GeoWatch

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Metsovo Bridge – Monitoring System

The Metsovo Bridge is located in the north of Greece, connecting the east-west highway “Egnatia Odos”. The 4-span, prestressed concrete bridge with a total length of 540 m crosses an approximately 120 m high ravine and lies between two tunnel portals. The main span covers a distance of 235 m.

The monitoring system is composed of two main sensor groups and a central acquisition computer.

The first group of sensors, four accelerometers, measures the ground motions and vibrations of the bridge. Two of these sensors are placed on the basement of the two main pylons and the other two are located in the maintenance tunnel below the road.

The second group of sensors consists of strain gauges, displacement transducers and a wind sensor. The two displacement transducers are located at each end of the bridge at the expansion joints between the bridge and the ground, whereas the 14 strain gauges and the wind sensor are positioned at various locations along the bridge.

The sensor signals are transferred via cabling to the Central Recording Station, a CR-5P system, where the incoming data is converted by internal digitiser boards. The CR-5P also has an integrated computer with an internal harddisk (80 GByte standard), where this data is stored locally. The system is operated by the GeoDAS Communication and Data Analysis software, which manages the recorded and stored data and is externally accessible by remote desktop control.

If an event triggers an alarm, GeoDAS will immediately send out a message to selected user groups, either by text message or email.

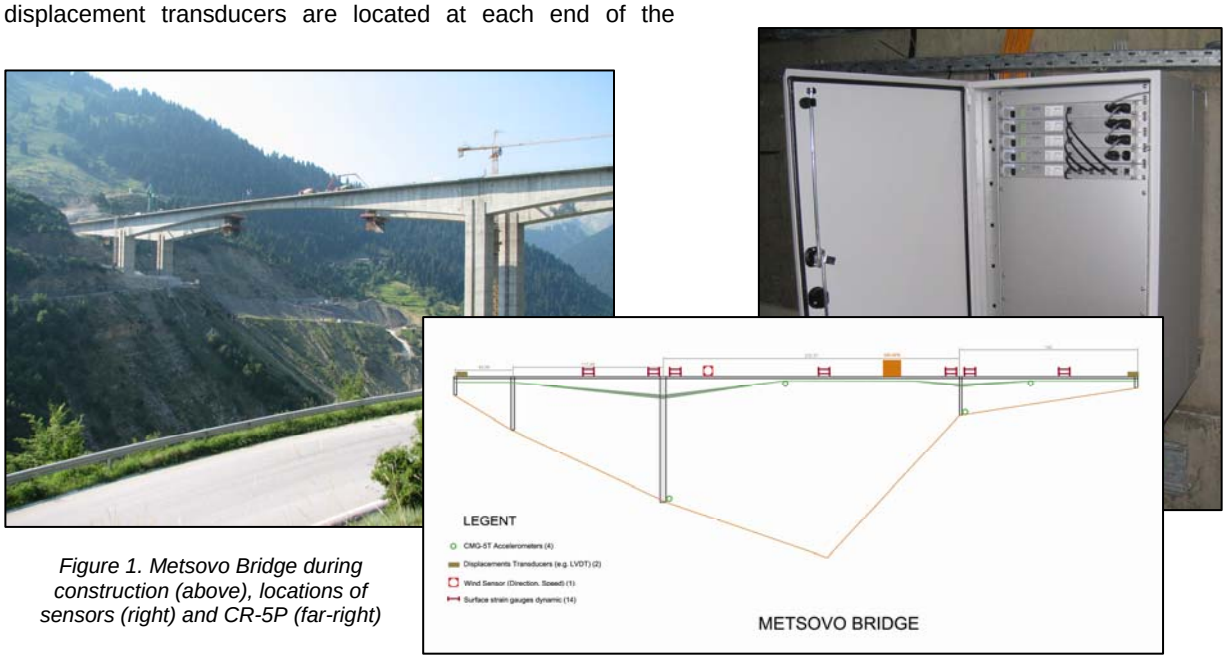

Figure 1. Metsovo Bridge during construction (above), locations of sensors (right) and CR-5P (far-right)

Installation completed at NPP Gösgen

With the handover of the final documentation, GeoSIG completed the installation of the NPP Seismic Instrumentation Network at Gösgen Nuclear Power Plant. GeoSIG equipment is now successfully running in all 4 Swiss Nuclear Power Plants.

The Gösgen NPP seismic system employs a GeoSIG Seismic Monitoring System (SMS) with de-centralized recording topology together with the GeoDAS software to ensure the safe operation of the Nuclear Power Plant. The SMS is interconnected to local recording units, whereas each unit consists of a GSR-18 Recorder with an external AC-23 Accelerometer.

If an event such as an earthquake occurs, GeoDAS decides from the incoming data whether it is safe to continue the operation of the plant, a plant walk-down is needed, or a safe shutdown of the reactor has to be initiated. The respective alarm will be triggered and shown as a flashing LED in the NPP central control room.

SSW-43 recorded recent earthquake east of Taiwan

Our Seismic Switch SSW-43 recorded the recent earthquake east of Taiwan of August 17, 2009. The epicentre was about 200 km ESE of Hualien city. The earthquake occurred in a depth of 11 km. USGS confirmed a magnitude of 6.7, reported by the CWB (Central Weather Bureau) of Taiwan.

The SSW-43, predecessor of our Seismic Streamer GST-43, is the newest Seismic Switch in the product range of GeoSIG. There are recent projects where this unit is being used, e.g. the Rapid Response System of Lenzburg (as reported in our previous GeoWatch 40).

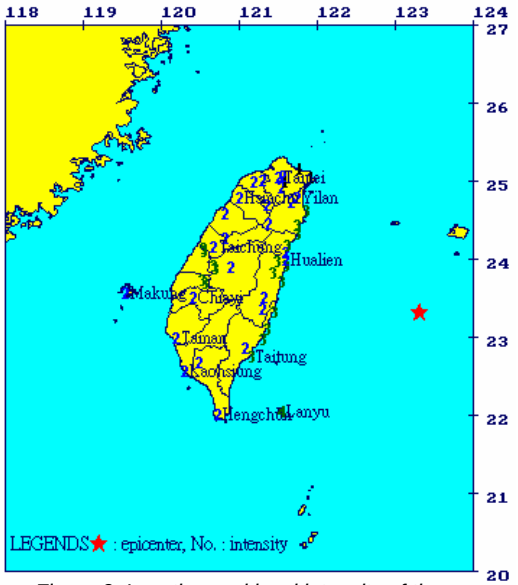

Figure 2. Location and local intensity of the earthquake (data provided by CWB, Taiwan)

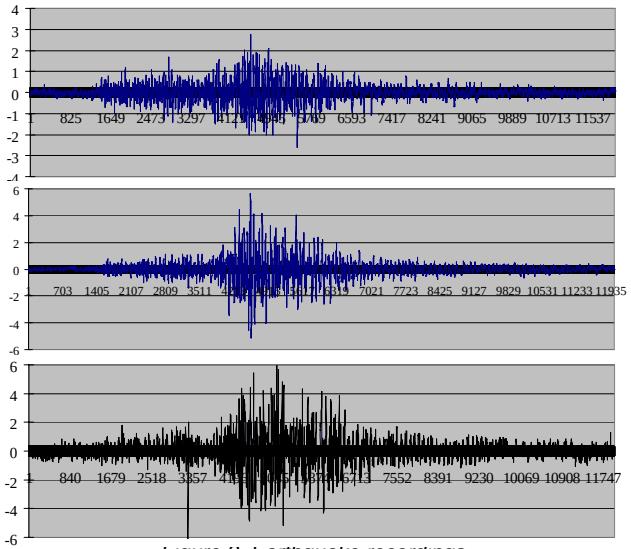

Figure 3. Earthquake recordings

GeoSIG attended the SAFER meeting in June 2009

GeoSIG sponsored and attended the SAFER (Seismic eArly warning For EuRope) final meeting in GeoForschungsZentrum (GFZ), Potsdam, Germany which took place from 3 to 5 June 2009.

The SAFER project aims to fully exploit the possibilities offered by the real-time analysis of the signals coming from seismic networks for a wide range of actions, performed in a time interval of a few seconds to some tens of minutes. These actions include shutting down of critical systems of lifelines, industries, highways, railways, etc., activation of control systems for the protection of crucial structures and supplying of information to support decision making for the rapid response of emergency management services (e.g. ground shaking maps, continuously updated damage scenario estimates, aftershocks hazard etc.).

We presented our latest state-of-the-art instruments GMS-18 and GST-43, both of which can be deployed in dense network applications involving early warning and rapid response applications. GeoSIG disposes of the know-how and experience on such equipment and its applications and performed several projects.

Among these are the Istanbul Earthquake Early Warning and Rapid Response System with more than 100 stations; USGS NetQuakes Instrumentation (based on the latest GMS series) with more than 100 units delivered to California, USA; Seismic Observatory of Structures with more than 1000 Acceleration Axes, delivered to Servizio Sismico Nazionale (SSN) in Italy; more than 100 IA-1 Stations in British Columbia, ~~in~~ Canada; 300 Digital Strong Motion Instruments for the National Strong Motion Instrumentation Network in India.

Figure 4. GeoSIG booth at SAFER meeting

Our new Electrical Engineer, Fabio Robbiani

Mr. Fabio Robbiani joined the GeoSIG engineering team this summer after the successful completion of his studies as an Electrical Engineer. Before his studies he was doing an apprenticeship as an IT specialist.

Fabio participates in the development of our future seismic recorders and is integrating the GeoSIG products in customer projects all over the world.

Currently he is involved in the development of our latest GMS series, where he is able to support the team not only with his knowledge of GNU/Linux but also with his programming skills. We warmly welcome Fabio to the GeoSIG family and wish him a successful teamwork with us.

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