

## Case Study



## London Heathrow Main Tunnel Ventilation Core Controls Solutions

### Overview of works

Built in 1955 the main tunnel at Heathrow provides the main access route under the runway into the central terminal area. Over the years there have been a number of refurbishments. In 2010 a ventilation refurbishment programme was completed in order to improve safety within the tunnel.

CCSL were awarded the contract to design and implement the systems providing the control and monitoring of the new ventilation system. The new ventilation system comprised of 32 new Jet Fans controlled by Variable Speed Drives. The component parts of our supply included:

- Design, manufacture and commissioning of two new Duplex HEART Outstations constructed using AB SLC 5/05 technology as per the Heathrow standard.
- Design, manufacture and installation of two 4-hour backup UPS Systems.
- Supply, installation and commissioning of 10 sets of CO/VIS/NOx pollution sensors.
- Design, manufacture and commissioning of two plenum ventilation MCC enclosures.
- Design, manufacture and commissioning of four firefighters Smoke Control Panels.
- Integration of ventilation systems into existing HEART SCADA system.

### Our solution

The VSD's were controlled across a number of diverse and interleaved DeviceNet networks that communicated with each Outstation installed in plant rooms at either end of the tunnel. Under normal operating

conditions the tunnel ventilation system operates autonomously using the pollution levels measured across the 10 pollutions sensor sets. The CO /VIS and NOx levels are continually monitored against operator configurable setpoints to ensure the ventilation demands are controlled to maintain a safe and pleasant customer environment as they travel though the tunnel bores.

A Smoke Control Panel located at each portal entry and exit provide emergency ventilation control for the

### The scope of works included

- Critical Infrastructure, only passenger route into Heathrow CTA.
- 2 Duplex resilient Outstations.
- 4 Custom designed and manufactured UPS units.
- 4 Custom designed and manufactured Smoke Control Panels.
- 10 sets of CO / VIS /NOx Pollution Sensors.



## Our solution

fire service operators in the event of an emergency scenario, our intuitive SCADA mimics allows the Heathrow Engineering team complete visibility and control of the system from a centralised control centre.

This was an exciting and challenging project. As the only route into the central terminal area, the main tunnel at Heathrow is critical to the operation of the airport and as such was required to remain operational between the hours 04:30 until 24:00. This left a small working window each night to install and commissioning the new control system and decommission the old one. Our strategy involved deployment of multiple teams of engineers working in rotating shift patterns to provide 24/7 attendance and system integration



**Main tunnel**  
under runway



**UK's busiest**  
airport



**Night time**  
programme