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The ALLEGRO experimental Gas Cooled Fast Reactor Project

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ALLEGRO is experimental fast reactor cooled by Helium being developed by the European V4G4 Consortium of the nuclear research organizations of the Czech Republic, Hungary, Poland and Slovakia associated with CEA, France. Development of ALLEGRO is an important step on the way to the Gas-cooled Fast Reactor, one of the six concepts selected by the Generation IV International Forum and one of the three fast reactors supported by the European Sustainable Nuclear Energy Technology Platform.

The main purpose of the facility is to develop:

- innovative refractory GFR fuels,
- components and systems related to the Helium technologies and
- a safety framework applicable to the specific characters of GFRs.

Starting from a reference design studied up to 2009, the project is exploring a new target of nominal power (in the range of 30 – 75 MW thermal) and power density (in the range 50 – 100 MW/m³) compatible with the safety limits and the design requirements. At the same time, the feasibility of a LEU UOX start-up core as alternative to a standard MOX core is being considered. This start-up core, to be used in the first period of the reactor operation, will include experimental positions dedicated to the refractory fuel development.

The paper describes the current status and the perspective steps of the design and safety studies and experimental work to demonstrate the feasibility of ALLEGRO.

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