

Ponts sur la Lutrive (Switzerland)



Project description

Two parallel bridge decks with a total length of approximately 400 m carry the A9 motorway across the Lutrive Valley to the North-East of Lausanne at Lake Geneva.

The bridges were built in the years 1971 to 1973 by the corbelling method with central articulations and are now being refurbished.

The refurbishment work on the Belmont-Lutry section of the A9 Motorway includes the renewal of the road surface as well as the drainage system.

Additionally, the authorities require a system to monitor and assess the movement of the bridge in both longitudinal and transverse direction over the next years. These data will be used to draw conclusions about the behavior of the bridge, its condition and the performance of the bearings and joints.

mageba scope

mageba is in charge of the design, supply and installation of the ROBO-SMART IoT SHM system including data visualization. A wireless system is chosen to avoid significant cabling work between the abutments which are 400 m apart.

A series of draw wire and temperature sensors are mounted to measure longitudinal and transversal displacement on all 4 abutments 24/7. The gateway, which transmits the data via the cellular network to the cloud, is powered by a solar panel.

A key benefit of the LoRa system is its very low power consumption enabling to monitor bridge movements for many years without replacing batteries. It uses a low frequency communication technology.

Furthermore, installation time can be cut down as only little cabling work is required – at Lutrive, on-site working time took only two days.

Highlights & facts

mageba products:

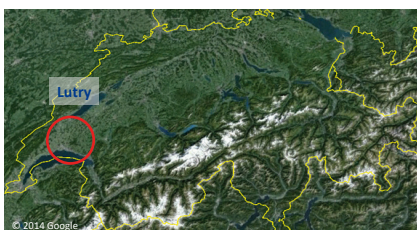
Type: ROBO®SMART IoT (Internet of Things) for joints
LoRa (Long Range) wireless SHM (Structural Health Monitoring) system

Installation: 2019

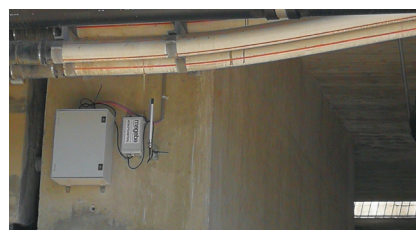
Structure:

City: Lutry
Country: Switzerland
Type: Twin motorway bridges
Main span: 112 m and 132 m
Length: 395 m
Completion: 1971
Owner: Federal Roads Office

The bridges are located near Lausanne, in Canton Vaud of Switzerland



The LoRa gateway, powered by solar panel



Presentation of the measured data from the applied SHM system

