

# ERTMS DEPLOYMENT IN THE UK

## RE-SIGNALLING AS A KEY MEASURE TO ENHANCE RAIL OPERATIONS



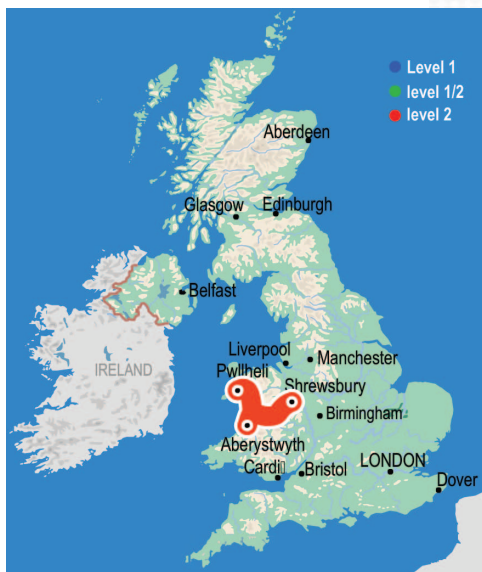
Although geographically distant from Central Europe's freight hubs, the UK is gradually launching major ERTMS investments as part of an ambitious program to revitalise national railway traffic. In a country with a long history of conventional signalling systems and train operations, the introduction of a major re-signalling program raises some exciting challenges. Whilst ERTMS Level 2 first entered into service in March 2011 on the Cambrian line, railway authorities are now pushing for a larger deployment scheme, which would allow to increase capacity and performance on Britain's railway lines and contribute to economic growth.

### What is the status of ERTMS deployment in the UK?

So far, ERTMS has been put in service on the Cambrian Coast Line, a single track line of 215km, which links Shrewsbury (Sutton Bridge Junction) with Aberystwyth and Pwllheli in Wales. On this line, ERTMS replaced the legacy Radio Electronic Token Block (RETB) signalling system installed on the route.



The line was put into service in March 2011, and operates with ERTMS Level 2. There are 24 sets of 2 coach Class 158 DMUs from Arriva Trains Wales which have now been ERTMS fitted for passenger operations, in addition to 4 Class 37 Diesel locomotives (now called Class 97) for freight and other operational duties.



### How was ERTMS installed on the Cambrian line?

Equipping the Cambrian line with ERTMS posed several technical challenges. A new signalling centre with two signaller positions has been implemented to control the total route and cater for the expected growth in traffic. ERTMS is also supported by the deployment of a GSM-R system, axle counters, new motorised point machines and balises along the track and a single Radio Block Centre (RBC) installed at the control centre in Machynlleth.

In the Cambrian deployment, Network Rail with its single prime contractor/supplier has had the opportunity to learn much key process, operational and technical lessons with respect to both UK and ERTMS standards. These lessons will be used to positive effect when further programmes for the introduction and implementation of ERTMS cab signalling are put into place for the rest of the national network.

### Are their further plans to introduce ERTMS in the UK?

Yes - the deployment of ERTMS is now an urgent requirement to cope with the high, continuing traffic demand seen by both passenger and freight transport operators. In this respect, the key features achievable with ERTMS - higher Safety, higher operational speeds, greater traffic capacity and accompanying cost savings/reductions in both CAPEX and OPEX are seen as vital benefits.

### *Which lines will be equipped with ERTMS in the coming years?*

Future routes for the deployment of ERTMS in the UK are already advanced but first a further ERTMS Pilot 12.8 route km equipment test line and laboratory facility will be implemented at Hertford North, where any aspiring ERTMS supplier are now demonstrating their equipment compatibility with UK standards before achieving approval status to compete for the national ERTMS roll out.

Following this scheme, it is foreseen that the following lines will be equipped:

- Great West Main Line (177km route) from Paddington to Reading, Newbury, Oxford, Swindon, Bristol. This route will be signalled Level 2 ERTMS as an overlay with light signals in the first instance and with new electrification traction, resignalling and recontrolling work undertaken in parallel. The target date for ERTMS operational service commencement is 2017 with completion in 2018.
- East Coast Main Line (251km route) from London Kings Cross station to the approaches of Doncaster station will be signalled Level 2 ERTMS without signals. This line is already electrified. The target date of readiness for operational ERTMS services is December 2018 with completion in 2021.
- Midland Main Line (158km route) from London St Pancras to Leicester will be signalled Level 2 without lineside signals. The target date of readiness for operational ERTMS services is December 2021.

Other special projects are also under active development:

- Thameslink London project running North-South on upgraded, existing tracks, where Automatic Train Operation (ATO) functionality will be deployed in the central core section having been tested and proven at Hertford North. The new trains purchased will have to transition between ERTMS and the existing conventional light aspect signalling (TPWS). Approximately 119 new trains are expected to be required.
- Crossrail is a new high capacity urban railway system utilising two new 21km tunnels running East-West under Central London but joining the national “main line” network at each of the portal tunnels’ extremities. Thus transition to ERTMS and TPWS will be required on the new trains now purchased as well as being able to drive CBTC with ATO in the tunnels. Approximately 63 new trains are expected to be required for the full service pattern.



### *Will British trains be equipped as well?*

In parallel to this infrastructure programme, there is concentrated work now being undertaken to plan the “retrofitment” programme for the “national” rolling stock fleet involving approx 2,500 locomotives up to 2030. This takes into account the fitment work required to match the fleets required for the routes to be upgraded to ERTMS, considering the current ages of the trains themselves as well as balancing this required volume against the “new ” build train ordering programme. In this respect the “UK” fleet is a remarkable mix of, and is distorted by, a large variety of differing trains and locomotive classes. Many will require costs associated with the first fitment engineering to be included. New build fleets will be expected to be either ERTMS capable or ERTMS ready from the day of delivery.

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