Design Optimization of the Primary Containment Building of a Pressurized Water Reactor

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Abstract : Primary containment structure is one of the five safety layers of a nuclear facility which is needed to be designed in such a manner that it can withstand the pressure and excessive radioactivity during accidental situations. It is also necessary to ensure minimization of cost with maximum possible safety in order to make the design economically feasible and attractive. This paper attempts to identify the optimum design conditions for primary containment structure considering both mechanical and radiation safety keeping the economic aspects in mind. This work takes advantage of commercial simulation software to identify the suitable conditions without the requirement of costly experiments. Generated data may be helpful for further studies.

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