



Regional Meeting on Small Modular Reactors and Microreactors: Design, Cogeneration, Applications, Refuelling Schemes, Transport Options and Deployment Pathways

Hosted by

The Government of Belarus

through

The Joint Institute of Power and Nuclear Research-Sosny

Minsk, Belarus

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Information Sheet

Purpose

The purpose of the event is to discuss and share as appropriate relevant information on the global advances of small modular reactors (SMR) design and technology development including that of microreactors, by identifying the associated enabling issues of design, cogeneration, applications, refuelling schemes, transport option, and their implications to deployment. This Regional Meeting is also intended to discuss the deployment pathways of SMRs and microreactors in Europe and their roles as clean energy technology in the global climate change mitigation efforts.

Working Language(s)

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

Deadline for Nominations

Nominations received after 14 August 2020 will not be considered.

Project Background

Small Modular Reactors (SMRs) are newer generation reactors designed to generate electric power typically up to 300 MW whose components and systems can, in most cases, be shop fabricated and transported as modules to the sites for installation. Modularization and/or small size may enable economics of mass production, shorter construction times and lower capital cost. Several Member States in Europe plan to implement long term strategic programmes by taking a leadership role in the development of SMR designs and technologies for near term deployable domestic use. In synergy with renewable energy sources for clean development portfolio, SMRs may be a viable option for countries in Europe that need alternatives to large reactors and fossil power plants. At least in the past 5 years, a new development trend emerged in the field of micro reactors, designed to generate power typically up to 10 MW(e). Generally assumed as a sub-category of SMRs, this advanced technology is under development in many Member States, including countries in the Europe region, to serve future niche electricity and district heat markets in remote regions, mining, industries and fisheries that for decades have been served by diesel power plants.

An initial request from several European Member States (MS) that plan to initiate or to expand their nuclear energy programme, have been addressed by the Regional Technical Cooperation Project RER/2/014 - Facilitating Capacity Building for Small Modular Reactors: Technology Developments, Safety Assessment, Licensing and Utilization. The main aim was to help to increase their capabilities to make knowledgeable decisions, particularly to become capable to identify and perform assessments of SMRs available for near term deployment.

The IAEA has launched a new project RER/2/017 “Assessing the Role of Low Carbon Energy Technologies for Climate Change Mitigation”. Under the Paris agreement Member States will develop Integrated National Energy and Climate Plans on a regular basis. A successful decarbonisation strategy for the power sector will need to rely on a mix of future technologies that may include nuclear power. Many of the participating Member States have smaller electric grids, are seeking solutions to decarbonise the electricity generation, district heating or other non-electric applications, or looking for electricity sources that can support variable and uncertain generation systems on the grid. SMRs show potential to fulfil all these requirements and are considered as a possible part of the energy mix by several MSs. In the imminent future, microreactors are also expected to be an alternate to both diesel and fossil-fired power plants.

Several aspects related to SMRs not yet addressed in RER/2/014 were therefore included in the RER/2/017 project. For example these include load following capabilities of SMRs; cogeneration of SMRs and using SMRs just for the production of heat; assessing the financial viability of nuclear power projects using the IAEA’s models; as well as the identification of different financing sources for nuclear power projects.

Expected Outputs

The expected main output of this event is an improved understanding of the global advances of SMR design and technology including that of microreactors, by identifying the associated enabling issues of design, cogeneration, applications, refuelling schemes, transport option, and their implications to deployment. Participants will also have a greater understanding of the deployment pathways of SMRs and microreactors in Europe and their roles as clean energy technology in the global climate change mitigation efforts.

A meeting report containing a summary of presentations and discussions on advances in SMR and microreactors technology development will be developed after the meeting. The report will include recommended approaches to address issues on design, cogeneration, applications, refuelling schemes, transport option, and pathways to their deployment and will capture suggestions of future activities in this area within the TC Programme.

Scope and Nature

This 5-day meeting will provide in-depth discussion of the prospects, key issues and enabling technologies of SMRs, including microreactors to support the implementation scenario of low carbon energy technologies for climate change mitigation.

The meeting will consist of presentations from IAEA staff, followed by presentations from international experts on the status of SMR and microreactors technology development and their deployment pathway. The specific experience of the host country on their development of micro reactor technology will be showcased including a visit to relevant facilities. Participants from embarking countries will also present their countries' specific technical considerations as users or utilities. Case studies and lessons learned will be shared and discussed as well.

Participation

The Workshop is open for up to 30 participants from Member States who currently participate in the project RER2017 and that show a high commitment in developing SMR Programmes in the future.

Participants' Qualifications and Experience

Participants should be nuclear engineers, experts on SMR engineering design, and policy makers from both embarking and expanding countries involved in the project RER/2/017 experienced and/or being tasked in conducting advanced R&Ds on SMRs and microreactors technology in their respective countries.

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. Search for the relevant technical cooperation event (EVT2002939) 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.

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 meeting from the [IAEA website](#).

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

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.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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