

CASE STUDY DATA SHEET

400V and 110V Tunnel Power and Lighting

The Blakley Projects team has recently been involved with a scheme to provide temporary power and lighting for a 1000m tunnel fed from a 400V supply. As is sometimes the case, the detailed requirements of the final user were not entirely clear at the early stages of the project. It was known that 110V lighting would be required at all times and that 110V and 400V power could be required at any location within the tunnel. It was therefore essential that the scheme should be flexible and adaptable.

Following discussions with the installer, it was decided to base the system on a single 125A 400V TP&N supply, fed via a 70mm² LSZH SWA cable. The cable loops-in and out of a series of free standing Tunnel Distribution Assemblies (TDA), installed at 200m intervals. Each TDA is fitted with a 125A main switch to control the through connection and a 63A TP MCB to control the local distribution fitted to the TDA. The TDAs are equipped with 4 no. 400V sockets and they also incorporate a 4kVA 400:110V transformer to supply the main lighting load (100m in each direction) and any local 110V power tool requirements. To cater for significant 110V loads, a number of 4kVA Portable Transformer Assemblies (PTA) are included, which can be fed from any of the 400V sockets fitted to a TDA. As the PTAs may be located up to 100m from a TDA, the PTAs are fitted with appliance inlets (fixed plugs) and 25m extension leads are supplied as part of the package (4 leads required to supply a PTA at the 100m point). The use of an appliance inlet (rather than a fixed input lead) minimises the weight of a PTA (under 50kg), which helps with manual handling on site.

A flexible approach was also required for the temporary lighting. As the tunnels are not large, the use of low glare, compact, 30W LED fittings was deemed a better option than a 5' 44W LED fitting or an LED floodlight. It was also decided to feed the lights via our Flori-67 plug and play system, as this minimises installation time on site, uses a unique 6A connector that can't be used to supply power tools and also enables fittings, etc., to be added or changed without isolating the entire circuit. It was also decided to install 5m spacing Flori-67 strings (i.e. up to 20 fittings per 100m) but initially to populate only every other outlet i.e. a fitting would be installed every 10m. If a greater level of lighting is required locally or overall, additional fittings can be plugged-in. 50% of the initial fittings supplied are maintained emergencies (one every 20m), providing 3 hours of light in emergency mode. The total initial lighting load for the 1000m tunnel is only 3kW and even if all lighting outlets are utilised, the total lighting load is still only 6kW, which leaves over 100A of 400V power available to supply other plant and machinery.

As this is a tunnel project, the Flori-67 strings and adaptor leads are made from Low Smoke Zero Halogen flexible cable and all sockets and lighting circuits are individually protected by 30mA RCD.

If you would like to discuss a tunnel power and lighting scheme, please contact our projects team who will be pleased to assist.



Tunnel Distribution Assemblies providing 400V & 110V power plus Portable Transformer Assemblies



Tunnel Distribution Assemblies part no. A7191751



Portable Transformer Assemblies part no. A7010577



fitting (S060916) and Flori String 2.5mm² 5m (S060830)

Experts in high performance power and lighting products E: sales@blakley.co.uk W: www.blakley.co.uk

South: 1 Thomas Road, Optima Park, Crayford, Kent DA1 4QX T: 0333 188 0284 North: Suite 38, Pure Offices, Turnberry Park Road, Morley, Leeds LS27 7LE T: 0333 188 0285