



**of the European Atomic Energy Community (Euratom)  
for nuclear research and training activities (2007-2011)**

**Collaborative Project**

***ARCHER***

Project title: **Advanced High-Temperature Reactors for  
Cogeneration of Heat and Electricity R&D**

Project number: **269892**

Project coordinator: **Nuclear Research and Consultancy Group, Petten,  
Netherlands**

HZDR participant: **Institute of Safety Research**

Starting date: **01.02.2011**

Duration (months): **48**

**Summary**

In line with the Sustainable Nuclear Technology Platform (SNETP) Strategic Research Agenda (SRA) and Deployment Strategy (DS), the ARCHER project will extend the state-of-the-art European (V)HTR technology basis with generic technical effort in support of nuclear cogeneration demonstration.

The partner consortium consists of representatives of conventional and nuclear industry, utilities, Technical Support Organisations, R&D institutes and universities. They jointly propose generic effort composed of:

- System integration assessment of a nuclear cogeneration unit coupled to industrial processes
- Critical safety aspects of the primary and coupled system:
  - Pressure boundary integrity
  - Dust
  - In-core hot spots
  - Water and air ingress accident evaluation
- Essential HTR fuel and fuel back end R&D:

- PIE for fuel performance code improvement and validation
- Back end research focused on radiolysis
- Coupling component development:
  - Intermediate heat exchanger development
  - Steam generator assessment
- High temperature material R&D:
  - Completion of graphite design curves
  - Making use of the experience of state of the art metal in conventional industry
- Nuclear cogeneration knowledge management, training and communication

The activities proposed are imbedded in the international framework via GIF; direct collaboration within the project with international partners from the US, China, Japan, and the republic of Korea; and cooperation with IAEA and ISTC. The proposal is a technical building block supporting nuclear cogeneration as fossil fuel alternative for industry and as such supports a high potential contribution to European energy strategy as defined in the SET-Plan.

The results of the proposal will be reported to SNETP, to support the strategic pillar of “other uses of nuclear energy”, and the establishment of a Nuclear Cogeneration Industrial Initiative, which shall include effective (international) nuclear cogeneration demonstration.