Contribution ID: **20** Type: **Poster**

Effect of strong n-th coupling on core design calculations based on a typical 100 MWe integral PWR design

New generations of nuclear reactors including Small Modular Reactors (SMRs) have received a lot of positive attention. Due to the unique features (improvement in economic and safety features) of SMRs, these reactors are under different stages of design and construction all over the world. SMART reactor as the first certified design SMR has been selected as the base case of the calculations in the present study. Different Thermo-Neutronic aspects of the SMART reactor have been investigated using an integrated coupling scheme of nuclear codes. DRAGON/DONJON codes have been used for neutronic cell and core calculation and COBRA code has been used for thermal-hydraulic calculations. Different parameters of SMART reactor core such as axial and radial PPFs, critical heat flux (CHF), minimum departure from nucleate boiling ratio (MDNBR), axial average coolant temperature in hot channel and core, and the maximum fuel temperature have been investigated using the developed coupling system. Some of the results have been checked by code-to-code verification which shows good agreement. Also, the coupling results demonstrate the non-negligible effects of the coupling in comparison to the stand-alone code modeling.

Country OR International Organization

Iran

Email address

yabbasi@aeoi.org.ir

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

Yes.

Authors: KHOSHAHVAL, Farrokh; MOKHTARI, Javad; MIRVAKILI, Mohammad; Dr AKBARI, Reza; Dr ABBASSI, Yasser (Reactor and Nuclear Safety Research School, Nuclear Science and Technology Research Institute, Tehran, Iran)

Presenter: Dr ABBASSI, Yasser (Reactor and Nuclear Safety Research School, Nuclear Science and Technology Research Institute, Tehran, Iran)

Track Classification: Topical Group A: SMR Design, Technology and Fuel Cycle: Track 1: Design and Technology Development of SMRs