



Mecca Royal Clock Tower Chooses AP Sensing for Heat Detection

The Mecca Royal Clock Tower (also known as the Abraj Al-Bait Towers) is an engineering and architectural marvel, and is located near the world's largest mosque, as well as Islam's most sacred site, the Masjid al Haram.

It contains the tallest hotel, the tallest clock tower, and the largest clock face in the world. In addition to the construction challenges and intricate workings of the huge clock, the tower is illuminated with 21,000 white and green lights, and two million LED lights.

To ensure the most modern and rugged system of heat detection and monitoring available, AP Sensing's *Linear Heat Series* was selected. Four Distributed Temperature Sensing devices were installed as explained below, to ensure continuous, fully-redundant monitoring in real-time.

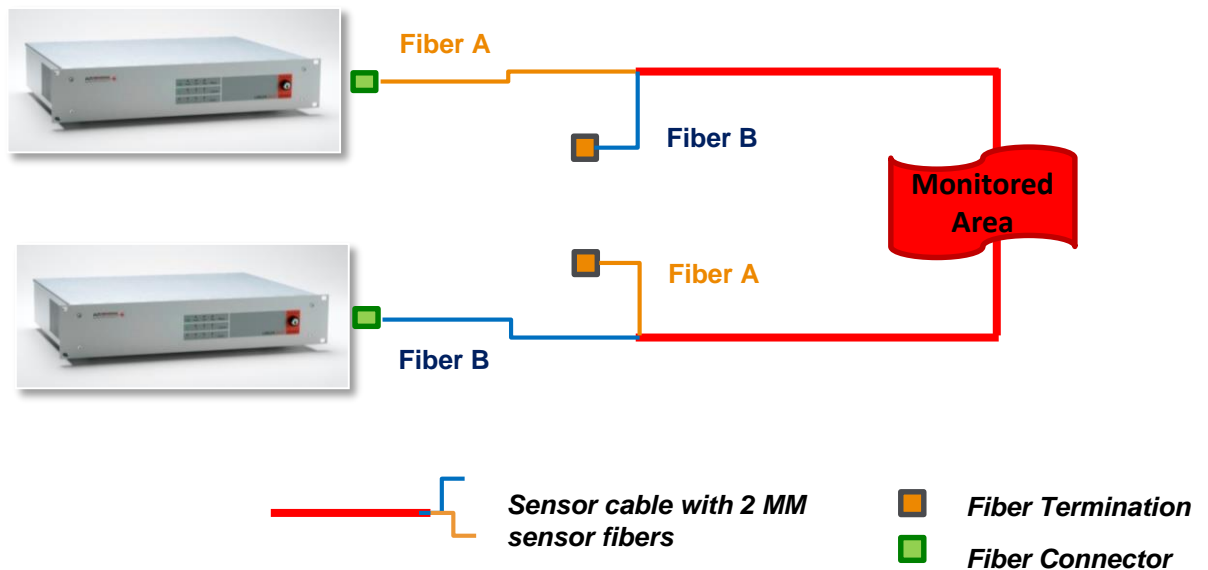


The Royal Clock Tower complex in Mecca

AP Sensing design concept

Planning together with local partners, it was decided to divide the tower areas into four sections, to ensure an efficient installation and the highest performance. This architecture results in **complete system redundancy**, even in the unlikely event of a fiber break or a system fault.

The four sensor cables can be divided into 256 zones, each zone with its own alarm criteria, which was ideal for covering the **media panels, platforms and cable trays** in each of the 4 sections.



For each section: 2 x dual channel DTS devices

Project challenges and the DTS solution

Media walls: There are enormous media walls on each side of the tower below the clock. Two of these measure 70m x 10m, and two 40m x 10m, and together they contain the 2 million LEDs. The 16km sensor cable is connected to the heat sink for the LEDs and is then routed throughout the walls in a tight pattern with 50cm spacing.

This ensures that all four walls (which generate 1.8mW) can be effectively monitored, despite direct sunshine, cool temperatures at night or in the shade, and thermal effects from wind.

Conclusion

Thanks to the combined efforts of a cross-functional team, the *Linear Heat Series* is optimally installed, providing a safe and effective DTS deployment. AP Sensing's unique code-correlated OTDR technology, combined with asset visualization software, precisely locates hot spots and alarm conditions in real time – extremely valuable assets remain protected.