

Special Session

Application of Earthquake Protection Systems in Design and Retrofit Projects

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In modern engineering practice, structural control has a long history and first applied in mechanical and aerospace engineering. For structural engineering, history of control application goes back to the end of 19th century by patented devices. Seismic isolation (SI) and energy dissipation systems (ED), shape memory alloy (SMA) devices and shock transmission units (STU) have been effectively used in earthquake prone regions. Due to advent of computer technology and the development of new passive and active control systems, number of applications was increased rapidly to mitigate the earthquake risk all over the world. Seismic isolation systems and energy dissipative systems can be considered as relatively mature and innovative technology with more than 10000 applications. Japan, US, Europe and New Zealand had pioneering roles in the dissemination of currently available seismic control techniques for both design and retrofit projects during the last five decades. Although design rules and guide specifications for control systems are already available in most countries, the state of practice differs from one to another and the use of IS/ED systems are restricted by demanding approval processes which were not considered for conventional retrofitting schemes.

This special session aims to bring researchers working on contemporary passive and active control systems for the proper application of this technology. Performance goals for isolated structures will be identified and discussed for different type of applications with emphasizes to traditional practice in isolated buildings, hospitals cultural heritages and bridges. Contributions are invited in structural cycle cost, direct and indirect losses, test requirements, code-based applications, protection of nonstructural components and structural health monitoring activities of seismically isolated structures together with the performance evaluation from past events.