



Contribution ID: 177

Type: **Oral**

Regulatory Gap Analysis for i-SMR

Korea government and nuclear industry now have been developing the new SMR called innovative SMR(i-SMR) by leading from the Korea government and KHNP(Korea Hydro and Nuclear Power company). KHNP sets the top tier requirements to secure the high level of safety, economic efficiency and flexibility. The i-SMR adopts the new plant design including integrated modular reactor, fully passive engineered safety features, and boron-free system. Due to the characteristics of i-SMR design, it will be anticipated that there are difficulties to apply the existing light water reactor regulatory requirements and guidance to achieve standard design approval by Korea nuclear regulatory body.

In this paper, the results of the KHNP gap analysis assessment are summarized. First, the analysis involved a detail review of nuclear safety laws(including technical standards) of the Korea regulatory body are performed. Afterward, the KHNP derives the “16 gaps” inappropriate with the existing LWR-based regulations and technical guidelines. These gaps are including system improvement and safety standards(aspect of safety analysis, non-safety class electrical system, passive safety system etc.). The KHNP had published the gap analysis report to prepare for pre-design review for standard design approval. The KHNP will continuously try to establish new regulatory standards and guidelines suitable for i-SMR.

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Track Classification: Topical Group B: Legislative and Regulatory Frameworks: Track 7: Regulatory Considerations for SMRs