Session ID: ASR-9

Title
INTEGRATED SEISMIC AND ENERGY RETROFITTING OF EXISTING BUILDINGS

Convenors
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Description
Collapses or serious damages of existing buildings during recent earthquakes have resulted in significant economic losses and loss of human lives. At the same time, buildings (in Europe) are responsible for about 40% of energy consumption and one third of the CO2 emissions. Through increased renovation of energy inefficient buildings, a reduction in energy consumption in the building sector can be achieved. Concentrating on energy efficiency without considering the seismic vulnerability is certainly not sufficient for seismic regions. With a large proportion of old buildings requiring renovation, recent scientific and technical developments demonstrate the importance of applying an integrated approach. Particularly in regions of moderate to high seismicity, integrating energy upgrading with seismic retrofitting interventions, could lead to cost-benefits for the building owner, hence potentially fostering higher renovation uptakes.

The field of integrated renovation is an emerging area of research, with proposed solutions ranging from integrated exoskeletons, combined strengthening with advanced materials (e.g. textile-based materials) or prefabricated (e.g. wood or concrete) panels and thermal insulation for external walls, as well as integrated interventions on roofs and floor slabs. Given the novelty of this research field, the proposed technical session aims to discuss the recent advances in this multi-disciplinary field, addressing also practical issues covering specific learning objectives. The topics to be covered, but not limited to, include: Novel materials and techniques, Experimental and analytical studies, Financial and Policy impacts, Illustrative case-studies, cultural heritage buildings for the concurrent seismic and energy retrofitting of existing buildings.

Invited Speakers
A. Marini [3], P. Morandi [4], F. Barbagallo [5], E.R. Baek [6], D. Oliveira [7], R. Monteiro [8], C. Del Vecchio [9], L. Koutas [10], F. Da Porto [11]

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