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## On The Relevance and Methods for Structural Health Monitoring In Seismic Areas: Theory, Implementation, Applications

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A large part of Europe is exposed to medium/high seismic risk, as proved by serious damages and structural collapses occurred in different countries during the last decades. Thus, it is crucial to estimate and enhance the structural safety of existing structures, in particular towards seismic effects. Among the constructions exposed to seismic risk, there are infrastructures, public buildings, crowded constructions that can lead to heavy losses in case of earthquake and, therefore, require efficient seismic protection. On the other hand, strategic infrastructures are required to be fully operational to manage aftershock emergencies.

The present paper deals with specific aspects related to implementation and operation of Structural Health Monitoring (SHM) systems in seismic prone areas. Technologies and data processing techniques can be, in fact, optimized in view of fast assessment of structures in the early earthquake aftershock. Moreover, a proper processing of data collected in critical conditions can improve the level of knowledge about the dynamic behaviour of structures during earthquakes and, as a consequence, their level of safety or design guidelines. Thus, technological solutions, methods for health assessment and data processing procedures will be reviewed focusing attention on seismic response of civil structures. Advantages and drawbacks of application of output-only dynamic identification techniques for modal-based damage detection in seismically-prone areas will be discussed in light of some case studies.

**Ключевые слова:**

**Содержание.**

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