

Development of integrated accelerographs using MEMS technology with efficient real- time data transmission and deployment of a collaborative seismic network.

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Having a dense network of high-resolution accelerometers based in "Feedback" systems in a reasonable amount of time, is crucial for national seismic networks such as the Spanish seismic network IGN. However, this requirement is in conflict with the huge budget needed that would make this virtually unaffordable.

IGN has designed, developed and manufactured integrated and comprehensive accelerographs that allow near real-time transmission of seismic data, based on what is known as MEMS technology.

This type of instrumentation enables compliance with the requirement to produce accurate shake maps based on large amounts of observed data, and not deducted (deducted of very simple analytical attenuation laws, almost in its entirety).

It would also be very important for the development of Technical Building Regulations in areas of seismic risk. All of this with prices at least ten times cheaper than high-resolution accelerographs.

With the aim to demonstrate its reliability, it has been realized a testing process of these MEMS accelerometers in a vibrant table at CEDEX and its comparison with a high resolution commercial accelerometer Guralp CMG-5T, and even the recorded accelerograms in the recent seismic crisis at Torreperogil village, in the province of Jaén.

Currently, the IGN is deploying several devices on focused areas such as Alhama Fault at Murcia Region (southeast of the Iberian Peninsula) and Aran Valley in the Catalonian Pyrenees. This new network is a densification of the existing accelerograph network based on standard commercial accelerometers and through volunteer citizens finds the installation places.