



European Sodium Fast Reactor – Safety Measures Assessment and Research Tools (ESFR-SMART)

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ABSTRACT

To improve the **public acceptance** of the future nuclear power in Europe we have to demonstrate that the new reactors have significantly higher safety level compared to traditional reactors. The **ESFR-SMART** project (European Sodium Fast Reactor Safety Measures Assessment and Research Tools) aims at enhancing further the safety of Generation-IV SFRs and in particular of the commercial-size European Sodium Fast Reactor (ESFR) in accordance with the ESNII roadmap and in close cooperation with the ASTRID program. The project aims at 5 specific objectives:

- 1) Produce **new experimental data** in order to support calibration and validation of the computational tools for each defence-in-depth level.
- 2) Test and qualify **new instrumentations** in order to support their utilization in the reactor protection system.
- 3) Perform **further calibration and validation** of the computational tools for each defence-in-depth level in order to support safety assessments of Generation-IV SFRs, using the data produced in the project as well as selected legacy data.
- 4) Select, implement and assess **new safety measures** for the commercial-size ESFR, using the GIF methodologies, the FP7 CP-ESFR project legacy, the calibrated and validated codes and being in accordance with the update of the European and international safety frameworks taking into account the Fukushima accident.
- 5) Strengthen and link together **new networks**, in particular, the network of the European sodium facilities and the network of the European students working on the SFR technology.

Close interactions with the main European and international SFR stakeholders (GIF, ARDECo, ESNII and IAEA) via the Advisory Review Panel will enable reviews and recommendations on the project's progress as well as dissemination of the new knowledge created by the project. By addressing the industry, policy makers and general public, the project is expected to make a meaningful impact on economics, environment, EU policy and society.