NC2I
Nuclear Cogeneration Industrial Initiative

Technical synergies HTGR/GFR

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www.nc2i.eu

NC2I is one of SNETP's strategic technological pillars, mandated to coordinate the demonstration of high temperature nuclear cogeneration.

SNETP
Sustainable Nuclear Energy Technology Platform
www.snetp.eu

What HTGR & GFR may have in common ?

(1)Similarities & differences in operating conditions

- He coolant

  ⇒Some similarities in He technologies (leak-tightness, tribology, etc.)

  ☞But no graphite in GFR

  ⇒Different chemistry (possible impurities are different)

- Same temperature range (> 500˚C)

  ☞But different neutron spectrum

  ⇒Materials could be the same at least for parts of the system that are not submitted to high neutron flux

What HTGR & GFR may have in common?

(2) Similarities in design

- Similar conditions

⇒Possibility to have similar design for part of the structures and components

- Circulator
- Valves
- Instrumentation
- Vessel?
- Cross duct?
- Primary heat exchanger?
- Power conversion?
- …

⇒Common modelling at least for part of the system

✚ ***Need to have an in-depth analysis of possible synergies***

Possible joint developments to be explored

- Common test facilities in helium atmosphere
  - Helium loop for component qualification
  - Specialized test benches (e.g. for testing He leak tight seals, for tribology in He atmosphere, etc.)

  ☞Need to take into account the physical and chemical conditions of both types of systems in the design of facilities
- Developing and qualifying jointly some components and looking for common supply chain for these components
- Joint qualification of computer code models
- Joint development and testing of high temperature instrumentation
- Joint qualification of materials ?
- Development of codes & standards adapted to high temperature operating conditions