



# Germany's 4<sup>th</sup>-Longest Traffic Tunnel Relies on AP Sensing

## Jagdberg Tunnel, Jena, Germany

The 3.1 km Jagdberg tunnel was designed to move traffic from a hilly, winding stretch of road into the twin tunnels (3 lanes each) near Jena, in eastern Germany. AP Sensing's Distributed Temperature Sensing (DTS) solution was selected for fire detection.

The new twin tunnels were opened in late 2014 and represent **Germany's fourth-longest traffic tunnel**. During the construction, great attention was given to tunnel security.

**Comprehensive fire tests** were carried out to test the tunnel itself, AP Sensing's Linear Heat Detection System, and the smoke extraction system. In all cases **the detection times specified were met or exceeded by the AP Sensing DTS**.



*Sensor cable installed along the tunnel roof*

In addition, **for the first time in a German traffic tunnel, an automatic pressurized foam extinguisher system was tested and employed**. Two fiber optic Linear Heat Series devices were installed, one at each end of the tunnels. Between these 2-channel devices there is nearly 7 kilometers of sensor cable installed. This configuration ensures a **completely redundant and secure operation** that would continue to function even in the unlikely event of a fiber break.

In each of the 2 tunnels, there are **127 different zones defined along the sensor fiber** to account for different temperature levels, and to account for the areas where the foam extinguishers are installed. **If an alarm goes off in a foam extinguisher zone, the foam extinguisher is activated.**

The **connection to the fire panel** is via the relay contacts of the DTS. Additional connections to the **instrumentation and control (I&C) technology is accomplished using the Modbus TCP protocol.** The Modbus interface is also used to transmit alarms and fiber breaks, as well as the average temperatures in all zones. These temperature are displayed graphically on the fire panel as well.



Since the installation went live late in 2014, the **AP Sensing Linear Heat Series has performed faultlessly and exactly as planned.** A very valuable infrastructure remains well protected.



*Jagdberg tunnel: Early construction phase*



*Northbound tunnel shortly before opening*

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