

Abstract:

Active tunnel infrastructure projects in London

Being the first of its kind worldwide, the metropolitan railway transport tunnel underneath the streets of London opened in 1863 in order to serve the Metropolitan Railway. Today, 150 years later, the London Underground system is serving approximately 3 million journeys per day. It has boomed again by activating challenging tunnel projects namely **Crossrail**, a series of **London Underground** upgrade projects, Thames Tideway scheme and High Speed 2 (HS2) railway project. This time however, NATM tunnelling (New Austrian Tunnelling Method)- known in the UK as Sprayed Concrete Lined tunnels (SCL)- the cutting edge tunnelling method of the still evolving tunnelling technology is employed.

Crossrail is an ambitious railway project linking the east and west of London and providing connections to a number of existing London Underground stations. With total funding of approximately 16 billion GBP, Crossrail is currently the largest construction project in Europe. The upgrade and maintenance works for the London underground aims to deliver an increased capacity of the system by rebuilding and refurbishing lines and main stations, while also entailing arrangements for step-free-access to the network.

The speaker will present **tunnel lining compositions**, **waterproofing system** and the challenges encountered during the design, lessons learnt in terms of **numerical modelling** of tunnels, **design management** and **health** and **safety**. Moreover, the role of **project-specific guidelines** and slightly tailored standards that assure client requirements in large scale tunnel projects are going to be discussed. In addition, an overview on **where does the UK stand** in terms of SCL and tunnelling practice are given by illustrating the successfully finished and on-going projects that the speaker has been involved in, such as Bond Street Station, Tottenham Court Road Station Upgrade Project and Farringdon station (Crossrail project).