

## Dissipation Capacity of Steel Building with Friction Pendulum Base-Isolation System

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**Abstract :** Use of base isolators in the seismic design of structures has attracted considerable attention in recent years. The major concern in the design of these structures is to have enough lateral stability to resist wind and seismic forces. There are different systems providing such isolation, among them there are friction- pendulum base isolation systems (FPS) which are rather widely applied nowadays involving to both affordable cost and high fundamental periods. These devices are characterised by a stiff resistance against wind loads and to be flexible to the seismic tremors, which make them suitable for different situations. In this paper, a 3D numerical investigation is done considering the seismic response of a twelve-storey steel building retrofitted with a FPS. Fast nonlinear time history analysis (FNA) of Boumerdes earthquake (Algeria, May 2003) is considered for analysis and carried out using SAP2000 software. Comparisons between fixed base, bearing base isolated and braced structures are shown in a tabulated and graphical format. The results of the various alternatives studies to compare the structural response without and with this device of dissipation energy thus obtained were discussed and the conclusions showed the interesting potential of the FPS isolator. This system may to improve the dissipative capacities of the structure without increasing its rigidity in a significant way which contributes to optimize the quantity of steel necessary for its general stability.

**Keywords :** energy dissipation, friction-pendulum system, nonlinear analysis, steel structure

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