Rail Systems Alliance – Engineering & CMS

CLIENT

Rail Systems Alliance

LOCATION

Melbourne

SYSTEMS

- Detailed design of hardware and software
- Automation engineering
- Application lifecycle management tools
- Interface management
- Factory acceptance testing and site acceptance testing
- Virtual Machine ware (VMware)
- Integration of video surveillance, security systems, fire systems, and programmable logic controls
- System engineering using the V-model
- Assessments of Reliability, Availability, Maintainability, and Safety (RAMS)
- Disaster recovery systems
- Simulation and training systems

TECHNOLOGIES

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

PROJECT SUMMARY

Comprising new twin nine-kilometre rail tunnels and five new underground stations to enable a new end-to-end rail line from Sunbury to Cranbourne/Pakenham, the $11b Melbourne Metro Tunnel Project (MTP) will increase capacity by 500,000 passengers per week across Melbourne's rail network.

The Rail Systems Alliance (RSA) is responsible for the design, installation, integration, and commissioning of control, communications, and signalling systems for the MTP. RSA will deliver Australia's first brownfield, high-capacity signalling project to be based on Communications Based Train Control (CBTC).

SCOPE OF WORK

SYSTEMS ENGINEERING SERVICES

Synertec's principal responsibility as Systems Engineers was to deploy the Systems Engineering V-Model and prepare all relevant management plans, thus ensuring the specified system both meets the true needs of the MTP and is built as nominated.

Synertec engaged design leads across systems and disciplines to define subsystem boundaries and complex interface requirements, and to derive requirements from various inputs including human factors, RAMS (Reliability, Availability, Maintainability, and Safety) analysis and electromagnetic compatibility analysis.

CONTROL AND MONITORING SYSTEM (CMS)

The Control and Monitoring System (CMS) is a critical component of the MTP that will enable high-capacity signalling technology to significantly increase capacity on the rail network.

Synertec's contract involved the design, implementation, and commissioning of a new Supervisory Control And Data Acquisition (SCADA) system, providing operator monitoring and control of the signal control centre equipment.

The design scope included Human Machine Interface (HMI) graphic design, alarm management, data structures, system architecture, network architecture, SCADA server configuration, and configuration of Programmable Logic Controls (PLCs). The system integrates PLCs, internet protocol video surveillance, and security systems to provide control and monitoring of mechanical, hydraulic, electrical, and fire systems and equipment.

The MTP CMS will provide operator control and monitoring of the entire rail line.