Interregional Workshop on Codes & Standards, Design Engineering, Testing & Manufacturing of Components and Supply Chain of SMRs and Microreactors

Hosted by

The Government of the People's Republic of China

through

China National Nuclear Power Co., Ltd

Haikou, China

3 to 6 March 2025

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Information Sheet

Purpose

The purpose of the event is to discuss codes and standards development regarding small modular reactors (SMRs) and their microreactor subset as well as the manufacturing and the testing of their components, highlighting the role of the supply chain. The purpose is to let the participants understand the potential for harmonisation that the development of the supply chain for SMRs offers, which in turn is key in achieving the promises of economies of series needed for SMRs to be competitive.

Working Language

The working language(s) of the event will be **English.**

Deadline for Nominations

Nominations received after **8 December 2024** will not be considered.

Project Background

To meet the growing demand for energy and to mitigate global climate change challenge, the interest in Small Modular Reactors (SMRs) and Micro-Reactors (MRs) is growing, especially in regions inaccessible to large electricity grids and regions with smaller electricity grids that need technology options deployed incrementally to closely match increasing energy demand. SMRs and MRs are also viable options for users with needs beyond electricity supply, e.g., district heating, desalination, industrial process heat, as well as hydrogen. The purpose of the project is to provide broad support to Member States in the development and deployment of SMRs and MRs. The project provides a broad range of fora to enable effective capacity building through training and technology transfer activities on all aspects of SMR development. The project also covers the emerging MRs, the development of SMRs for electric and non-electric applications, and the coupling of such nuclear systems with renewables in integrated energy systems. The aim of the project is to enable national stakeholders to gain enhanced understanding of key characteristics of SMR and MR technologies and their applications, and to formulate, in line with international safety standards, countries' specific legal and regulatory frameworks, and generic user requirements and criteria for SMR technologies.

Nuclear power is broadly recognized as a low-carbon energy source and is a key option to achieve zero-carbon economies by 2050, as outlined in the 2015 Paris Climate Agreement, provided that it can be deployed quickly and on a large scale. SMRs have the potential to become game changers thanks to their mass production in factories, small footprint, and compatibility with smaller grids, making them an attractive option for a broad range of users across the globe.

For SMRs to be massively deployed by 2050, they need to become mature solutions and reach some kind of standardization. This makes the supply chain a crucial element in the deployment of SMRs. Use of standards and codes for SMR may support this standardization, as will design engineering. The testing of components may also support harmonization of regulatory practices by sharing standardized testing methodologies.

Scope and Nature

The event has several specific objectives, which are as follows:

- To disseminate information about the current state of development of SMR technologies and their approach towards Codes and Standards;
- To highlight the role of the supply chain in the early deployment of SMR technologies; and
- To assist Member States considering deployment of SMRs in establishing their national industrial involvement policy and anticipating regulatory frameworks compatible with the industry practices

The 4-day workshop splits in several topical sessions covering the

- Technology holders' considerations on the status and perspectives of the technology development for SMRs and their approach to design engineering and use of codes and standards;
- SMR component manufacturing and testing;
- Good practices on the supply chain management of SMR; and
- Initiatives to foster standardization

The event will feature presentations from the IAEA, developers of SMRs technologies and stakeholders in the nuclear supply chain with a focus on use of codes and standards, component manufacturing and testing. The hosting organization will provide a technical tour for participants to an SMR construction site.

In addition, the event will provide opportunities for participants to network and continue sharing information and good practices as well as other potential follow-up tasks and coordinated activities, as appropriate.

Expected outputs

The key output of the Event is an enhanced knowledge of the current status and near-term trends in developing SMR technologies and their approach towards standardization through the use of codes and standards. Finally, the event is expected to allow the IAEA to compile information that can be later used in the revision of relevant IAEA publications.

Participation

The event is open to up to 30 participants from the following Member States participating in the TC Project INT2023:

<u>The selected participants to attend from the following member states will be funded:</u>

Algeria, Argentina, Armenia, Bolivia, Brazil, Bulgaria, China, Czech Republic, Egypt, El Salvador, Estonia, Ethiopia, Ghana, Guatemala, Hungary, Indonesia, Islamic Republic of Iran, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Lithuania, Malaysia, Mexico, Mongolia, Morocco, Myanmar, Nigeria, Pakistan, Philippines, Poland, Romania, Rwanda, Saudi Arabia, Serbia, Singapore, Slovakia, South Africa, Sri Lanka, Thailand, Tunisia, Türkiye, United Republic of Tanzania, Uzbekistan, Zambia

<u>At no cost to the IAEA, participants from following countries can also be considered:</u>

Belgium, Canada, Denmark, Finland, France, Italy, Japan, Republic of Korea, Russian Federation, United Kingdom, United States of America

Participants' Qualification and Experience

The target audience of this event are those individuals working in Member States' governments, energy planning authority, nuclear energy programme implementing organizations (NEPIOs) or prospective owner/operator organizations, technology developers and regulatory bodies/ potential users, particularly those needing to understand the key issues and challenges associated with SMR.

The activities will be conducted in English and candidates should have sufficient English proficiency to participate in the event without difficulty.

Candidates are requested to provide a summary of how this event will provide direct benefit to their current or future job position.

Accepted participants should read the following references to get the most out of the event:

- INTERNATIONAL ATOMIC ENERGY AGENCY, Advances in Small Modular Reactor Technology Developments — A Supplement to: IAEA Advanced Reactors Information System (ARIS) - 2022 Edition, IAEA, Vienna (2022)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Technology Roadmap for Small Modular Reactor Deployment, IAEA Nuclear Energy Series No. NR-T-1.18, IAEA, Vienna (2021)
- INTERNATIONAL ATOMIC ENERGY AGENCY, IAEA Safety Standards, Specific Safety Requirements No SSR-2/1 (Rev. 1), Vienna (2016)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Procurement Engineering and Supply Chain Guidelines in Support of Operation and Maintenance of Nuclear Facilities, IAEA Nuclear Energy Series No. NP-T-3.21, IAEA, Vienna (2016)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Quality Assurance and Quality Control in Nuclear Facilities and Activities, IAEA-TECDOC-1910, IAEA, Vienna (2020)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Management of Nuclear Power Plant Projects, IAEA Nuclear Energy Series No. NG-T-1.6, IAEA, Vienna (2020)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Challenges and Approaches for Selecting, Assessing and Qualifying Commercial Industrial Digital Instrumentation and Control Equipment for Use in Nuclear Power Plant Applications, IAEA Nuclear Energy Series No. NR-T-3.31, IAEA, Vienna (2020)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Suitability Evaluation of Commercial Grade Products for Use in Nuclear Power Plant Safety Systems, IAEA-TECDOC-2034, IAEA, Vienna (2023)

For more information related to management systems, project management, quality and supply chain management in the nuclear industry throughout the world, please join the IAEA Network MSCQ (register the NUCLEUS account and request access here: MSCQ Registration (iaea.org)).

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (https://intouchplus.iaea.org) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (https://websso.iaea.org/IM/UserRegistrationPage.aspx) before proceeding with the event application process below.

2. On the InTouch + platform, the candidate must:

a) Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;

b) Download and complete the Designation of Beneficiary and Emergency Contact Form, and upload to InTouch+ ('Profile' tab under the personal section) specifying the document name. If already provided, kindly discard this step;

c) Search for the relevant technical cooperation event (EVT2302832) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

NOTE: Completed applications need to be approved by the relevant national authority, i.e., the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline. **All nominations must include a scan of the candidate's first page of passport with photo.**

For additional support on how to apply for an event, please refer to the InTouch+ Help page. Any issues or queries related to InTouch+ can be addressed to InTouchPlus.Contact-Point@iaea.org.

Should online application submission not be possible, candidates may download the nomination form for the training course from the IAEA website.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency American Express, or a travel grant, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability, or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

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