

Special Session Proposal for Earthquake Engineering

Integrated seismic and energy retrofit of buildings

Approximately 80% of the buildings in Europe were constructed before 1990, when seismic and energy efficiency requirements were below today's standards. The energy performance of these buildings is unsatisfactory: in fact, the energy consumed in buildings is the biggest source of greenhouse gas emissions in Europe. At the same time, damage of buildings after earthquake may result in injuries, deaths, economic loss, disruption of business and essential services, loss of cultural heritage, and generate large amounts of waste. This is particularly relevant in countries with medium to high seismic hazard in south and east Europe, where the seismic events of recent decades have claimed thousands of victims and caused extensive economic damage, but also in some areas at lower risk in central Europe. The major programmes for energy retrofit of existing buildings that are currently underway across Europe, further reinforced recently by the Renovation Wave initiative of the European Commission, present a not-to-be-missed opportunity to, simultaneously and in a cost-efficient way, reduce the seismic risk associated with old buildings. Several research groups and projects in Europe are producing significant research results and technical guidance on retrofit technologies, development of composite materials for integrated retrofitting, assessment methodologies, cost-benefit analyses, scenarios for retrofit, case studies, experimental testing, data and tools to support decision-making, etc. The special session will encourage the sharing of state-of-the-art knowledge on the integrated seismic and energy retrofit of buildings. The proposed special session is relevant to the 3rd ECEES topics on rehabilitation of buildings, risk and resilience.

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