



European Rail Traffic Management System (ERTMS), Early Deployment Scheme (EDS)

Project

European Rail Traffic Management System, Early Deployment Scheme

Client

UK Department for Transport

Location

Wales, UK

Start Date

2007

End Date

2013

Duration

42 months

Contract Value

£113m

Services provided

Development and roll out of ERTMS & ETCS levels 1-3, signalling, train control and telecoms, feasibility design and programme management

Background

The European Rail Traffic Management System (ERTMS) Early Deployment Scheme EDS on the Cambrian lines in Wales was the pilot project for Level 2 deployment to other parts of the UK network.

The railway was selected because the radio frequencies used to operate the Radio Electronic Tokenless Block (RETB) method of signalling were to be handed back to the government.

The enhancements were needed to facilitate an hourly train service to Aberystwyth. The train fleet used on this line is relatively small and because of this the train fitment was limited to 24 passenger trains and 3 locomotives.

This relatively self-contained railway provided a suitable test environment for the components of the ERTMS. The project was deemed a success, and has prompted the accelerated roll out of ERTMS across the UK network as part of our Digital Railway programme.



Scope of Works

The project scope included:

- ▶ a new Signalling Control Centre (SCC) was built at Machynlleth covering the entire route of 217km. The Radio Block Centre, Computer Based Interlocking, Axle Counter Evaluators and other associated control equipment for the route is located in the SCC.
- ▶ installation of on board European Train Control System (ETCS) equipment to 24 x two car Class 158 diesel passenger units and three Class 97 locomotives.
- ▶ communications between the SCC and trains is provided by Global Systems for Mobile – Railway (GSM-R) Data and Voice.
- ▶ commands to operate movable infrastructure and return indications to the signallers Video Display Unit workstations are sent via the Network Rail FTN fibre network, this has minimised the use of copper cable at the line side to small areas such as passing loops and level crossings.

Key Project Outputs

The project outputs were:

- ▶ 24 x Class 158 units and 3 x Class 97 locomotives operational in Level 0 ETCS before route commissioning
- ▶ commission between Harlech and Pwllheli to allow Level 2 operation to commence
- ▶ commission the remainder of the route from Shrewsbury to Harlech and Aberystwyth for Level 2 operation
- ▶ level 2 operation for shunting, coupling, uncoupling, sidings, depots and running to buffer stops
- ▶ provide automatic transition for trains between Level 0 and Level 2 at Shrewsbury Sutton Bridge Junction
- ▶ produce Safety Justifications to gain approval for the introduction and changes to the system
- ▶ produce design specifications for speed and gradient profiles and degraded operations
- ▶ specify train braking parameters
- ▶ provide continuous train detection by axle counters using the FTN fibre optic cable for data transmission
- ▶ train signallers, drivers and maintainers
- ▶ all lines signalled bi-directionally
- ▶ convert three gated and one AOCL crossing to MCB CCTV operation
- ▶ application of current standards for interoperability
- ▶ produce maintenance documentation for train and trackside equipment
- ▶ reduce journey times by improving passing loops and line speeds to allow an hourly passenger service to Aberystwyth
- ▶ monitor new assets to ensure performance targets are met and address shortfalls
- ▶ monitor safe and reliable operation of the system and produce regular reports for senior management.