IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Workshop on High Temperature Gas Cooled Reactor Technology

Virtual Event

8–11 November 2021

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Information Sheet

Introduction

High temperature gas cooled reactors (HTGRs) have been built and operated in Member States of the International Atomic Energy Agency (IAEA) as far back as the 1970s, in the form of both experimental and demonstration plants. A wealth of knowledge has been accumulated from these nuclear power facilities. Today, two experimental HTGRs are operational: the High Temperature Engineering Test Reactor in Japan and the HTR-10 in China.

After an HTGR project in South Africa came to an end in 2010, several other Member States have continued to show an interest in such projects, and some have also continued technology development. To ensure that knowledge in this area is maintained, the Technical Working Group on Gas Cooled Reactors has recommended the continuation of knowledge management and the preservation of HTGR technology through training courses and workshops. This event will cover software packages and computer codes available for design and safety analyses, in order to maintain, capture and expand knowledge in HTGR technology.

After several years of discussion and action, an agreement has been reached between the IAEA, the Jülich Research Centre and German export authorities to release the high temperature reactor code package for high temperature reactor safety performance analyses (HCP) to the IAEA, so that more Member States can use this computer code to perform safety analysis of HTGRs. The HTR code package (HCP) allows for the simulation of several safety-related aspects of a High Temperature Reactor core in a highly integrated manner. The main feature of the code is the design, implementation and validation of software for the simulation of V/HTRs by applying the latest programming techniques and standards. HCP has full three-dimensional capabilities. This is not available in any other integrated HTR code system.

The HCP will be showcased and demonstrated during the event. Other institutes, universities and vendors will also be invited to present their latest designs and software codes.

Objectives

The purpose of the event is to familiarize participants with modular high temperature reactors by presenting current technology, reactor design concepts, reactor physics, core thermal fluid design, safety analyses, and modelling and simulation.

Target Audience

The event is targeted at decision makers, nuclear engineers, research scientists, university students and staff members of vendors, designers and regulatory bodies who are planning on studying, developing or licensing HTGR technology, or who are currently engaged in HTGR research. A scientific/technical background in nuclear science and engineering, mechanical engineering and power engineering is essential.

Working Language

English.

Structure

Expert presentations will be followed by discussions among the participants, the primary goal being to exchange information and share knowledge. Discussions on possible future cooperation for the joint development of codes (especially based on the HCP to be made available) will also be included. The presentations and discussions will be led by experts from software developers, designers and research organizations.

Topics

The focus will be on presenting state-of-the-art software and computer codes available to perform core design and safety analyses. The latest project progress and design status of participating vendors and technology developers will also be included. Other topics may include fuel technology, reactor design concepts and features, heat removal systems and power conversion systems in both prismatic and pebble bed HTGR designs, technology innovations, and non-electric applications. Ultimately, the event will also highlight contemporary research and development efforts that will lead to the immediate and near-term deployment of HTGRs.

Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **8 September 2021**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by the above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and technical matters.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the Data Processing Notice concerning IAEA InTouch+ platform.

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on other matters related to the event to the Administrative Secretary.