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Thorizon's cartridge core molten salt reactor

Low pressure operation, and elimination of potential escalation by laws of physics, combined with large fuel flexibility, neutron spectrum flexibility, and convenient connection to reprocessing and subsequent fuel production, make molten salt technology the superior basis for next generation nuclear power reactors.

The key challenge of molten salt reactors relates to the structural materials in contact with the primary salt, which are exposed to high temperatures, radiation damage and chemical interaction.

Instead of trying to find and qualify materials that can withstand these conditions for the typical lifetime of a nuclear plant, Thorizon has mitigated material degradation issues by integrating a replacement strategy in the reactor design. The patented Thorizon reactor core concept is modular, consisting of a number of so-called cartridges which can be replaced and maintain nuclear containment at all times.

The benefits of this approach, in terms of safety, practical and economic feasibility, qualification, licensing, time to build and the convenient connection to reprocessing facilities will be explained.

In addition, a cartridge based experimental validation and qualification strategy will be elaborated, enabling an ambitious timeline to realization of a 250 MWth Thorizon first of a kind.

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

YES

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