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## Shielding Systems for Nuclear System of Maritime SMR

Maritime Small Modular Reactor (SMR) products, such as Nuclear Propulsion Ships (NPS) and Floating Nuclear Power Plants (FNPP) have been emerging as a game changer in the shipbuilding and offshore industry. Success of the maritime SMR development highly relies on the shielding systems, which are to be designed to accommodate constraints for maritime applications. In the development the land based concrete shielding system will be replaced with a viable alternative to be installed inside the vessels, which secure crews a safe working environment. In addition to the shielding systems, it is crucial in the marine application to efficiently arrange complex nuclear reactor systems including the primary and secondary systems within the limited space. A new operation philosophy will be developed to overcome the space limits. The present paper will address how the land based nuclear power plant system can be designed and arranged inside the marine vessels. Additionally, we suggest shielding systems based on the arrangement of nuclear reactor systems that complies with annual radiation exposure limits. The design of these systems primarily focus on replacing the concrete structures of land based nuclear reactors within the limited space of NPS and FNPP, with effective shielding against gamma rays and neutrons.

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### Confirm that the work is original and has not been published anywhere else

Yes

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