

## **DESIGN CONCEPT AND PRELIMINARY ANALYSIS OF CONTAINMENT PRESSURE AND RADIOACTIVITY SUPPRESSION SYSTEM FOR SMART**

**Kyung Jun Kang<sup>1</sup>, Seong Su Jeon<sup>2</sup>, Ji-Han Chun<sup>3</sup>, Soon Joon Hong<sup>4</sup>, Han-Ok Kang<sup>5</sup>**

<sup>1</sup> Technical Coordination Group, SMART Development Institute, KAERI, Korea

<sup>2</sup> Manager, FNC, Korea

<sup>3</sup> Technical Coordination Group, SMART Development Institute, KAERI, Korea

<sup>4</sup> Technical Director, FNC, Korea

<sup>5</sup> Design Project Manager, SMART Development Institute, KAERI, Korea

### **ABSTRACT**

Korea- Saudi SMART Pre-Project Engineering (PPE) for FOAK plant construction in the Kingdom of Saudi Arabia is on-going project to be performed by Korea Atomic Energy Research Institute. In the PPE phase, SMART aims at achieving enhanced safety and improved economics; the safety enhancement of safety and reliability is realized by incorporating inherent safety-improving features and reliable passive safety systems. The aim of study is to introduce CPRSS (Containment Pressure and Radioactivity Suppression System) which has been designed for SMART application. The main functions of it are; to suppress containment pressure and temperature in containment and to remove radioactive material during accident. The performance of the system is preliminarily calculated by system code. The main results are that CPRSS is efficient way to achieve the design goals pursued in the SMART PPE because the system dramatically reduce the pressure and temperature in containment and can be significantly lowered the radioactive material through removal mechanisms due to multi-barriers between reactor and containment atmosphere.