

Natural convection in the world's first licensed integral reactor: SMART

문주형†
한국원자력연구원
(moonjooh@kaeri.re.kr†)

SMART (System-integrated Modular Advanced Reactor) is a small-sized advanced integral reactor with a rated thermal power of 330 MW. It can produce 100 MW of electricity, or 90 MW of electricity and 40,000 tons of desalinated water concurrently, which is sufficient for 100,000 residents. The enhancement of safety and reliability is realized by incorporating inherent safety features and reliable passive safety systems. A passive residual heat removal system (PRHRS) is one of the safety enhancement features, which passively removes the core decay heat and sensible heat by a natural circulation in the case of an emergency such as an unavailability of feedwater supply or a station black out. This presentation includes the brief introduction of SMART and the major characteristics of the PRHRS. Thermal performance of PRHRS is also presented. The audience will understand how passive safety systems maintain the reactor safe and finally find that how important the natural circulation is especially in the area of nuclear engineering.