Engineering V-Model approach, which began at the inception of project planning, with the creation of a project plan detailing the scope, responsibilities, and execution methodology and incorporating the lifecycle engineering management principles of the V-Model.

Flowing through to the delivery stage, Synertec fulfilled its promise of a project completed on-time and on-budget with zero safety issues, 100% uptime and improved safety outcomes for MURL passengers, staff, and emergency personnel.