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Hydraulic Design and Evaluation of the PHTS Mechanical Pump of PGSFR

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The Prototype Generation IV Sodium-Cooled Fast Reactor (PGSFR) has been developed by Korea Atomic Energy Research Institute (KAERI). The hydraulic part such as the impeller and diffuser of the PHTS pump has been designed to satisfy the requirement of the hydraulic performance. The essential geometric parameters of the impeller and diffuser were determined through the optimal design methodology. The hydraulic performance and cavitation of the prototype pump were confirmed using CFD simulation. To verify performance of the pump and produce safety analysis input data, the scaled-down model pump and test facility were designed and fabricated based on the scaling law. The performance curve, NPSH curve, coastdown curve, pressure pulse curve, homologous curve and flow resistance curve were obtained from the model pump test facility. The hydraulic performance with rational margin were verified from the model pump test.

Country/Int. Organization

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