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反应堆工程

超临界水冷堆国内外研发现状与趋势

程旭，刘晓晶

上海交通大学 核科学与工程学院，上海 200240

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摘要 从我国核能长期发展的需求来看，研发第4代新型核能系统将确保核能的长期稳定发展。作为6种第4代未来堆型中唯一的水冷堆，超临界水冷堆具有经济性、延续性及可持续性等诸多综合优势，是国家水冷堆核电技术路线进一步发展的必然选择，也是清洁能源科学和技术领域基础研究国际竞争与合作重要的前沿与热点之一。本文将分析超临界水冷堆的技术特性及它在我国核能长期发展战略中的地位，总结国内外超临界水冷堆的研究现状与发展趋势，提出中国超临界水冷堆的发展方向与路线图。

关键词 超临界水冷堆 技术特性 发展趋势 路线图

分类号

Research Status and Prospect of Supercritical Water-Cooled Reactor

CHENG Xu, LIU Xiao-jing

School of Nuclear Science and Engineering, Shanghai Jiaotong University, Shanghai 200240, China

Abstract In order to ensure the long-term nuclear power development in China, it is of crucial importance to deploy the innovative nuclear systems of generation Ⅳ (GEN-Ⅳ). Among the six GEN-Ⅳ reactor concepts recommended by the GEN-Ⅳ International Forum (GIF), supercritical water-cooled reactor (SCWR) is the only reactor type with water as coolant. Due to its economical advantage, technology and experience continuity, SCWR has attracted significant interests of nuclear industries and research institutions. It is also well recognized as an inevitable extension of the existing nuclear power plants, which mainly utilize water-cooled reactors. This paper presents the main technical features of SCWR and its position in the Chinese long-term nuclear power development. The ongoing research and development activities were summarized and the future needs were clarified. Finally, a roadmap of the development of China SCWR was proposed.

Key words supercritical water-cooled reactor technical feature development trend roadmap

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