

Heavy Liquid Metal Coolant - the Key Safety Element in the Complex of New Nuclear Energy Technologies

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Abstract : The future of Nuclear Energetics is seen in fast reactors with inherent safety working in the closed nuclear fuel cycle. The concept of inherent safety, which lies in deterministic elimination of the most severe accidents due to inherent properties of the reactor rather than through building up engineered barriers, is a cornerstone of success in ensuring safety and economic efficiency of future Nuclear Energetics. The focus of this paper is one of the key elements of inherent safety - the lead coolant of a nuclear reactor. Advantages of lead coolant for reactor application, influence on safety are reviewed. BREST-OD-300 fast reactor, currently being developed in Russia withing the "Proryv" Project utilizes lead coolant and a special set of measures and devices, called technology of lead coolant that ensures safe operation in a wide range of temperatures. Here these technological elements are reviewed, and current progress in their development is discussed.

Keywords : BREST-OD-300. , fast reactor, inherent safety, lead coolant

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