

Making the London connection



Cable drums for the London Connection

ABB manufactured, installed and commissioned the 400 kV cable for the National Grid's largest ever tunnelling project, called 'The London Connection', a 20 km long 400 kV underground cable to supply central London which was energised in 2005 and which was at the time one of the longest 400 kV underground cables in Europe.

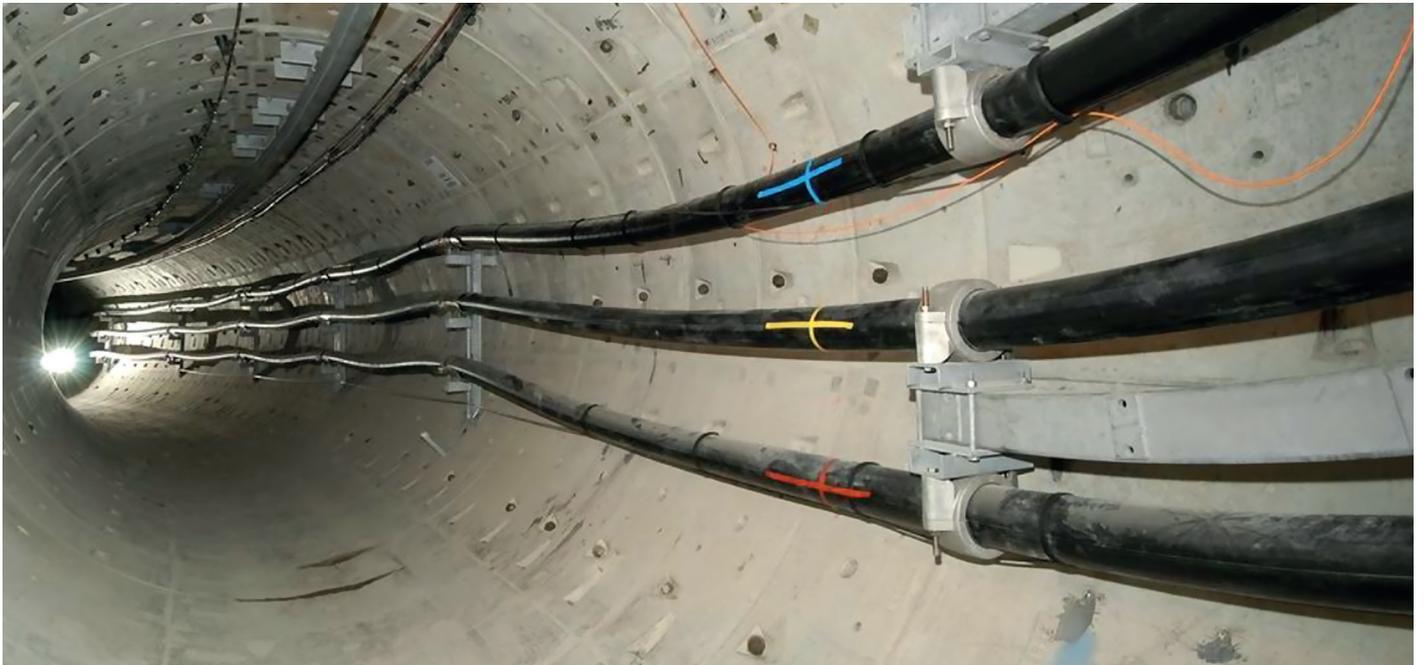
The need

With electricity demand in north west London and the City increasing twice as fast as the national average and projections showing that this growth would be sustained for a decade, National Grid set out a project called The London Connection designed to create a three phase high voltage supply for North West London and the City. Essential to National Grid's future licence to operate, the connection linked Elstree to St John's Wood through a new three metre diameter, 20 km long tunnel to a new £60 million substation, also constructed by ABB.

Project details

ABB manufactured a total of 61 km of high-voltage cable using cross-linked polyethylene (XLPE) insulation technology, which eliminates the need to use old-fashioned oil and high maintenance gas filled cables. A similar ABB 400 kV XPLE underground cable has been in service in Berlin since 1998.

The cable was manufactured at our own plant in Germany and underwent a one-year duration test at an independent test facility, where it was signed off as fit for purpose.



Three phase HV AC cable installed in the tunnel

We supplied 150 mm diameter cable for three 20 km lengths – one for each of the three phases of the supply. At a total weight of 2,440 tonnes, the act of pulling the cable along the length of the tunnel was an element of the project that threw up significant challenges.

ABB delivered the cable to site on 63 massive separate cable drums and pulled it through the tunnel in three sections at intermediate shafts along the length of the tunnel, with the longest cable pull being around 7.5 km. ABB used a special arrangement of cable pulling equipment for the safe and smooth installation through the tunnel. A post-pulling cable insulation test proved that the cable was ready for safe service as part of the grid.

As a full turnkey project, ABB's successful installation of the cable and connection to the new St John's Wood substation meant that the London Connection was ready for National Grid to operate in summer 2005 and it has been in operation providing energy to London consumers ever since.

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