

< Breaking-out Session >

Discussion 2.

Safety & Operating Performance



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KAERI

Contents

1. SMR Safety & Performance

2. Lessons from Existing Nuclear Plants

3. Requiriements

SMR Safety & Performance



» Data driven evaluation of SMR Safety & Performance

- **SMR has no operational experience**, so there are limitations to evaluate safety or performance.
- **Various data** from international organizations such as the IAEA and countries with experience building and operating commercial nuclear power plants **is required**

» Informed decision by policy decision makers

- Nuclear technology is decided based on **the government's informed decision process**
- IT technologies such as **digital twins can be useful for several purposes**

UAE Experience would be useful reference for the newcomers

1. Informed selection of reactor types
2. Timely establishment of relevant organizations
3. Strong support by the country of origin
4. Support by the IAEA and other advanced countries
5. Nationwide efforts for capacity building

Evaluating SMR Safety & Performance

» IAEA's efforts to assess SMR reliability and operation

IAEA SMR Platform

- Serves as a **focal point** for the IAEA activities on SMRs and their applications
- Provides **coordinated support and expertise from across the entire Agency**, for consideration, development, deployment, and oversight of SMRs
- **SMR Portal** provides latest news, IAEA events, and publications on SMRs
- **New service** under development for newcomer countries interested in SMR
- Enquiries and requests for assistance: SMR.Platform@iaea.org



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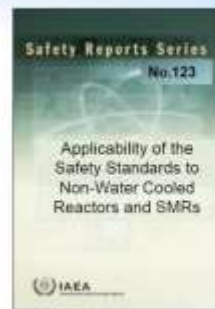
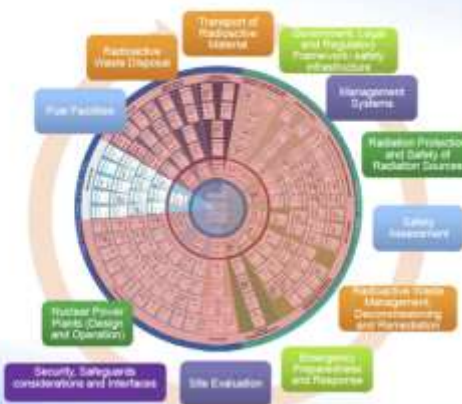
Reactor Technology Assessment

- **Design selection process** for the most suitable reactor technology to meet the objectives of a Member State's nuclear power programme
- User defines its own **degree of importance** among different Key Elements of the decision
- **Self assessment tool** revised in 2022 after 10 years of practice by MSs



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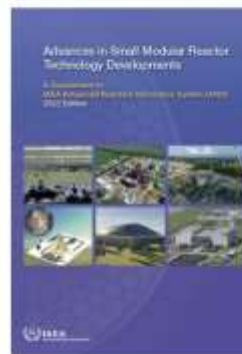
Review and Adjustment of Safety Standards



https://preprint.iaea.org/search?q=nsr_srs_123

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IAEA ARIS SMR Booklet 2022



IAEA SMR Booklet, 2022 Edition	
Number of reactor designs:	83
Member states involved:	18
Reactor types	1.1. Water-cooled Land Based – 25 1.2. Water-cooled Marine Based – 8 2. High temperature Gas-cooled – 17 including 3 test reactors 3. Liquid Metal-cooled Fast Neutron Spectrum – 8 4. Molten Salt – 13 5. Microreactors – 12
Distinguishing features	<ul style="list-style-type: none"> • Annexes on economics, non-electric applications, experiments for design validation, fuel cycle and waste management • Insightful annexes with various charts and tables
Status	Published in hardcopies and online
Link to download	https://aris.iaea.org/Publications/SMR_booklet_2022.pdf

The 2022 IAEA SMR ARIS Booklet is a biennial publication as a supplement to the IAEA Advanced Reactor Information System (ARIS) Database. It provides a brief yet comprehensive design description of 83 different reactor designs. The 2022 version is an updated version of the 2020 booklet. It includes 11 more designs and a more comprehensive set of annexes.

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THANK YOU

