West Coast Mainline Autotransformer Project

Case Study: Installation, Testing, and Commissioning of Autotransformer Substations along the West Coast Mainline

Client: Power Upgrade JV (via Network Rail)

Project Partner: WJ Project Services

Location: West Coast Mainline (Tamworth to Oxenholme)

Scope: Installation, testing, and commissioning of 9 HV autotransformer substations, HV section proving and soak testing, and provision of associated equipment and services

Project Overview

The project upgraded the West Coast Mainline electrification, installing eight 25-0-25 kV autotransformer GIS substations, converting a GECMK1 building, and adding two ATFS buildings. WJ Project Services supported all stages from pre-commissioning to final testing, ensuring minimal disruption to the 400 kV National Grid.

Approach

A detailed installation and commissioning plan minimised outages and enabled joint testing with National Grid. Advanced planning and coordination ensured safe, reliable, and efficient operations.

Commissioning & Training

The team conducted pre-commissioning, overhead line testing, section proving, and circuit testing. All results were documented, and faults rectified to allow rapid commissioning and minimal downtime.

Equipment

Eight 25-0-25 kV autotransformer GIS substations and two ATFS buildings, fully compatible with Network Rail infrastructure and the 400 kV system, ensuring safe and scalable operations.

Outcome

Fully commissioned substations and feeder stations, complete testing documentation, and seamless National Grid integration. The upgrade supported improved train services along the reinforced West Coast Mainline routes.