

Tunnel Transformers, 3300V to 400V and / or 110V

Given the crowded nature of the UK's major cities and the environmental impact of large scale infrastructure projects, very long tunnels under our cities and countryside are becoming more prevalent. Although tunnels are comparatively expensive to build, they cause limited disruption above ground and advances in tunnel boring technology have significantly reduced costs and time scales. The longest tunnel currently under construction in the UK has a diameter of 6 metres and, when finished, will be 37km in length. By utilising multiple Tunnel Boring Machines (TBM), each of which can progress at a rate of up to 20 metres per day, the main tunnelling activity should be completed in a little over 2 years.

On a large scale tunnel project, the TBM will require a dedicated HV supply and a separate small power system is usually installed to provide 400 volts for heavy plant and 110 volts for small tools and tunnel lighting. Every project will have different small power requirements and we offer a 1000V small power supply system for runs typically up to 3km in length and a 3300V system for runs typically up to 10km in length. Both are proven means of providing 110V and 400V supplies along a tunnel.

On a recent project we have supplied a series of 3300V tunnel transformers which are to provide 400V and 110V power. The bulk of the requirement is for 110 volts only, which is provided by 12kVA 3300:110V tunnel transformers installed every 300 to 400 metres. Where there is also a requirement for 400V power, the 12kVA is replaced by either a 35kVA or a 77kVA transformer with a secondary winding of 400V (at 23kVA or 65kVA) and a tertiary winding of 110V at 12kVA.

The transformers are housed in sturdy enclosures, which provide ingress protection to IP55. The enclosures incorporate lifting arrangements and bolting-down flanges to facilitate safe installation within the tunnel (the 77kVA weighs-in at 700kgs). The 400V sockets are rated at 63A and 32A and 110V sockets are rated at 16A and 32A. All sockets are switched & interlocked to prevent insertion or withdrawal of plugs on load and they are individually protected by MCB and RCCB.

All transformers are fitted with incoming and outgoing 3300V Victor half couplers, which enable different sizes of transformer to be supplied on the same circuit, in any sequence (the through connections are fully rated). Primary windings of transformers are fuse protected.

On this project the transformers feed our Flori-67/3P 110V tunnel lighting system, which allows the illumination levels required by BS6164:2019 to be achieved (30 lux on walkways).

If you are involved with a tunnel project and would like to discuss 1000V or 3300V small power and lighting systems, please contact the Blakley Projects Team.



Part Number A7043046, Tunnel Transformer, 12kVA, three phase, 3300:110NE



Part Number A7043047 - Tunnel Transformer, 77kVA, three phase, 3300:400NE / 110NE



LHS: 400V Distribution of 77kVA (A7043047)
RHS: 110V Distribution of 35 kVA (A7043064)