

عنوان مقاله:

Dynamic behavior analysis of different pressurizer types on a high-pressure test facility

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خلاصه مقاله:

The pressurizer is a key equipment to ensure the safe operation of pressurized water reactor by maintaining the reactor coolant system pressure within allowed tolerances. Various pressure control systems (Pressurizer) are adopted in industrial applications to satisfy their characteristics. In accordance with the purpose of using nuclear facilities, Steam, Gas-Steam, and Gas Pressurizer (PRZ) have been used. In nuclear industry, the dynamic behavior of each PRZ is different. Peak pressure is one of the important parameters in choosing the type of PRZ. This study has been evaluated for the University of Wisconsin High-Pressure Critical Heat Flux (WHPCHF) facility as the base loop. Three PRZs are connected to the WHPCHF loop to evaluate their performance during the in-surge scenario. The Peak pressure of the three PRZs is evaluated during transients. The results showed that the use of the Non-condensable Gas (NCG) increases the peak pressure due to the lack of NCG condensation during transient conditions. The use of gas PRZ makes it possible to change the pressure quickly. Also, the pure gas PRZ has the highest peak pressure but has straightforward control logic. The gas PRZ is the best choice for small reactors and high-pressure test facilities.

کلمات کلیدی:

Pressurizer, Dynamic behavior, Peak pressure, Control logic, test facilities

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