

2nd IAEA DEMO PROGRAMME WORKSHOP

16-20 December 2013

IAEA Headquarters, Vienna, Austria



IAEA

International Atomic Energy Agency

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Announcement

INTRODUCTION

The International Atomic Energy Agency (IAEA) will hold the second IAEA DEMO Programme Workshop (DPW-2) at the IAEA Headquarters in Vienna from 16-20 December 2013. The previous meeting in the series was held at the University of California at Los Angeles (UCLA), Los Angeles, California, United States of America from 15 - 18 October 2012.

BACKGROUND

With the construction of ITER, the worldwide magnetic fusion programme has begun a transition from a fusion science activity to one aimed at producing fusion energy on an industrial, power plant scale. This is driving an increased emphasis on a fusion technology programme which, along with ITER and accompanying research, will bring fusion as a power source within our reach. While internationally there is no agreement on a single roadmap to fusion, the science and technology issues to be resolved for fusion power to become a reality are broadly agreed. Resolving these issues and understanding the options for next-step fusion nuclear facilities are of common interest, even if the emphases and priorities vary from nation to nation. Thus there is substantial scope to add value to the programme by international cooperation. Against this backdrop, the IAEA has established a series of annual DEMO Programme Workshops to facilitate international collaboration on defining and coordinating DEMO programme activities.

OBJECTIVES

The objective of this workshop in the IAEA series, is to discuss a subset of key DEMO scientific and technical issues with the aim of defining the facilities and program activities that can lead to their resolution. The workshop output, to be documented in summary presentations and (tentatively) a journal publication, will be information that could be used by any party as input to the planning of possible roadmaps to DEMO. Opportunities to make greater progress through international collaboration will be identified, ideally leading to coordination or joint work where beneficial. To promote continuity in the workshop series, participants will propose the set of topics for the next workshop(s) in the series, considering the status, expected progress, and need for international discussion among the various DEMO issues.

TOPICS

The Meeting will cover the following topics:

1. Fusion design codes

This refers to the integrated physics-engineering design codes (e.g., PROCESS and the ARIES system code) that are used to develop point designs and study trade-offs and sensitivities. There is a need to discuss the assumptions used in these codes, physics and engineering constraints and sub-modules, benchmarking activities, and the results of sensitivity and trade-off studies. It is suggested that the workshop focus on issues (e.g., neutron damage, power densities) where there are large gaps from ITER to DEMO

2. Plasma power exhaust and impurity control

This topic is continued from DPW-1 in view of the large gaps from ITER to DEMO and the urgency of defining and testing possible solutions. Going beyond DPW-1, there should be reports from national groups addressing the problem comprehensively, e.g. including both steady-state and transient heat loads self-consistently. Specific plans and capabilities of both existing and planned devices, including both confinement facilities and linear devices, should be discussed.

What choices are available for plasma exhaust in fusion nuclear facilities, where the loads and conditions are harsher than those of ITER? What combination of materials, divertor configurations, neutral gas pumping, and operating scenarios will lead to solutions compatible with good plasma performance, tritium breeding, and long component lifetimes?

3. Plasma scenarios and control

This topic encompasses time-dependent simulations of plasma scenarios; and the sensors, actuators, and control models for DEMO. Minimum measurement requirements and minimum actuator requirements need to be clarified. It is suggested that the workshop focuses on issues (e.g. compatibility with the radiological environment and with tritium breeding blankets) where there are large gaps from ITER to DEMO.

4. Special topics

- Updates on national roadmap plans, i.e. focusing on significant progress or changes from DPW 1 to DPW 2.
- Report from Japan on the implications of society's response to Fukushima, and the distinctions between fission and fusion.

WORKSHOP ORGANIZATION AND FORMAT

The workshop will be organized around three topics, listed above, where discussion and action are urgently needed. The agenda will be structured with a balance of invited talks and discussion time sufficient to facilitate reaching conclusions. The meeting will end with summary talks on each of the topics. In preparation for the workshop, it is expected that speakers will target their work and their presentations to address the workshop's aims. The international organizing committee is responsible for planning the technical programme and documenting the conclusion.

Language

The working language of the meeting is English; no interpretation will be provided.

Participation

About 60 experts from IAEA Member States and International Organizations are expected to attend the meeting. **All oral presentations will be based on invitation only.** Participants should be actively involved in the topics of the meeting. In order to participate in the meeting, all persons

not officially invited by the IAEA to give a presentation at the meeting must send a completed Participation Form (Form A) to their appropriate governmental authority for subsequent transmission to the IAEA. Such a participant will be accepted only if the Participation Form is transmitted to the IAEA through one of the official channels by **16 August 2012**.

Contributed posters

A limited number of posters addressing the workshop topics may be included. Should any participant wish to present a poster, they are requested to submit a one page abstract to physics@iaea.org no later than **16 August 2012**. In addition, they must further submit a duly completed Form A to their appropriate governmental authority for transmission to the IAEA. This form must be received by the IAEA no later than **16 August 2012**.

MEETING LOCATION AND TRANSPORTATION

The meeting will take place in Room M3 at the **Vienna International Centre**.

Detailed information regarding accommodation and transport in Vienna can be found under the following link: <http://awms.iaea.org/links/final%20HOTEL%20LIST%20VIE%202013.pdf>.

PUBLICATION

Electronic Proceedings

Electronic proceedings of the workshop, consisting of slides or posters, will be made available to all participants on an open web site.

Journal Publication

It is tentatively planned to publish a summary of the workshop as a journal article.

EXPENDITURES AND FINANCIAL SUPPORT

The costs for the organization of the meeting are borne by the host organization and the IAEA. No registration fee will be charged to participants.

As a general rule, the IAEA does not pay travel and accommodation expenses for meeting participants. However, limited funds are available to help meet the cost of attendance of a few selected specialists, primarily those from developing countries with low economic resources.

VISAS

Participants who require a visa to enter Austria should submit the necessary application as soon as possible. A letter of invitation, if needed, should be requested from the local organizer by emailing Ms. **Marion Linter** at m.linter@iaea.org.

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