

Great Western Mainline Electrification Programme



Case Study: HV

Infrastructure and OLE Commissioning on the Great Western Route

Client: Network Rail

Project Partner: WJ Project Services

Location: Maidenhead to Bristol Parkway; Reading to Newbury; Wootton Bassett to Chippenham

Scope: 25kV substation commissioning, RATS protection testing, HV soak testing, section proving, and OLE system verification



Project Overview

WJ Project Services supported the modernisation and electrification of the Great Western Mainline. The programme delivered over 1,000km of new overhead line equipment, approximately 9,500 foundations, and 21 new 25kV substations to enable electric passenger services.

Approach

Works included commissioning of new infeed and 25kV substations, HV soak testing, section proving of OLE infrastructure, and short-circuit testing with VL and VT monitoring. Testing was also completed on 450 manual and motorised switches, incoming feeders, and the Rationalised Auto Transformer System (RATS) protection scheme.

Commissioning & Training

Dynamic testing was undertaken using instrumented pantograph test trains, alongside EMC testing to verify train and system compatibility. Control room integration and protection verification were completed prior to energisation and service entry.

Equipment

New 25kV substations and RATS protection systems were installed, providing improved fault response, enhanced reliability, and increased network capacity.

Outcome

The large-scale testing programme was successfully delivered, enabling the introduction of electric passenger services between Bristol Parkway, Newbury, Reading, and Maidenhead in January 2019.

