

Case Study

Structural Monitoring

Metsovo Bridge

Metsovo, Greece

Background

Metsovo Bridge is a highway bridge in the course of the east-west connection "Egnatia Odos" in the north of Greece.

The 4-span, totally 540 m long prestressed concrete bridge traverses an approximately 120 m deep ravine and lies between two tunnel portals. The main span is given with 235 m. The deck is constructed to the balanced cantilever method. Both main piers are founded on shafts with diameters of 12 m and length up to 25 m.

Challenge

The bridge design is governed mainly by the high seismic loads in this region. It has been noted that Greece and the surrounding area is the most seismically active region of Europe.

The scope of the project was monitoring the structure with respect to ground motions and other ambient dynamic activity such as dynamic loads imposed by traffic, environmental effects, etc.

Solution

With their impressive experience in this field, our Partner in Greece, [Eurotech SA](#), was chosen to offer a bridge monitoring solution. For more than 25 years, Eurotech has provided large construction projects and industry in Greece with measuring instruments and specialised equipment, as well as consulting services.

The system for Metsovo Bridge is composed of two main sensor groups and the central acquisition computer. The first group measures the acceleration of the ground and vibrations of the bridge with four AC-63 triaxial force balance accelerometers, which are placed on the basement of two main pylons and in the maintenance tunnel below the deck.

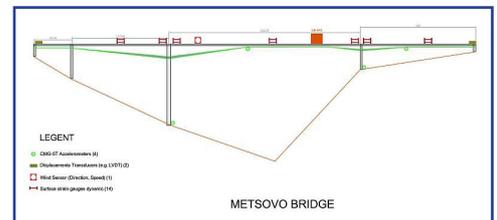
The second group consists of 14 GSG-XX strain gauge sensors and four GS-LVDT displacement transducers, as well as a meteorological sensor (METEO-WDST) to measure wind speed and direction. The displacement transducers are located at the end of the bridge at the conjunction point between the bridge and the ground, whereas the strain gauge sensors are positioned in different points along the bridge (see figure).

All measured data are acquired at the Central Recording Unit (CR-5P), which integrates the digitiser board and an industrial PC in one platform, simply controlled through the Windows XP operating system. The measured data are managed by GeoSIG-developed seismic software GeoDAS.

Another Solution using GeoSIG instruments and a capable Partner effectively showing that quality and reliability can also be cost-effective.



Metsovo Bridge is a single box girder bridge located in the north of Greece.



This figure shows the placement of strain gauges, accelerometers, displacement transducers and wind sensor.



The CR-5P central recording unit integrates the digitiser board and an industrial PC in one platform.

Product links

[CR-5P central recorder](#)

[AC-63 accelerometers](#)

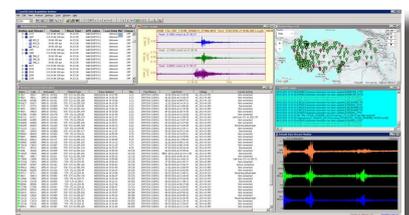
[GeoDAS](#)



AC-63 accelerometer



CR-5P



GeoDAS