



Fire Detection in Bus Terminal

Paris, France

AP Sensing was selected to provide a Linear Heat Detection (LHD) solution at the bus terminal Jules Verne in La Defense, France. La Defense is a major business district just west of the city limits of Paris, where hundreds of high-rises and buildings owned by major companies are found. This bus terminal needed a system with fast response times, excellent accuracy and low maintenance.

A 1 km AP Sensing LHD device with one channel and 20 relays was installed in a single-ended configuration to monitor the temperature of approximately 450 m of sensor cable along the bus terminal.



Bus terminal "Jules Verne"

In the event of a fire or fiber break event, alarm information is sent via relays to the Fire Control Panel (FCP). A maximum of 20 relays can be configured in the Distributed Temperature Sensing (DTS) unit installed at the bus terminal, but only seven relays were required and wired.

The passive sensor cable is immune to dirt, dust, humidity, corrosive materials and electromagnetic interference (EMI). In this case, the sensor cable was fixed on the cable tray by clamps without being in direct contact with the tray. The estimated height is about 6 m.

The bus terminal is divided into five different alarm zones (Voie 2, Voie 1, Entrée, Voie 3 & Sortie west), as well as a test zone in order to test the DTS system periodically. All alarm parameters were configured in accordance with the VDS certification EN 54-5 Class A1 standard.



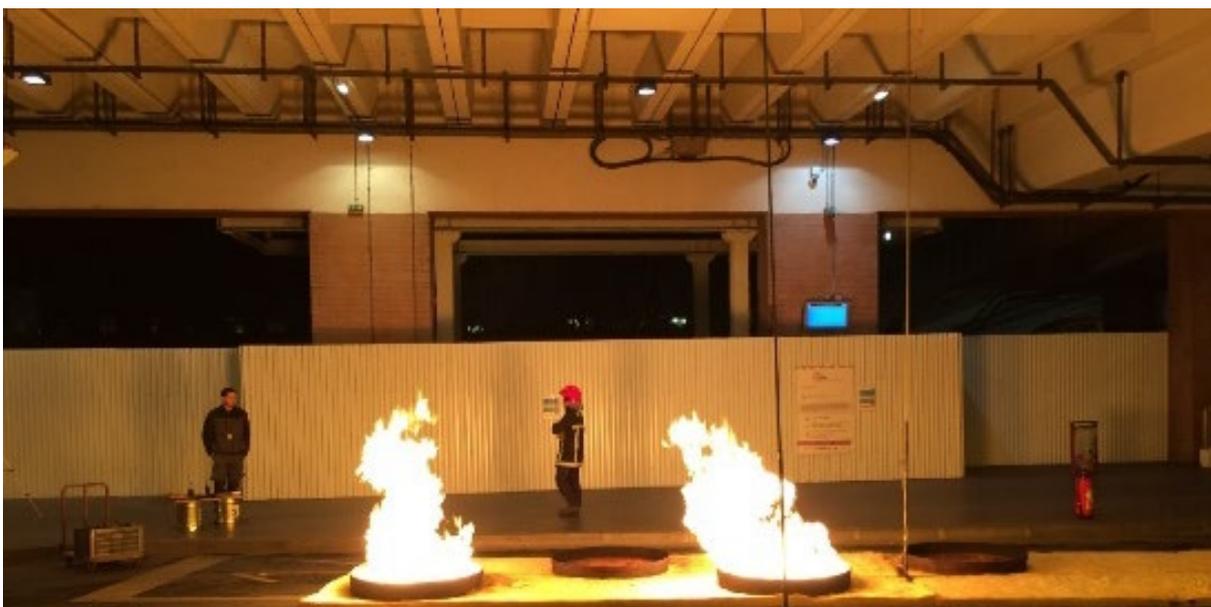
Sensor cable installation (left) and cable tray installation (right) at the Bus terminal "Jules Verne"

In 2016, a fire test was conducted at the bus terminal under the supervision of AP Sensing. The objective of the fire test was to successfully trigger alarms in two different scenarios.

The first scenario was using four barrels of ethanol. In total, 80 liters were used, and the fire was about 3 MW. The maximum temperature reached during the test was 62 °C. The second scenario was created using only two barrels of ethanol, containing 40 liters in total, and the fire was about 1.5 MW. The maximum temperature reached during the test under the second scenario was 47 °C.

As this installation is outdoors, weather, wind and ambient temperatures are considered project-specific monitoring challenges. These were considered in the requirements. Before starting both fire tests, the alarm parameters of the configuration were adjusted, adding the UL criteria in order to compare the sensitivity during the test. The fires were successfully detected in both fire tests.

Those successful results ensure the correct functionality of the DTS and demonstrate the fast and precise fire detection capabilities of the AP Sensing Linear Heat Detection series.



Fire test with 40 liters of ethanol