Melbourne Metro Tunnel TVCS & BMS

CLIENT

Cross Yarra Partnership

LOCATION

Melbourne

SYSTEMS

- Requirements management
- Functional safety design
- Human factors
- RAMS analysis (Reliability, Availability, Maintainability, and Safety)
- System architecture design
  - Virtualised servers
  - Redundant networks
  - High availability and fault tolerance
- Functional descriptions
- Software design
- Cybersecurity strategy
- Electrical design, IO lists, cable schedules
- Development of database tools
- SCADA screen design using best practice standards
- Design report
- Bill of materials
- IT environment design

TECHNOLOGIES

- WinCC OA
- SCADA

PROJECT SUMMARY

The $11b city-shaping Melbourne Metro Tunnel project will dramatically increase capacity across Melbourne's busy rail network. Twin nine-kilometre rail tunnels and five new underground stations will enable a new end-to-end rail line from Sunbury in the west to Cranbourne/Pakenham in the south-east. New high-capacity signalling will allow brand-new, longer trains to run more often and increase network capacity by more than half-a-million passengers each week.

The nature of underground rail projects means safety is of the utmost concern. This is where Synertec came in, filling a vital role in the Public Private Partnership team. Synertec delivered the interim design for the Tunnel Ventilation Control System (TVCS) and Building Management System (BMS) for the project. These integrated systems are critical for the safety of the travelling public and must comply with stringent operational and safety requirements.

SCOPE OF WORK

Synertec's project delivery for the interim design consisted of:

- TVCS interim design
  - Tunnel vent jet fans
  - Over track exhaust system
  - Directional lighting
  - Functional safety – emergency response system
  - Interface to train control system
- BMS interim design
  - Vertical transport
  - Heating, ventilation, and air-conditioning
  - Fire system
  - High voltage interface
  - Low voltage interface
  - Station lighting
  - Hydraulic services

Synertec's work included systems engineering project methodology and V-Model delivery.

Compliance was achieved with key standards for safety, software, and rail systems including AS61508, AS15288, EN50126, EN50128, and EN50129.