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## Italy's Journey into Small Modular Reactors: Research, Safety Assessment, Testing, and Future Prospects

Italy's interest and involvement in Small Modular Reactors (SMR) and Advanced Modular Reactors (AMR) technologies dates back to almost two decades ago and had a notable surge in recent years. As a nation investigating the possibility of restarting a nuclear program, Italy has recognized the potential of innovative nuclear technologies to contribute to its energy security and sustainability goals, and to diversify its portfolio of low carbon resources. This article explores Italy's engagement in SMRs and AMRs, spanning from design activities, numerical studies, safety assessment and testing endeavors. In particular, recent efforts within the context of thermal-hydraulics, neutronics, fuel performance, safety and licensing and material testing are reported. Worth mentioning, the Italian nuclear sector leverages a collaborative effort between academic institutions, research organizations, and industry stakeholders. By providing a comprehensive overview of Italy's involvement in forthcoming nuclear technologies, this article aims at contributing to the global discourse on nuclear energy innovation and its role in addressing contemporary energy challenges.

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### Confirm that the work is original and has not been published anywhere else

YES

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