



Network Rail North West Electrification is undertaking a large scale investment project to electrify the Liverpool / Manchester line with an interface to the West Coast Mainline at Newton Le Willows. Phase 1 covers the electrification of the Chat Moss lines from Castlefield Junction to Parkside Junction and includes the installation of two new autotransformer distribution sites Ordsall Lane MPATS & Willow Park ATFS. These Autotransformer substations utilise the new IEC 61850 protection control system.

Contract Details

<i>Commenced</i>	August 2012
<i>Completion date</i>	November 2013

Location

<i>West Coast Mainline/ Liverpool - Manchester Chat Moss Route</i>	Willow Park ATFS (36 Panel Board)
	Ordsall Lane MPATS (24 Panel Board)

Principal Works

- Test & Commissioning of 2 HV Siemens 8DA12 GIS Auto Transformer Substations.
- Testing of RATS, IEDs, Network Switches IEC 61850 system and SCADA System at Willow Park and Ordsall Lane substations using.
- HV Soak Testing and Section Proving of sites.
- Section proving of 26 kilometres on new electrified infrastructure.
- Short Circuit testing with V_L and V_T monitoring.
- Incoming Feeder Transfers

The North West Electrification Project is part of a programme of works to reinforce the electrification infrastructure on the West Coast Main Line and install new electrification on the Chat Moss lines between Liverpool (Castlefield / Parkside Junction) and Manchester (Ordsall Lane).

The traction power supply system is to be installed as a 12kA fault level 25kV – 0 – 25kV Auto-transformer (AT) system but with initial implementation as a 6kA fault level Autotransformer 25kV system (derived from the single phase supply at Willow Park ATFS).

The initial works included moving the existing 132/25kV in-feeds from the existing Parkside Feeder Station to the new Willow Park ATFS substation. This was followed by the transfer of all track feeders.

The existing Parkside Feeder Station was taken out of service and decommissioned.

The two new Autotransformer substations at Willow Park and Ordsall Lane are modular buildings with Siemens 8DA12 gas insulated switchgear. Circuit / equipment protection is provided by Siemens Siprotec and Schneider Relays.

Control of the equipment is carried out by conventional Invensys SCADA but also has the IEC 61850 network system functionality being trialled in parallel.

In conjunction with the Network Rail Specialist Team the “RATS” (Rationalised Auto Transformer Scheme) with IEC 61850 network messaging has been developed using pioneering testing techniques where Omicron secondary injection test equipment has been GPS linked to simulate / inject simultaneous fault conditions at the two sites.

Section proving and short circuit testing has been carried out of the new electrified infrastructure to verify the system.