



Informal information sharing with the members of the IAEA Technical Working Group on Small and Medium Sized or Modular Reactors

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Euratom updates

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Outline

- **Technologies covered by SMRs Euratom funded Projects**
- **Euratom Projects on SMRs currently funded:**
 - ❖ **GEMINI+** (HTGR)
 - ❖ **ELSMOR** (LW-SMR)
 - ❖ **McSAFER** (LW-SMR)
 - ❖ **ECC-SMART** (SCW-SMR)

Technologies covered by SMRs Euratom funded Projects

In terms of SMRs technologies the projects Euratom currently funds cover:

- High Temperature Gas cooled Reactor (HTGR)
- Light Water (LW)
- Super Critical Water Reactor (SCWR)

HTGR: framework for the licensing and a business plan for a full scale demonstration

LW-SMRs: safety aspects related to the core and to the Reactor Pressure Vessel (RPV), safety aspects related to the containment.

SCWR: aspects related to materials, chemistry, thermal-hydraulic and neutronics.

<https://cordis.europa.eu/project/rcn/211038/factsheet/en>

<http://www.gemini-initiative.com/about/>

- Project GEMINI+ will provide a conceptual design for a high temperature nuclear cogeneration system (HTGR) for supply of process steam to industry, a framework for the licensing of such system and a business plan for a full scale demonstration.
- GEMINI+ has an important international cooperation (INCO) aspect with the participation of the JAEA from Japan, KAERI from Korea and NGNP INDUSTRY ALLIANCE from the USA.
- Ongoing project from the Euratom Work Programme (WP) 2016-2017
- Duration 36 months, Start date 1 September 2017 End date 31 August 2020
- EC contribution € 4 million circa
- Coordinated by NARODOWE CENTRUM BADAN JADROWYCH (Poland)
- EC Project Officer: Dr Panagiotis Manolatos

❖ ELSMOR

<https://cordis.europa.eu/project/rcn/223419/factsheet/en>

- Project ELSMOR (towards European Licencing of Small MOdular Reactors) aims to create methods and tools for the European stakeholders to assess and verify the safety of light water small modular reactors (LW-SMR) that would be deployed in Europe.
- ELSMOR focuses only on safety related aspects The project focuses mainly on core cooling safety functions of integral LW-SMRs with experimental campaigns and numerical simulation methods.
- Safety analysis methods and tools for containment safety functions are also partially developed with numerical simulation methods.
- Ongoing from the Euratom Work Programme (WP) 2018
- Duration 42 months, Start date 1 September 2019, End date 28 February 2023
- EC contribution € 3.5 million circa
- Coordinated by Teknologian Tutkimuskeskus VTT Oy (Finland)

<https://cordis.europa.eu/project/id/945063>

- Project McSAFER (High-Performance Advanced Methods and Experimental Investigations for the Safety Evaluation of Generic Small Modular Reactors) focuses on safety aspects for LW-SMRs and in particular on technical challenges for the core and for the Reactor Pressure Vessel (RPV).
- Experimental campaigns are foreseen and development of numerical tools.
- CNEA from Argentina participates in this project. CNEA currently contract an SMR prototype in Argentina.
- Ongoing from the Euratom Work Programme (WP) 2019-2020
- Duration 36 months, Start date 1 September 2020 End date 31 August 2023
- EC contribution € 4 million circa
- Coordinated by KARLSRUHER INSTITUT FUER TECHNOLOGIE (Germany)

<https://cordis.europa.eu/project/id/945234>

- Project ECC-SMART (Joint European-Canadian-Chinese Development of Small Modular Super-Critical Water-cooled Reactor Technology) aims at assessing the feasibility and identification of safety features of an intrinsically and passively safe small modular reactor cooled by supercritical water (SCWR-SMR).
- ECC-SMART objective is to collect the experience gained on the development of SCWR (Supercritical Water-cooled Reactor) in Europe, Canada and China to derive a joint design requirement document that will be a basis for a future conceptual design project of a supercritical water -small modular reactor (SCW-SMR).
- ECC-SMART has an important international cooperation aspect with the participation of CNL from Canada and of 3 entities from China (Nuclear Power Institute of China-NPIC, a subsidiary to China National Nuclear Corporation-CNNC).
- Ongoing from the Euratom Work Programme (WP) 2019-2020
- Duration 48 months, Start date 1 September 2020 End date 31 August 2024
- EC contribution € 4 million circa
- Coordinated by CENTRUM VYZKUMU REZ SRO (Czechia)

Thank you for your attention!