

## 6th National Conference on Reliability and Safety

Amity Institute of Nuclear Science & Technology, Amity University Uttar Pradesh, and Society for Reliability and Safety (SRESA) jointly organised the 6<sup>th</sup> National Conference on Reliability and Safety at Amity University Uttar Pradesh, Noida Campus during 20-21 March 2025.

The theme of the conference focussed on evaluation of safety and security infrastructure of complex facilities like nuclear power plants, chemical industries, healthcare and space exploration agencies. These are entities which have multiple systems working together and requiring highest reliability and quality of operations. The conference caters to latest developments in the research and industry to ensure our systems are available and safe in their operations.

### Motivation for the event

Catering to the present times wherein the need for clean and green energy, affordable healthcare and innovative and disruptive technologies is the need of the hour, the conference brought some solutions to the societal issues in terms of better structures, systems and optimized solutions, for instance with utilization of machine learning and deep learning applications. These catered to the UN SDGs number 3 for augmenting efficient healthcare technology with relevant quality and safety imbibed. Industries like space, nuclear, medicine and manufacturing joined in bringing out innovative and sustainable solutions (SDG 7 and 9). Since the major applications are in manufacturing, space, healthcare, and nuclear industry this would also support the development of SDG no. 12 and 13.

### Event Objectives:

The conference brought together subject matter experts, policy makers, academicians, researchers and industry personnel working in the area of risk assessment, management, reliability and quality assurance. The conference aimed to enhance the understanding and implementation of reliability and safety principles across different sectors, ultimately contributing to safer and more reliable systems and processes.

The following are a few objectives:

1. Providing a platform for researchers, engineers, and practitioners to share their latest findings, innovations, and best practices in the field.
2. Facilitate interactions and collaborations among academics and industry experts to foster partnerships and exchange ideas.
3. Discussions regarding the development and application of advanced technologies and methodologies for improving reliability and safety in important industries.
4. Opportunity to explore risk-based approaches and probabilistic safety assessments to manage complex systems such as nuclear plants, space and aviation systems, transportation, and software systems.
5. To encourage students and researchers to submit research papers for publication in conference proceedings and journals, contributing to the body of knowledge in the field.

## Brief Overview of the conference

The conference developed collaborations and exchange of ideas between researchers, academicians and industry partners. The program included one Keynote address



by Dr. D K Aswal, Group Director, Health Safety and Environment Group (HS&EG), Associate Director, Medical Group, and Director, National Radiation Emergency Response (Department of Atomic Energy, Government of India). Bhabha Atomic Research Centre (BARC), Mumbai, seven invited talks from subject matter experts



and 26 contributory papers presentation from young and experienced researchers.

The keynote address focussed on the sustainability of sun being the most reliable source of energy generation and the way fusion power is being exploited on the commercial scale. The audience comprised of university under graduate and doctoral students (from Amity

University, University of Delhi and Lajpat Rai College in Delhi NCR and school students from Amity Schools in Delhi NCR. There were approximately 100 people who attended the lecture.

The invited talks focussed on reliability and risk management for critical facilities like nuclear power plants, and their developing fleet, human reliability, emergency preparedness and response to the threat landscape, communication systems and the latest technological advancements in the area of Chemical, biological, radiological and Nuclear (CBRN) Threat detection and identification. Some of the renowned Department of Atomic Energy(DAE), Defense Research Development Organization (DRDO) and academicians from Indian Institute of Technology (IIT) were invited for the talks.



The invited talk speakers are as follows:

1. Dr. Umasankari Kannan, Former Head, Reactor Physics and Design Division, BARC. Professor Homi Bhabha National Institute
2. Shri. S K Gupta, Former Director, Safety Analysis and Documentation Division Atomic Energy Regulatory Board
3. Prof M Saibaba, Visiting Professor, National Institute of Advanced Studies. Former Director, Resources Management Group, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, DAE.
4. Prof (Dr.) Rakesh Kumar Sharma, CEO, Center for Disaster Preparedness, Recovery & Research, and Founder President, CBRN Warriors India Foundation. Former Pro-Chancellor, SGT University, Gurugram, Former Vice-Chancellor, SIMATS, Chennai, and Former Director, DRDO-DFRL, Mysore
5. Dr. Debabrata Datta, Joint Director, Research and Development Department of Information and Technology, Heritage Institute of Technology, Kolkata. Former Head Radiological Physics & Advisory Division, Bhabha Atomic Research Centre, Mumbai
6. Dr. S. Dharmaraja, Professor and Former Head, Department of Mathematics, Indian Institute of Technology Delhi
7. Ms. Kritika Kaur, Area Sales Manager, Thermofisher Scientific

The other exciting aspect of the conference were contributory papers by young researchers, from various universities. Their work was highly appreciated and encouraged by the

experts.

Students

from



IIT Indore, Mahindra University, Pimpri Chinchwad College of Engineering, Pune, Dwarkadas J. Sanghvi College of Engineering (Mechanical Department) and Amity University presented their work to seek feedback and guidance from experts. Scientific officers from Indira Gandhi Centre for Atomic Research, Bhabha Atomic Research centre, Atomic Energy Regulatory board and Vikram Sarabhai Space centre presented their work.



Another interesting aspect of the conference was the session by industry leaders and their representatives. Since this was sponsored by our industry partners a dedicated speaking slot was provided to brief about their institutions and opportunities available for collaboration. Following are the details of the industry experts who joined for the session:

- a. Ms. Kritika Kaur, Area Sales Manager – RMSI, Thermofisher Scientific
- b. Mr. Sonam Soumyashree, Marketing Communication Specialist, CAD MSD Marketing



- c. Mr. Tarush Jain, Director, SARU Smelting
- d. Mr. Gokul Kumar, Sales Specialist, AMETEK-ORTEC India
- e. Ms. Saily Varde, COO ERAMC
- f. Mr. Vinay Shukla, RSO ACEDS Pvt. Ltd.

The valedictory was graced with the presence of Prof. Dr. Surya Parkash, Head Geohydrometeorological Risks Management Division, CBRN Industrial and Cyber DRR Division, National Institute of Disaster Management, MHA, Govt. of India. The rich experience of the guest in responding to CBRN threats and response planning was highly appreciated by the audience.







## Details of Collaborators /Partners / Sponsors

This conference was supported by the Atomic Energy regulatory Board (AERB), Department of Atomic Energy Mumbai, in both technical and financial aspects.

The following firms and agencies sponsored the conference. There was a dedicated industry session for professionals to portray their expertise and competencies. The industry leaders gave a glimpse of their firms and further demonstrated the employment opportunities and collaborative projects possible.

- a. Sponsors
  - i. **Advance Tech controls Pvt. Ltd**
  - ii. **Thermofisher Scientific**
  - iii. **SARU Smelting**
  - iv. **AMETEK-ORTEC India**

## Outcomes:

a) Learning Outcomes:

S.No.	Outcomes	Status
1	Foster enhanced collaboration and idea-sharing between emerging scholars and industry leaders for development of safe and secure technologies in all sectors of application. (SDG 3 and 7)	Achieved to a good extent. There were almost 40% student presentations which were highly appreciated

2	Get insights into the latest technological developments taking place in industry and academic research. (SDG 7). This also opened avenues for joint research.	Industry session contributed to the achievement of this outcome. Faculty shall discuss the further course of action
3	Create visibility and advertise for the nuclear security facility at AINST to attract users for the facility and spread the information about safety of nuclear facilities.	Experts and participants were enlightened about the laboratory facility and motivated to use these for their research work.
4	Create possibility for interaction with leading academicians and seek guidance for further studies	Ongoing work.



b) Operational Outcomes:

S.No.	Outcomes	Status
1	Explore possibility for industry led assignments and projects	In consideration and discussions
2	Interaction with experts for seeking mentorship from senior researchers. (SDG 4)	Some students got the opportunity to share their research and seek further guidance for improvement

3	Explore possibility for collaborative activity with leading academic institutions like IITs.	In process
4	Employment and internship opportunities for AINST students	Industry partner assured of involving our students for projects and also depicted interest in taking up collaborative research projects.
5	Invitation to senior speakers for Guest/expert lectures	Few invited speakers agreed for delivering expert lecture for AINST students.
6	Joint /collaborative activity with Speakers and their organizations	Preliminary MoU is under consideration with one firm and shortly we will be taken up specialised CBRN mitigation trainings.

#### Future course of action:

- Long-term collaborations and associations are planned with our industry partners, and we shall involve them in further events and activities also.
- Further training and workshops will be organized with the experts identified at the conference.
- Students seek guidance from industry leaders for advanced studies and employment opportunities.
- Speakers to be contacted for expert sessions during the semester.
- Industry to support joint research projects at AINST.

