

LONDON UNDERGROUND - INVERTER TRIAL PROJECT



BACKGROUND

As part of its energy efficiency strategy, London Underground is exploring the benefits of inverter technology in traction power substations to allow regenerative braking energy from trains operated at 750V DC to be exported back into the 11kV AC distribution network. This follows on from the introduction of new high-powered rolling stock capable of regenerative braking.



CHALLENGES

Maintenance was a key consideration of our approach to the selection of the technology. The HESOP™ inverter is natural air-cooled, which requires minimal maintenance compared to forced air-cooling systems on 'standard' inverters.

The works were confined to the inside of the existing footprint of the Cloudesley Road operational substation and cable basement, requiring protection of existing infrastructure as well as careful construction sequence.

ACHIEVEMENTS

We identified and provided an innovative alternative to London Underground's design to minimise the amount of additional equipment, such as transformers and switchboards, to be amended, installed and commissioned. This provided more space for future installation and delivered cost savings.

Extensive testing and monitoring has been undertaken including EMC impact and system performance assessment leading to imminent full operational service. London Underground is now considering introducing the innovative technology as part of the New Tube for London programme, which will see new trains running on the Piccadilly, Waterloo & City, Bakerloo and Central lines in the mid-2020s.

SCOPE

We carried out the design, system integration, procurement, supply, construction, commissioning and handover of the inverter and associated electrical equipment. This included the buildings and structural modifications required to enable the implementation and trial operation of the inverting substation technology.

We identified suitable technology and worked with the supplier Alstom to adopt their HESOP™ inverter. This provides cost-effective transformation of the DC braking energy of the trains from DC to AC to supply back to the grid. It is fully remote-controlled and installed in cubicles.

KEY STATS

£1.5

million project



Innovative
technology



Further
roll-out
anticipated

CONTACT

GARY GREGORY
PROJECT MANAGER

ENQUIRIES@UKPOWERNETWORKS.CO.UK