IAEA
International Atomic Energy Agency
Atoms for Peace

Technical Meeting to Examine the Techno-Economics of and Opportunities for Non-Electric Applications of Small and Medium Sized or Modular Reactors

IAEA Headquarters

Vienna, Austria

29–31 May 2017

Ref. No.: I3-TM-55097

Information Sheet

A. Background

There has been a growing interest in nuclear cogeneration in many countries over the past several years, which was empowered by the integration of advanced nuclear reactor technologies. Among these technologies, small and medium sized or modular reactor (SMR) designs are gaining more attention for cogeneration applications. They are considered an attractive option to enhance energy supply security in newcomer countries with small grids and less developed infrastructure, and in advanced countries for remote areas or specific purposes. SMR nuclear cogeneration technologies could be key for future freshwater production and energy security worldwide. More recently, several hybrid energy systems, e.g. nuclear and renewable energy configurations, have been under investigation for non-electric applications, including desalination and hydrogen production.

Furthermore, nuclear cogeneration has a key role to play in accordance with the historic Paris Climate Change Agreement, adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change in 2015. In addition to the CO_2 emission reduction that comes with replacing conventional fossil fuel based energy systems with nuclear power plants, cogeneration applications of nuclear energy lead to lower specific emissions, where less emissions per unit of produced products is achieved. This is further enhanced with the utilization of the waste heat of the nuclear reactor. Nuclear cogeneration would also result in a better operating efficiency, better energy utilization, and better grid flexibility, along with being more benign to the environment. Advancement in the technologies towards the recovery and re-use of waste heat for non-electric applications has increased the potential of nuclear cogeneration projects.

Nuclear cogeneration for process heat applications serves in the areas of seawater desalination, district heating and cooling in residential and commercial buildings, industrial process heat supply, and fuel synthesis. Several Member States have been utilizing nuclear cogeneration for district heating and desalination applications. The practical operating experience of nuclear district heating and seawater desalination has reached a total of ~750 operation years (as of 2012) from 74 nuclear reactors. The main challenges to deployment of nuclear cogeneration are to demonstrate the economic viability and commercialization potential, along with the required licensing for the cogeneration plant.

The International Atomic Energy Agency (IAEA) assists Member States in the demonstration of non-electric applications of nuclear energy, including nuclear desalination, hydrogen production, district heating, and other industrial applications. It supports Member States by providing various information exchange tools such as the publication of various Technical Documents, coordinated research projects, and Technical Meetings similar to this one. Sharing of operating experience and related techno-economics of nuclear cogeneration projects could help decision-makers in countries considering nuclear cogeneration as an option.

B. Objectives

The purpose of this meeting is to discuss the prospects of future nuclear cogeneration, reassess the techno-economic aspects of nuclear cogeneration for non-electric applications based on SMR technologies and other potential advanced power reactors, exchange information on practical aspects and challenging issues for the deployment of cogeneration with SMRs, and discuss hybrid energy systems and their potential coupling to non-electric applications.

C. Expected Output

The expected output of this meeting is a collection of up-to-date information on the status of nuclear cogeneration in Member States with demonstration plants, the exchange of information on the techno-economics of nuclear cogeneration using SMRs, and a meeting report summarizing the discussions held and the results presented on various techno-economic aspects of cogeneration projects.

D. Administrative and Financial Arrangements

Designating Governments will be informed in due course of the names of the selected candidates and will at that time be given full details on the procedures to be followed with regard to administrative and financial matters.

The costs of the meeting are borne by the IAEA; no registration fee is charged to participants. Travel and subsistence expenses of participants will not be borne by the IAEA. Limited funds are, however, available to help meet the cost of attendance of certain participants. Such assistance may be offered upon specific request to normally one participant per country provided that, in the IAEA's view, the participant on whose behalf assistance is requested will make an important contribution to the meeting. The application for financial support should be made at the time of designating the participant.

The organizers of the meeting 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 meeting, and it is clearly understood that each Government, in designating participants, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

E. Application Procedure

Designations should be submitted using the attached Participation Form (Form A). Completed forms should be endorsed by the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) and returned through the established official channels. They must be received by the IAEA not later than **30 March 2017**. Designations received after that date or applications sent directly by individuals or by private institutions cannot be considered. Designating Governments will be informed in due course of the names of the selected candidates and at that time full details will be given on the procedures to be followed with regard to administrative and financial matters.

For Member States receiving technical cooperation assistance, applications for financial support should be made at the time of designating the participant.

F. Working Language

The working language of the meeting will be English with no interpretation provided. All communications, abstracts, and papers must be submitted in this language.

G. Venue

The meeting will commence at 9.00 a.m. on Monday, 29 May 2017, in Room M0E79, Building M, of the Vienna International Centre (VIC). Meeting participants are requested to arrive at Checkpoint 1/Gate 1 one hour before the start of the meeting on the first day, in order to allow sufficient time for the issuing of grounds passes, which are necessary for official visitors to the VIC.

H. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria as soon as possible.

I. Organization

Official correspondence with regard to the technical aspects of the meeting should be addressed to the Scientific Secretary:

Mr Ibrahim Khamis
Nuclear Power Technology Development Section
Division of Nuclear Power
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 22822
Fax: +43 1 26007
Email: I.Khamis@iaea.org

Official correspondence with regard to administrative issues should be addressed to the Administrative Secretary:

Ms Mercedes Nicole Córdova Jurak
Nuclear Power Technology Development Section
Division of Nuclear Power
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 22815
Fax: +43 1 26007
Email: M.Cordova-Jurak@iaea.org

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Form A
I3-TM-55097

Participation Form

Technical Meeting to Examine the Techno-Economics of and Opportunities for Non-Electric Applications of Small and Medium Sized or Modular Reactors

IAEA Headquarters, Vienna, Austria

29–31 May 2017

To be completed by the participant and sent to the competent official authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA), Vienna International Centre, PO Box 100, 1400 Vienna, Austria, either electronically by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed).

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

Deadline for receipt by IAEA through official channels: 30 March 2017

<table>
<tr><td colspan="2">Family name: (e.g. Smith)</td><td>First name(s): (e.g. John)</td><td>Mr/Ms</td></tr>
<tr><td colspan="4">Institution:</td></tr>
<tr><td colspan="4">Full address:</td></tr>
<tr><td colspan="2">For urgent communications please indicate:</td><td colspan="2">Tel.:
Fax:
Email:</td></tr>
<tr><td colspan="2">Nationality:</td><td colspan="2">Designating Government or organization:</td></tr>
<tr><td colspan="4">Mailing address (if different from address indicated above):</td></tr>
<tr><td colspan="4">Do you intend to submit a paper? Yes ☐ No ☐
Title:</td></tr>
</table>

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Form C
I3-TM-55097

Grant Application Form

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To be completed by the applicant and sent to the competent official authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA), Vienna International Centre, PO Box 100, 1400 Vienna, Austria, either electronically by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed).

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Family name: (e.g. Smith)	First name(s): (e.g. John)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yy/mm/dd):	Nationality:	

1. Education (post-secondary):

Name and place of institution	Field of study	Diploma or Degree	Years attended from	to

2. Recent employment record (Starting with your present post):

Name and place of employer/ organization	Title of your position	Type of work	Years worked from	to

3. Description of work performed over the last three years:

Date: **Signature of applicant:** _____

Date: **Name, signature and stamp of Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority** _____