

International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)



Contribution ID: 412

Type: ORAL

Primary Analysis on The Nuclear Energy Development Scenario base on the U-Pu Multicycling with PWR, FR and CNFC in China

Thursday, June 29, 2017 8:40 AM (20 minutes)

As one of the largest developing country, China needs reliable energy supply. At the same time, China should improve the energy structure and reduce carbon dioxide emissions. Nuclear and renewable energy is the main solution to these problems. According to some studies, nuclear power capacity will increase to 400GWe in 2050. Due to limitations of uranium resources, we must consider the development of fast reactor (FR) and closed nuclear fuel cycle. Development Strategy of China's FR is three-step model "Experimental Reactor - Demonstration Reactor - Commercial Reactor". The construction of the China Experimental Fast Reactor (CEFR) has completed, and obtain the necessary experience on FR. The design of the demonstration FR CFR-600 is ongoing, which is 600MWe power. After this step, the commercial FR with more large power will be constructed. Based on the development of nuclear energy and the constraints of uranium resource in China, this article presents and analyses some cases of nuclear power scenarios of PWR-FR matching development with closed nuclear fuel cycle (CNFC) including some indicators such as the matching capacity, the uranium resource consumption, reprocessing capabilities etc.

Country/Int. Organization

China

Primary author: Mr ZHOU, Keyuan (China Institute of Atomic Energy)

Co-authors: ZHANG, Donghui (China Institute of Atomic Energy); Mr XU, Mi (China Institute of Atomic Energy); Mr YANG, Yong (China institue of atomic energy)

Presenter: Mr ZHOU, Keyuan (China Institute of Atomic Energy)

Session Classification: 7.4 Fuel Cycle Analysis

Track Classification: Track 7. Fast Reactors and Fuel Cycles: Economics, Deployment and Proliferation Issues