

Butetown VMSS Replacement

Working in conjunction with EI-WHS, Ematics were awarded the contract for the provision of a replacement Variable Message Signing System (VMSS) for the Butetown Link Tunnel in Cardiff.

The project implementation was over 2 phases spanning 2 years. Phase 1 comprised the design of the full replacement VMSS System and implementation of the new top end system. Phase 2 comprised the installation and commissioning of replacement bottom end sign drivers.

The Tunnel is approximately 700m long, has two bores which feeds the Cardiff Bay area. The Tunnel is operated by Cardiff County Council via the Urban Traffic Control system, located at County Hall in Cardiff.

The VMSS system implements sign plans, which request the setting of individual signs within the tunnel and on the tunnel approaches. The selection of sign plans is based on actual road conditions in terms of traffic flow, incidents, maintenance activities etc. Overall the system controls 40 Lane Control signs within the tunnel, 8 portal mounted VMS Signs and 4 gantry mounted VMS Signs and 2 post mounted VMS signs on the tunnel approaches.



The System

The Top end SCADA system is in dual redundant configuration, running under Windows 2003 operating system on High Availability PC Servers. The system provides operator interface functionality at the Tunnel Services Building and at the traffic operations room in County Hall. The SCADA system also interfaces with a Siemens UTC system for receiving traffic plan requests and for reporting status of the various signs within the scheme. The SCADA system also hosts a Microsoft SQL Server Database which contains all the required sign plans. This database is configurable via a user friendly graphical front end for modification/creation of sign plans by the end user.

At lower level, Ematics have developed a PLC based system to interface with the gantry, portal and post mounted VMS signs. This PLC is effectively a straight replacement for the existing NMCS2 Transponder. It communicates with the signs using Standard Highways Agency 5 byte NMCS2 messages via existing RS485 cables. It also provides an Ethernet interface and communicates with the top end system via Modbus TCP protocol. This PLC has been developed to be user configurable such that additional signs can be added in the future if required (PLC will accommodate up to 30 signs).

Overall, the use of modular design principles and off the shelf components leads to a more cost effective system, with the end user not locked in to a specific vendor company. This presents the end user with future benefits in terms of system maintainability and upgradeability.

Interface Management

- The Tunnel Lane Control Signs are controlled via a digital interface to programmable logic controllers.
- The VMS Signs are controlled via Standard Highways Agency 5 byte NMCS2 Protocol.

Ematics
First Floor
Camellia House
76 Water Lane
Wilmslow, Cheshire
SK9 5BB

Phone: 0845 226 9550
Fax: 0845 226 9551
E-mail: mail@ematics.co.uk