*Customer Success Story*


# *London Underground*

## *Cooling the Tube Programme*

westermo®

*Robust Industrial Data Communications – Made Easy*

# Cooling the Tube Programme

**Manufacturer:**

Extracting heat from the London Underground Network is a huge and ongoing engineering challenge, especially on the deep tunnel lines. To meet this need TfL established a dedicated programme team to provide a variety of solutions including mid tunnel ventilation and cooling, station cooling and regenerative braking on vehicles.

Keeping the Tube's customers cool involves utilising current technologies as well as making best use of more traditional approaches.

Firstco were approached by Mansell Construction Services Ltd to design the control system that would control the cooling fans and dampers to be installed at four Mid–tunnel Ventilation Shafts (MTVSs) on the Victoria line, thus doubling the air flow through these tunnel sections. The control system consists of a network of Programmable Logic Controllers (PLCs) that interfaces to a Central Cooling System (CCS), providing operators with real time monitoring and performance trending. This control system architecture required the designing of an industrially robust network to cope with the harsh underground environment.

In 2009, Westermo Data Communications were approached to supply much of the industrially hardened networking equipment used to connect the Central Cooling System to the PLC equipment used to provide the control and monitoring functionality within the four MTVSs.

In order to obtain the reliability and performance required from the network it was decided at an early stage to adopt ADSL as the communications technology as PSTN circuits already existed, that could be easily migrated over to an ADSL service. By using the Westermo DR-250 ADSL Router IP traffic could be transferred at rates of up to 8Mbit, broadband speed. This high bandwidth, 'always on' connection enables engineers and operators to make informed decisions based on alarms indicating fault conditions generating from the shaft and station plant.

Additionally a data historian was utilised to provide real time data logging and archiving functionality generating performance reports for the client.

# ADSL 2/2+ Router

ADSL offers high speed access to remote sites over existing analogue telephone lines. The DR-250 has features such as firewall, data encryption and VPN tunnelling to provide secure data transmission between sites.
The device has a serial RS-232 port and four 10/100BaseT ports. The DR-250 supports routing protocols such as: BGP, VRRP, OSPF, and RIP2.

- ADSL / ADSL2 / ADSL2+ Compatibility
- VRRP+, BGP, OSPF, RIP2, GRE, L2TP routing protocols
- 10/100 BaseT Ethernet switch
- Integrated RS-232 terminal server port
- SNMP management protocol
- Firewall, IPSec VPN, DES, AES, SSL, SSH
- Made easy configuration and comprehensive diagnostic
- Extended temperature range (–20°C to +55°C), (–4°F to +131°F)
- 10 to 28 VDC power input

| Product/Art. no | Description | Connectivity |
|---|---|---|
| **DR-250**<br>3622-xxxx  | ADSL 2/2+ Router. | RS-232<br>4 x 10/100BaseT<br>2 x SIM<br>2 x USB |