Status of GFR Activities

49th PG and 43rd EG meetings,
Virtual meeting, 26-27 May 2020

Extracted for the Virtual Event 14th GIF-IAEA Interface Meeting

Antonio VAYA-SOLER (GIF Technical Secretariat) on behalf of GFR SSC and PMBs chairs

Outline

- GFR SSC and PAs overview
- PAs status and working progress
- European projects

GFR SSC and PAs overview

System Arrangement Signatory	Representatives
France	Frederic Serre
Euratom	Branislav Hatala
Japan	Kazuteru Sugino

Project Arrangements	Signatories
Conceptual Design & Safety (CD&S)	France, Euratom
Fuel Core Materials (FCM)*	France, Euratom, Japan
**Provisional status*	

GFR CD&S PA (working progress)

WP	Task	Leader	Contrib.	<2018	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. GFR R&D in support to the conceptual design and safety													
	1.1 **Review of GFR exploratory and pre-conceptual studies***	FR											
2. ALLEGRO R&D in support to the conceptual design and safety													
	2.1 **Core benchmark***	EU											
	2.2 **System thermalhydraulics** benchmark*	EU											
	2.3 Transient analysis	EU	FR										
3. GFR Safety design criteria and Guidelines													
	3.1 **SDC and SDG reports***	EU	FR										
4. Decay Heat Removal Systems													
	4.1 Experimental activities on STU and CV Rez loops	EU											

*** These tasks have already been completed**

GFR FCM provisional PA (working progress)

WP	Task	Leader	Contrib.	2018	2019	2020	2021	2022
1.1. Selection, design and qualification of ALLEGRO start-up core								
	1.1.1. Testing 15-15Ti cladding alloys in high temperature He	EU						
	1.1.2. Development of qualification procedure for start-up fuel	EU						
	1.1.3. Numerical model development for the start-up core	EU						
1.2. Selection, design and qualification of GFR / ALLEGRO refractory core								
	1.2.1. Testing SiC claddings in high temperature He	JP	EU					
	1.2.2. Ion Irradiation Effect on SiC Composites	JP						
	1.2.3. High Temperature Oxidation Behavior of SiC Composites	JP						
	1.2.4. Development of High Dose Irradiation Tolerant SiC Composites	JP						
	1.2.5. Evaluation of SiC/SiC Composites for High Dose Irradiation Applications	FR						
	1.2.6. Chemical compatibility between UO2 and SiC claddings	FR						
	1.2.7. Fuel element design for GFR : overview of challenges and associated R&D	FR						
1.3 Conclusions on current state of GFR fuel development and on new results								
	1.3.1. Compilation of finding from previous studies	EU	JP, FR					
	1.3.2. Preparation of the final report	EU	JP					

*** These tasks have already been completed**

European projects

- **Previous projects (2008-2018)**: GCFR, GoFastR, ALLIANCE, and VINCO

- **New projects (H2020 2019-2020 call)**: SafeG, PUMA and BONSAI

- **ALLEGRO (V4G4 project)**:
  - Small scale (75 MWth) demonstrator of GFR technology
  - Current project focus assesing:
    - Possibilities of GFR as SMR
    - Completely passive safety
    - Low-enriched UOX fuel in AIM1 cladding to replace MOX fuel in the driver core