Excessive or prolonged vibrations in civil structures can produce annoyances in the users and damages in structural and nonstructural elements. These vibrations are determined by the dynamic parameters (mass, stiffness and damping), and is modifying these structural characteristics what reduces the response of the structure. The reduction of the structural response is the objective in the earthquake engineering an seismic design, guaranteeing a suitable strength, stiffness and ductility. In the past years have been purposed several alternatives to diminish the structural vulnerability, among them active, passive, hybrid and semi-active control systems which have been implemented in flexible structures (skyscrapers and suspension bridges) in Japan and the United States. This paper includes a brief historical summary of the development of these structural control systems and presents the state-of-the-art and state-of-the-practice of this technology. In addition, describes the limitations and advantages of the systems in the context of the structural seismic design and rehabilitation.

Keywords
Structural Control, Structural Damping, Active Control, Passive Control, Hybrid Control, Semiactive Control, Structural Dynamics.