First substation now energised for Great Western electrification programme

In 2014, ABB and UK Power Networks Services joined forces in a consortium to deliver a turnkey project for the creation of the new autotransformer feeder substations (25-0-25 kV) to deliver trackside power for Network Rail's Great Western Route Modernisation (GWRM) programme. Worth in the order of £100 million split circa 50:50, the project is a critical element in the electrification of the Great Western railway to make travel more reliable, greener and smoother for passengers, as well as quieter for people living near the railway.

Between 2015 and 2017, the GWEP programme will see the delivery of 33 trackside feeder substations along a route that serves major towns and cities across southern England and Wales. Summer 2015 saw the project reach a major milestone with the successful energisation of the first of these substations.

SMOS Light trackside switchgear

The feeder substations are based on ABB's unique modular Structure Mounted Outdoor Switchgear (SMOS) Light concept, which is designed to help railway infrastructure owners reduce the time required for construction, testing and commissioning by as much as 30 per cent. The substations also deploy ABB's state-of-the-art eco-efficient power distribution switchgear, supporting Network Rail's policy of reducing its environmental impact. They receive power from National Grid who provide the 400 kV connection and the associated cabling to the National Grid trackside disconnector compound.

The turnkey feeder substation solution also incorporates ABB's advanced protection and control concept, which was developed to suit Network Rail's own Rationalised Autotransformer Scheme (RATS). This highly sophisticated method of deploying the global IEC 61850 open communications standard helps achieve a cost-efficient substation solution. The protection and control cubicles and accessories are installed in a containerised building that is fully factory assembled and tested, constituting a near plug and play solution. The first substation is scheduled for commissioning in 2015 and the project is expected to be completed in 2017.

Stephen Trotter, Managing Director for ABB's Power Systems Division in the UK said "The successful energisation of the first autotransformer substation is a very significant milestone in the electrification of the Great Western route. Achieving this exactly on schedule is a tribute to both ABB's state-of-the-art technology SMOS Light technology and the effective consortium that we have established with UK Power Networks Services. Our focus is now on rolling out the remaining 33 substation sites".

Supporting Hitachi Rail Europe's push into the UK rail market

The SMOS Light concept is also gaining in popularity with other rail projects across the UK. Most recently, it has been specified along with an 8 MVA 132/25 kV autotransformer to power the 1.1 km test track at Hitachi Rail Europe's flagship manufacturing facility at Newton Aycliffe in northeast England.

Hitachi's facility in Newton Aycliffe