

Wireless monitoring of the Ponte Vecchio

COUNTRY

ITALY

PROJECT TYPE

BRIDGE MONITORING

SECTOR

CRITICAL INFRASTRUCTURE

MAIN PRODUCT

LOADSENSING

Challenge

When more than 200 meters of a street close to Florence's famous Ponte Vecchio collapsed in May 2016, alarm bells started ringing. The sinkhole, caused by a broken pipe, swallowed about 30 vehicles. Fortunately, nobody was hurt, but the municipal authorities became seriously concerned about the stability and integrity of the Ponte Vecchio. The current bridge was built in the 14th century, although there are vestiges of previous constructions going back to Roman times. As well as receiving millions of visitors every year, the Ponte Vecchio has a number of shops and in its recent history has survived floods, fire and even the modern trend of hanging padlocks from its balconies (more than 5,000 locks were removed in 2006). The question for the authorities was how to guarantee the continued stability and integrity of a monument that has endured for more than six centuries.

Solution

At the request of Florence City Council, the Geology Department of the University of Florence installed a network of geotechnical sensors and monitoring software to monitor the Ponte Vecchio. Worldsensing's Loadsensing remote monitoring system was selected due to its reliability and long-range, low-power wireless operation. Being wireless was especially important, as installing cables was not an option given the need to preserve the World Heritage monument.

Benefits

The wireless monitoring solution showed that despite being over 600 years old, the Ponte Vecchio has a stable and secure structure. The sensors located along the 32-meter length of the structure provide real-time information on the stability of the bridge and of the nearby land. This guarantees the safety of the millions of people who visit the monument every year and enables any structural incident to be detected and dealt with before it becomes a threat. In this way, the people of Florence and the city's visitors will be able to enjoy what is considered Europe's oldest medieval bridge far into the future.

Advantages

- Guaranteed safety for millions of visitors as a result of robust infrastructure monitoring
- Minimal impact of monitoring thanks to wireless operation
- Immediate detection of any risk to the World Heritage site



1 - The sinkhole near Ponte Vecchio, caused by a broken pipe, swallowed about 30 vehicles.