



Training Workshop on Non-Destructive Examination, In-Service Inspection and Online Monitoring Techniques for Research Reactors

**IAEA Headquarters
Vienna, Austria**

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Information Sheet

A. Introduction

There are approximately 235 research reactors currently in operation or in temporary shutdown worldwide. Of these, about 73% have been operating for more than 40 years. As a result, many research reactors are experiencing various ageing-related effects that can impact the reliability, availability, and safety of their systems and components. With the continued operation of these facilities, there is an increasing need for comprehensive asset management programmes that incorporate advanced predictive maintenance technologies for equipment condition monitoring, degradation assessment, and ageing management. Such programmes can support timely decision-making, optimize maintenance activities, and contribute to the safe and sustainable continued operation of research reactors.

In this context, the IAEA has consistently supported research reactor (RR) operation and maintenance programmes, particularly the formulation and implementation of ageing management and surveillance programmes. These programmes involve the systematic assessment of structures, systems and components (SSCs) to identify potential degradation mechanisms, verify continued compliance with safety requirements, and maintain optimal reactor availability and performance. Comprehensive ageing management and surveillance programmes incorporate routine inspections, in-service inspections, periodic testing, condition monitoring, and corrective and preventive maintenance activities. Together, these measures help identify and mitigate ageing effects, preserve the intended safety functions of SSCs, and support the safe and reliable continued operation of research reactors.

The IAEA has developed guidance on Non-Destructive Examination (NDE) and In-Service Inspection (ISI) as integral elements of RR ageing management and surveillance programmes.

These guidelines provide a systematic framework for monitoring the condition and integrity of SSCs throughout the operational lifetime of research reactors. The guidance addresses:

- NDE methodologies applicable to the in-service inspection of various types of research reactors;
- The preparation, documentation, scheduling, and implementation of ISI programmes and plans;
- The selection and application of appropriate inspection methods, techniques, and procedures for different reactor systems and components; and
- The qualification, training, and certification requirements for NDE personnel involved in the inspection of research reactors.

The Agency supports Member States operating research reactors through the provision of equipment, expert missions, and NDE and ISI services. In addition, the IAEA assists in strengthening national capabilities by training local personnel, disseminating international best practices, and enhancing ageing management and surveillance programmes.

Online Monitoring (OLM) technologies have been successfully implemented in nuclear power plants for a wide range of applications, including condition-based calibration, performance monitoring of instrumentation and control systems, detection of process anomalies, and differentiation between sensor degradation and process-related effects. Although significant advances have been made in applying OLM technologies in power reactors, their use in research reactors remains limited. Drawing on the positive experience gained in nuclear power plants, there is growing interest within the research reactor community in adopting OLM technologies to support predictive and condition-based maintenance, enhance safety and operational reliability, strengthen ageing management programmes, and contribute to the continued operation of research reactors.

B. Objectives

The purpose of the event is to provide training on NDE methodologies and techniques, as well as insights into ISI and OLM practices for research reactors.

The workshop is intended to enhance the practical competence of participants in conducting NDE, ISI and OLM activities at the RRs of participating Member States, and to facilitate the exchange of experiences, challenges and lessons learned related to NDE/ISI/OLM activities within the framework of ageing management and surveillance programmes.

The workshop will include lectures covering the principles and applications of NDE, ISI and OLM, together with practical demonstrations using selected IAEA equipment, including ultrasonic testing systems, videoscopes and underwater radiation-resistant cameras.

C. Target Audience

The workshop is aimed at the technical personnel who are involved in NDE, ISI and OLM, for the research reactor facilities. Member States are strongly encouraged to identify suitable women participants.

D. Working Language

This workshop will be held in English.

E. Topics

The workshop will cover the following topics:

- NDE/ISI/OLM techniques applicable to RRs;
- Use of NDE/ISI equipment;
- ISI programmes, and ISI schedules and plans for plant structures, systems and components;
- Qualification requirements for NDE;
- Guidance for OLM implementation;
- Status of OLM of structures, systems and components of RRs.

F. 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 or invited organization, participants are requested to submit their application via the InTouch+ platform (<https://intouchplus.iaea.org>) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **2 October 2026**, following the registration procedure in InTouch+:

1. Access the [InTouch+](https://intouchplus.iaea.org) platform (<https://intouchplus.iaea.org>):

- Persons with an existing NUCLEUS account can sign into the platform with their username and password;
- Persons without an existing NUCLEUS account can register [here](#).

2. Once signed in, prospective participants can use the [InTouch+](https://intouchplus.iaea.org) platform to:

- Complete or update their personal details under ‘Complete Profile’ and upload the relevant supporting documents;
- Search for the relevant event under the ‘My Eligible Events’ tab;
- Select the Member State or invited organization they want to represent from the drop-down menu entitled ‘Designating Authority’ (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
- If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
- Based on the data input, the InTouch+ will automatically generate the Participation Form (Form A) and/or the Grant Application Form (Form C);
- Submit their application.

Once submitted through the [InTouch+](#), the application, together with the auto-generated form(s), will be transmitted automatically to the required authority for approval. If approved, the application, together with the applicable form(s), will automatically be sent to the IAEA through the online platform.

For additional information on how to apply for an event, please refer to the [InTouch+](#) Help page. Any other issues or queries related to [InTouch+](#) can be sent to InTouchPlus.ContactPoint@iaea.org

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial 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. The IAEA may also use the contact details of Applicants to inform them of the IAEA's scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA. These secondary purposes are consistent with the IAEA's mandate. Further information can be found in the [Data Processing Notice](#) concerning IAEA [InTouch+](#).

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

G. Papers and Presentations

The IAEA encourages participants to deliver brief presentations (approximately 20 minutes) on the status and results of NDE, ISI and OLM activities in their respective countries, including information on the methods, techniques and approaches used for implementation.

Participants who wish to give presentations at the event are requested to submit an abstract of their work (maximum 300 words) and complete the Form for submission of a Paper (Form B).

The abstract and the signed copy of Form B must be uploaded at [InTouch+](#) as supporting documents of the event selected and send to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **2 October 2026**. Authors will be notified of the acceptance of their proposed presentations by **15 October 2026**.

H. Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made clear indicating in the corresponding box at [InTouch+](#), and should be submitted together with the application, by **2 October 2026**.

I. Venue

The event will be held at the Vienna International Centre (VIC), where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page: www.iaea.org/events.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

J. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

K. Reference and Publications

IAEA documents containing useful information related to OLM are as follows:

- 1) On-line Monitoring of Instrumentation in Research Reactors (IAEA-TECDOC-1830, Vienna, 2017).
- 2) Advanced Surveillance, Diagnostic and Prognostic Techniques in Monitoring Structures, Systems and Components in Nuclear Power Plants (IAEA Nuclear Energy Series No. NP-T-3.14, Vienna, 2013).
- 3) On-line Monitoring for Improving Performance of Nuclear Power Plants, Part 1: Instrument Channel Monitoring (IAEA Nuclear Energy Series NP-T-1.1, Vienna, 2008).
- 4) On-line Monitoring for Improving Performance of Nuclear Power Plants, Part 2: Process and Component Condition Monitoring and Diagnostics (IAEA Nuclear Energy Series No. NP-T-1.2, Vienna, 2008).
- 5) Condition Monitoring and Incipient Failure Detection of Rotating Equipment in Research Reactors (IAEA-TECDOC -1920).

IAEA documents containing useful information related to NDE and ISI are as follows:

- 1) Safety of Research Reactors, IAEA Specific Safety Requirements, SSR-3, 2016.
- 2) Training Guidelines in Non-destructive Testing Techniques (IAEA-TECDOC-628/Rev. 3, Vienna, 2013).
- 3) Training Guidelines in Non-Destructive Testing Techniques: Manual for Visual Testing at Level 2 (IAEA Training Course Series No.54, 2013).

- 4) Training Guidelines in Non-destructive Testing Techniques: Leak Testing at Level 2 (IAEA Training Course Series No.52, 2012).
- 5) Non-Destructive Testing: Sample Questions for Conduct of Examinations at Levels 1 and 2 (IAEA Training Course Series No.45, 2010).
- 6) Ageing Management for Research Reactors (IAEA Safety Standards Series No. SSG-10 (Rev. 1), Vienna, 2023).
- 7) Risk Informed In-service Inspection of Piping Systems of Nuclear Power Plants: Process, Status, Issues and Development (IAEA Nuclear Energy Series No. NP-T-3.1, Vienna, 2010).
- 8) Maintenance, Periodic Testing and Inspection of Research Reactors (IAEA Safety Standards Series No. SSG-81, Vienna, 2023).
- 9) Non-destructive Testing for Plant Life Assessment (Training Course Series No. 26, IAEA, Vienna, 2005).
- 10) Improvement of in-service inspection in nuclear power plants (IAEA-TECDOC-1400, Vienna, 2004).
- 11) Improvement of Effectiveness of in-service inspection in nuclear power plants (IAEA-TECDOC-1853, Vienna, 2018).
- 12) Maintenance, Testing, Surveillance and Inspection in Nuclear Power Plants (IAEA Safety Standards Series No. SSG-74 , Vienna, 2022).
- 13) Application of non-destructive testing and in-service inspection at research reactors (IAEA-TECDOC-1263 (Rev. 1), Vienna, 2025).

L. IAEA Contacts

Scientific Secretaries:

Mr Sumanth Panyam

Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100, 1400 VIENNA, AUSTRIA
Tel.: +43 1 2600 21558; Fax: +43 1 26007
Email: S.Panyam@iaea.org

Mr Abdelfatah Ibrahim

Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100, 1400 VIENNA, AUSTRIA
Tel.: +43 1 2600 24463; Fax: +43 1 26007
Email: A.Ibrahim@iaea.org

Administrative Secretaries:

Ms Reena Thottakkara

Research Reactor Section
Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy

International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 Vienna, Austria
Tel.: +43 1 2600 22755
Fax: +43 1 26007
Email: R.Thottakkara@iaea.org

Ms Nisansala Nath-Sirimalwatta
Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100, 1400 VIENNA, AUSTRIA
Tel.: +43 1 2600 25809; Fax: +43 1 26007
Email: n.nath-sirimalwatta@iaea.org

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

Forms:

Participation Form (A), Form for submission of a Paper (B) and Grant Application Form (C) - Via Intouch+ Platform