A CORE DESIGN APPROACH AIMED AT THE SUSTAINABILITY AND INTRINSIC SAFETY OF THE EUROPEAN LEAD-COOLED FAST REACTOR

Abstract:
Among the Generation-IV fast reactor technologies, a Lead-cooled Fast Reactor concept is currently under development in Europe as a potential candidate for the deployment, to meet long-term objectives of European energy policies. Within the Lead-cooled European Advanced DEmonstration Reactor (LEADER) project, co-financed by the European Union within the 7th EURATOM Framework Programme, the conceptual design of the reference Generation-IV European LFR (ELFR) industrial plant was developed, benefiting from and further optimizing the concept put forward during the ELSY 6th EURATOM Framework Programme project. In order to embed in the design the safety and sustainability goals in the most effective way, an innovative, dedicated design approach was developed and applied to the design of the ELFR fuel pins, fuel assemblies and core. This new approach, together with the main analysis results supporting the design of the reference ELFR configuration, are presented and discussed in detail.

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