

Development and Testing a New Strong-Motion System for the Interreg IV Project HAREIA

The seismic network of Austria consists of two different station types: Highly sensitive broad-band stations with Streckeisen® STS-2 seismometers that measure velocity starting with 1 nm/s and strong-motion stations that measure acceleration up to 2g. The strong-motion systems are less sensitive than the broad-band systems but the costs of setting up and maintenance are cheaper than the other ones. Most of the existing strong-motion systems consist of a Kinemetrics® K2 data-logger and a FBA-23 accelerometer and are older than ten years. In the frame of the EU-project HAREIA (Historical and Recent Earthquakes in Italy and Austria) WP1 (Working Package 1) it was possible to develop a new strong-motion system to expand the network and later to renew the old systems.

Features of the new strong-motion system should be:

- very modular
- high availability
- very low maintenance costs
- high quality
- power independent for one week
- robust data transmission
- compatible with Antelope system

These features are found in the new system comprising a Kinemetrics® Basalt data logger with a built-in Episensor. Additional to the data logger and the sensor we designed a robust aluminium housing with isolation to the ground and electrical one point grounding. All signals pass overvoltage protection devices. The sensor is mounted on a glass plate and a metal grid, which forms a Faraday cage together with the housing. The Basalt has the logic to work with a external battery as a uninterruptible power supply (UPS).

In the HAREIA project nine of these systems are being installed in Italy and three in Tyrol. The Conrad Observatory is a perfect place with seismically low noise and complete infrastructure for the development and testing the accelerometers and the data loggers.

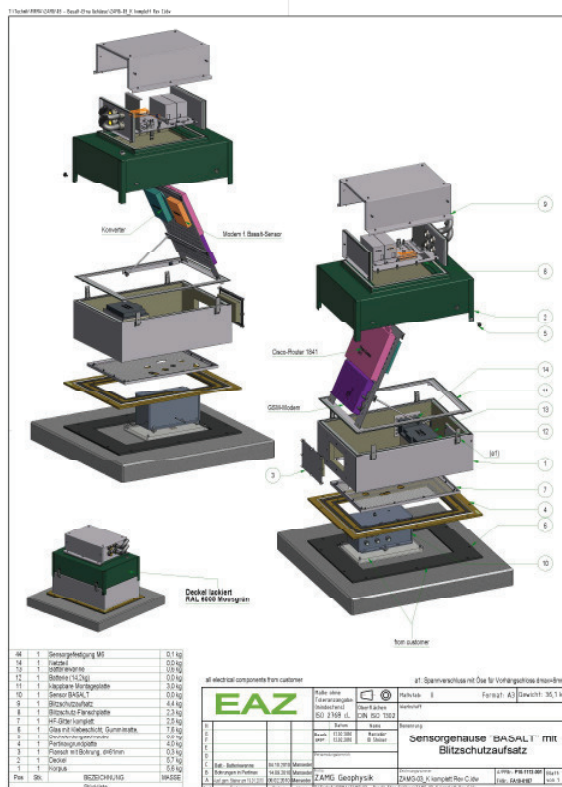


Figure 1: Schematic of the new strong-motion system



Figure 2: Kinemetrics® Basalts datalogger and accelerometer testing in the Conrad Observatory with Prof. Peter Suhadolc and Dr. Giovanni Costa from the University of Trieste

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