

# ABB to deliver power quality solutions for High Speed 1

ABB has secured a major project with High Speed 1 to design, manufacture and install capacitive compensation solutions to prevent voltage drops along the 25 kV catenary supply serving the 68 mile (109 km) High Speed 1 route from the Central London terminal at St Pancras International to the Channel Tunnel at Dover.



## The Background

High Speed 1 is used by Eurostar trains operating the international high speed routes between London, Paris and Brussels as well as high speed domestic trains that provide a commuter service between London and Kent. The railway lines are electrified on the 2 x 25 kV principle using autotransformers.

High Speed 1's nominal line voltage is 25 kV. There are, however, some areas of the line where it can drop as low as 17.5 kV, causing a reduction in overall system performance. These voltage drops result from the inherent design of the isolation transformers (used to isolate between High Speed 1's AC traction power supply and the adjacent Network Rail DC traction power supply), located in the existing substations along the line, as they require large magnetising currents and therefore demand substantial inductive reactive power. This causes a drop in the voltage supply as seen by the train's catenary.

## The Response

A number of studies commissioned by High Speed 1 have demonstrated that a reduction in the reactive power demand from the isolation transformers will improve system performance. This will be achieved by the installation of ABB's capacitive compensation equipment that will effectively cancel out the inductive power demand of the transformer, and hence reduce the voltage drop.

ABB's contract with High Speed 1 covers the design, manufacture, installation and commissioning of capacitive compensation filters in nine AC/DC compounds at strategic positions along the line.

Seamus O'Neill, ABB Power Systems Operations Manager for Rail said "ABB looks forward to working with High Speed 1 on this prestigious project to engineer and deliver high technology solutions to address the existing issues with voltage drops. This will ensure the efficient operation of high speed trains through London and the Kent countryside to the Channel Tunnel."

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