

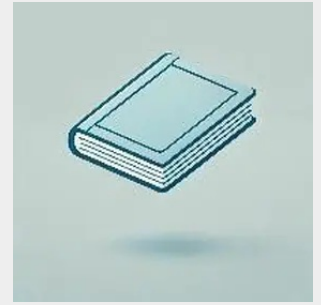
Advances in Small Modular Reactors

Technology, Safety, and Economic Viability

Advances in Small Modular Reactors: Technology, Safety, and Economic Viability explores the transformative potential of Small Modular Reactors (SMRs) in advancing sustainable and efficient energy solutions. Topics explore principles, advanced design techniques, safety protocols, and economic analysis in clean energy solutions. Readers will gain insights into SMR technology advancements, application of Digital Twin, AI, and Machine Learning, and detailed techno-economic analyses and policy evaluations. Sections introduce nuclear power and the role of SMRs in sustainable clean energy solutions while also investigating the fundamentals of thermal-hydraulics in nuclear reactor systems, scaling, and modeling techniques for SMR design and modern instrumentation in SMR technologies. Additional sections cover modeling applications using CFD, system, and computer codes for SMR development, as well as experimental studies and waste management strategies for small modular reactors. The book then examines safety considerations, economics, and future prospects of SMRs, covering reliability and risk assessment, digital twin technology, techno-economic analysis, policy and regulatory impacts, non-water-cooled SMRs development, and the future horizons in SMR thermal-hydraulics and economic analysis. This is an indispensable resource for graduate and postgraduate students, professional engineers, researchers, industry professionals, policymakers, and clean energy enthusiasts.

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