framatome

Seismic Isolation

Isolation of Dynamic Vibrations due to Seismic Excitation and Airplane Crash (APC)

Framatome has a technical solution for the reduction of dynamic vibrations due to seismic excitation and airplane crash by supporting of sensitive equipment and components on a spring-damper system

Challenge

- High dynamic vibrations due to seismic and airplane crash impact endangering the functionality of sensitive, safety relevant equipment and components in nuclear power plants.

Technical information

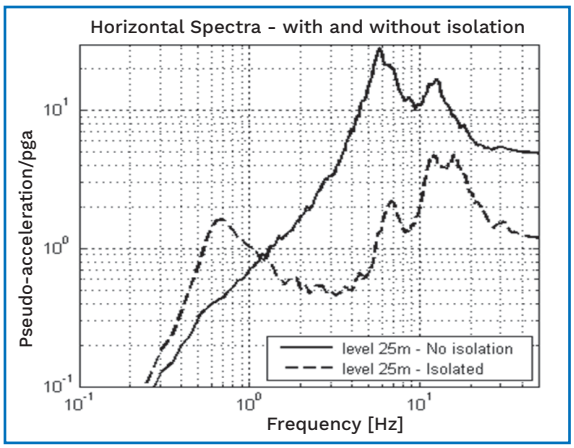
- Detailed 3D finite element analysis of the seismic response of the whole structure including the superstructure, the isolators, the substructure and the soil-structure-interaction
- Response spectrum analysis or time history analysis is used for the analysis of base-isolated structures
- The analysis includes the coupling between vertical and horizontal responses on floor response spectra, and the local flexibility of the foundation raft, the upper slab and the superstructure
- An analysis of the structure considers the effects of time-dependent actions, including creep, concrete slab shrinkage, construction sequence, thermally induced displacements, settlements on the loads on the isolators
- The isolator design criteria are checked for static dynamic conditions considering the variation of the elastomeric shear modulus during the design life
- Optimization of seismic isolation stiffness and damping values

Customer benefits

- Recoupling of safety relevant components by reduction of system frequencies
- Significant reduction of seismic vibrations and APC induced vibrations for sensitive equipment and components
- Easy adaptation of component design in case of change of requirements referred to seismic excitation and APC impact
- Cost savings at components manufacturing e.g. spent fuel racks during compacting projects

Your performance
is **our** everyday **commitment**

Seismic isolation supporting the spent fuel pool structure



Comparison of floor response spectra between isolated and non isolated system

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