Riyadh Metro Tunnel Fire Detection

Riyadh, Kingdom of Saudi Arabia

The Riyadh Development Authority (RDA) in the Kingdom of Saudi Arabia recently executed one of the largest metro projects within the Gulf Cooperation Council (GCC) region. The Riyadh Metro has a total of six lines covering approximately 177 km. There are 85 stations in total, including underground, ground level and elevated stations. The Riyadh Metro Project is part of Riyadh's Public Transport Project (RPTP) plan which is also known as the "King Abdulaziz Public Transportation Project". AP Sensing was chosen to monitor this very prestigious infrastructure with our fiber optic Linear Heat Detection (LHD) system. Our system is used to detect and monitor the complete underground tunnel network.

Riyadh Metro Blue Line

A total of approximately 90 km of passive fiber optic sensor cable, plus 54 multi-channel fiber optic LHD systems are used to monitor the Blue, Red, Yellow, Green and Purple lines of the metro underground tunnel network. Each LHD system offers up to 256 user defined alarm zones per channel and provides five configurable criteria (Max; 3x rate-of-rise; adaptive) for setting up alarm thresholds for each zone. Additionally, each system has 44 potential free relay contacts and a network interface for communication with SCADA via Modbus TCP/IP.

AP Sensing's fiber optic LHD units were designed and placed strategically into multiple station control rooms to achieve a fully redundant system setup. The system monitors and provides accurate temperature traces in each zone and activates an alarm when temperature development in any zone exceeds the pre-determined thresholds.

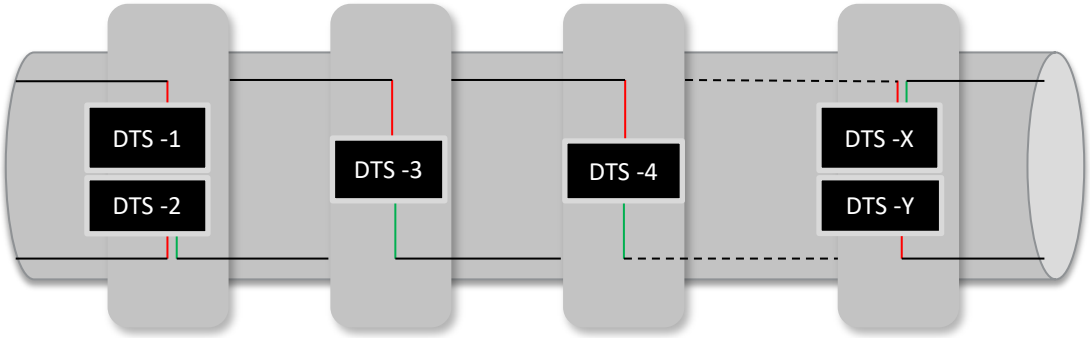
System Commissioning and Zone Configuration

Besides providing fire alarming capabilities, our fiber optic LHD system activates precisely the ventilation fans at the scene of fire to extract smoke from tunnels and draw it away from any station concourse. All alarms and ten-thousands of temperature values are received by the command center room via Modbus in order to monitor potential fires and their sizes, precise location, and direction of spread due to wind factors in the tunnel.

Fiber Optic LHD Advantages

Some key considerations when choosing AP Sensing's fiber optic LHD system for Metro Systems:

- Immunity to electromagnetic interference (EMI), ensuring no signal interference occurs
- Full set of fire certifications including UL, FM, VdS
- MTBF of >33 years with the lowest failure rates in the industry
- Industry standard interface (Modbus) and relays for easy integration with SCADA and FP
- Fire monitoring capabilities: a system that can report temperatures up to 750 °C, in order to effectively gain control over fires and activate countermeasures in emergency situations



LHD System Schematic View

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