



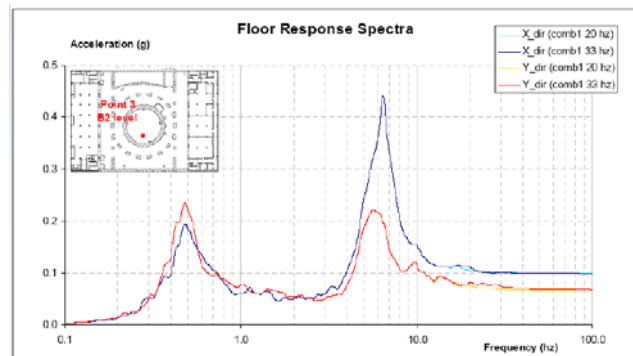
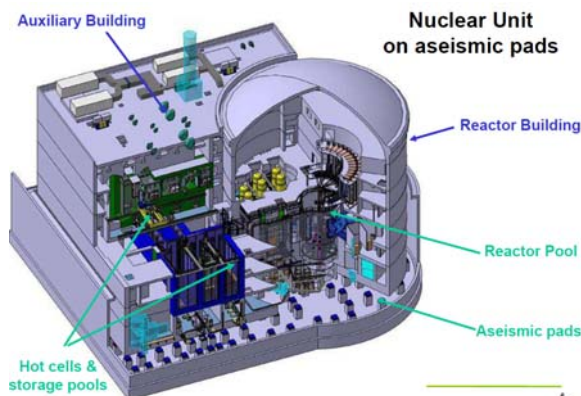
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ΔΙΑΛΕΞΗ

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Non-isolated modes' response of seismically base isolated structures

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The proper function of industrial and power generation facilities, especially nuclear plants, during and after an earthquake, depends, to a great extent, on the capacity of their components and equipment to withstand the earthquake induced forces. Therefore, in this case, one major benefit from the application of the seismic isolation method is expected to be a substantial reduction of the equipment demand.

However, in some cases, an amplification of the non-isolated modes' response (modes other than the lower isolated modes) arises which considerably reduces the expected benefit from seismic isolation.

The various mechanisms of the higher modes' amplification will be discussed and illustrated by means of simple models with only a few degrees of freedom. It is shown that the main reasons for this undesirable behaviour are: a) high base energy dissipation b) rocking induced excitation due to horizontally propagating waves or to the scattered motion in the case of embedded foundation and c) horizontal response to vertical excitation in some cases of plants with complex geometry.

As a possible future alternative, mixed isolation systems combining passive and semi-active devices have been studied to attenuate the undesirable non-isolated modes' response.