In 2007 ABB completed the delivery of a £33 million turnkey project to build trackside power infrastructure for High Speed 1, then known as the Channel Tunnel Rail Link, running from St Pancras to the Channel Tunnel, which enables trains to match the high speeds experienced on the Continent.

**New power infrastructure**
As the first major railway line to be built in the UK in more than 100 years and the only one running between the UK and mainland Europe, High Speed 1 was designed for trains to travel at up to 300 kilometres per hour and meet European rail electrification standards. As the project was a major new piece of railway line, new power infrastructure was needed.

**Project details**
ABB was contracted by High Speed 1 contract partner EDF to deliver eight trackside substations to supply the continental European style 25-0-25 kV traction power for the catenary power to the trains. In addition, ABB supplied and constructed a 400 kV to 25-0-25 kV transformer to act as the main grid connection at National Grid’s Barking substation. The scope of the project also included a 1,800 metre cable connection to Choats Road feeder substation, which houses two 26 MVAr Static Var Compensators, also provided by ABB.
The ABB feeder substations and auto-transformer stations were tailored specifically for trackside application with the 25-0-25 kV power distribution system, which is widely used for European high speed rail services. It has the benefit of allowing a transmission voltage of 50 kV, while the voltage seen by the train is only 25 kV. This arrangement will increase the efficiency, reduce losses and lead to fewer track feeding points and fewer connections to the distribution grid.

With manufacture beginning in 2003, well before installation on-site from 2005, the project was completed successfully in 2007. To deliver the project, ABB called upon the skills and experience of specialists from its UK teams, which ensured a seamless interface between the client and delivery teams. The project was led by ABB Stone, which procured and supplied the substation equipment. ABB Eutech delivered the civil engineering elements and ABB Rugby carried out the installation work.

ABB clocked up a remarkable safety record on the project, with well over 250,000 hours without a lost time incident.

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