

Self-centering Aseismic System with Four Rigid Movable Bearings

Theoretical and experimental analyses have highlighted the following features of the proposed system:

- self-centering of the building after an earthquake;
- extreme economical competitiveness with all conventional and base isolation aseismic systems, due to the considerable decrease of the seismic energy in the building, which makes it possible to use slender carrying structures;
- can also be applied to those buildings where the resonance threshold is very low, due to the complete independence of the system from the earthquake frequency;
- pendulous effect in the building during an earthquake, characterized by a very small rotation. This varies on average from a few seconds to some minutes, with soil displacements of between a few millimeters to about 150 mm. Since this effect is very limited, there are no psycho-physical repercussions on the inhabitants of the building.

Moreover, the study has pointed out that, by adopting multidirectional movable bearings with sliding friction, the seismic energy in the building undergoes an average decrease equal to about 85% of the energy absorbed with conventional systems. Conversely, the adoption of movable bearings with rolling friction makes it possible to obtain an almost total decrease in the seismic energy of the building.