

SUCCESS STORY

TUNNEL MONITORING FOR THE GRAND PARIS METRO PROJECT

COUNTRY:

France

PROJECT TYPE:

Tunnel Monitoring

SECTOR:

Construction - Tunnels

MAIN PRODUCT:

Loadsensing | The Wireless Monitoring System

Challenge

The Grand Paris Metro Project is an extensive metro expansion project for the city of Paris. According to the Société du Grand Paris, the Grand Paris Express is the new metro of the Capital region that will provide connections to developing neighborhoods, Paris' 3 airports, business districts and research clusters. It will service 165,000 companies and transport 2 million commuters daily thus creating new opportunities for economic development.

The project needed data nodes that could gather data from sensors installed up to seven basement levels deep in selected buildings. The data nodes had to be compatible with different types of sensors and had to require minimal manual maintenance for the replacement of the batteries.

Solution

400 Loadsensing wireless data nodes are successfully collecting and transmitting data from different types of sensors (inclinometers, strain gauges, load cells and extensometers), some installed in deep building basements.

Loadsensing uses LoRaWAN: a long-range, low-power wireless technology used by IoT networks worldwide. The system's low-power components remain on sleep mode and are only activated at predetermined times thus extending the lifespan of the batteries for up to 8 years.

Benefits

Minimal adjustments were required for the sensors due to their compatibility with the long-range data nodes and gateways. The Grand Paris construction project saves not only on cabling costs since the data nodes can be operated wirelessly but also on manual maintenance costs due to the low-power consumption of the data nodes which are expected to last until the project completion in 2022.

Loadsensing data nodes were deployed in a section of the Grand Paris Metro Project to enable the wireless monitoring of the stability of the surrounding ground structures during the metro extension. This is to ensure the safety of employees and citizens during the tunnel excavation under some densely populated business districts.

ADVANTAGES

- Real-time, wireless monitoring of sensors, some installed deep in building basements
- Compatibility with various types of sensors
- Minimal maintenance required for the long-range, low-power wireless data nodes
- Immediate feedback for any concerns raised with the Worldsensing helpdesk

Worldsensing's full technical support helps partners to immediately resolve any concerns raised to the Loadsensing helpdesk. The healthy relationship between Worldsensing and the other stakeholders of the project provides a promising outlook for their other endeavors aside from tunnel monitoring such as construction, mining and other projects related to structural health monitoring.

Crucial data on the stability of the tunnels and surrounding areas are being accurately and regularly delivered which ensures the safety of the employees and the citizens in the project area. This in turn helps to support a seamless overall project execution of the metro expansion which hopes to revitalize the greater Paris region.



*Figure 1:
Loadsensing wireless tiltmeter, a 2-in-1 sensor + data node*



Find out more:

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