

HKIE Nuclear Division - Annual Report of Session 2025/26

The global nuclear industry is entering a renewed phase of strategic growth, driven by the accelerating demand for low-carbon, reliable, and large-scale energy solutions. China continues to play a pivotal role in this transformation, with sustained deployment of new large-scale nuclear power plants, rapid standardisation of advanced Generation III reactors, and growing momentum in the development of Small Modular Reactors (SMRs) to support flexible, distributed, and diversified energy applications. In parallel, major advances in nuclear fusion engineering—particularly in superconducting tokamaks, plasma confinement, materials science, and control systems—are steadily moving fusion from experimental research toward long-term engineering realisation.

Despite these encouraging developments, the nuclear engineering profession faces persistent challenges. Public understanding of nuclear technology remains limited, with misconceptions surrounding safety, radiation, and waste management continuing to influence perception. Meanwhile, as nuclear engineering is established as a new and evolving discipline within the Institution, the Nuclear Division currently operates with a relatively small membership base, constraining capacity for outreach, professional exchange, and broader influence.

Against this backdrop, the Division affirms its core mission: to educate members, students, and the public through accurate, balanced, and fact-based dissemination of nuclear engineering knowledge. This includes nuclear power generation, safety systems, radiation protection, medical and industrial applications, emergency preparedness, and emerging technologies such as SMRs and fusion. Strengthening professional literacy and public confidence remains essential to the sustainable development of the nuclear sector.

Looking forward, the Division recognises that the future of nuclear engineering is inherently multidisciplinary and system-driven. Modern nuclear projects integrate not only reactor physics and thermal-hydraulics but also digital systems, structural design, safety engineering, radiation science, medical physics, and complex project integration. The Division, therefore, aspires to build an open, inclusive, and future-ready professional community by welcoming practitioners with backgrounds in medical physics, radiation science, mechanical, electrical, civil, and systems engineering who possess relevant nuclear-related experience and competence. By bringing together diverse expertise, the Division seeks to foster innovation, strengthen technical depth, and better reflect the expanding role of nuclear technology across energy, healthcare, safety, and advanced engineering systems.

To support this vision, the Division will actively pursue collaboration with other professional

disciplines, academia, industry partners, and overseas bodies, while expanding both the quantity and diversity of Continuing Professional Development (CPD) activities. Technical seminars, interdisciplinary talks, site visits, student engagement, and joint professional events will form the foundation of this effort, enabling knowledge exchange and professional growth across traditional boundaries.

Through education, collaboration, and sustained engagement, the Nuclear Division aims to grow its membership, enhance professional relevance, and position itself as a trusted platform for nuclear engineering excellence—supporting both the profession and society as nuclear technology continues to evolve.

During this session, we have continued our mission to promote nuclear technology among members, students, and the public through the following technical visits, seminars, mentorship activities, and outreach events.

Technical Visit to EAST (Hefei)

A technical visit to the Experimental Advanced Superconducting Tokamak (EAST) in Hefei gave participants a first-hand look at the world's first fully superconducting tokamak, deepening their understanding of nuclear fusion and China's independent development of this experimental device.

Mentorship Programme Reception – CityU

The division hosted a mentorship programme reception in collaboration with City University of Hong Kong, where industry supervisors met with students to provide guidance on career pathways for nuclear engineers both locally and internationally.

Technical Visit to CNPEC – Nuclear Intelligent Construction & Safety Technologies

A visit to China Nuclear Power Engineering Co., Ltd. (CNPEC) focused on nuclear intelligent construction and safety technologies. As a core enterprise of the China General Nuclear Power Group, CNPEC showcased its role managing the full lifecycle of nuclear power projects, with particular emphasis on the independently developed ICS 3.0 Digital System that serves as a smart construction platform for modern nuclear facilities.

Technical Visit to Daya Bay Nuclear Power Station

Participants toured the Daya Bay Nuclear Power Station, exploring the Daya Bay Nuclear Power Science and Technology Museum. A highlight of the visit was the 1:4 scale model of the “Hualong One” nuclear island and turbine hall, which illustrated the design and scale of contemporary nuclear power units.

Technical Seminar – “A Fukushima Story”

The division organized a technical seminar entitled “A Fukushima Story,” which examined the causes and consequences of the Fukushima Daiichi accident, the global response that followed, and the ongoing local recovery measures.

Talk on Nuclear Emergency Preparedness

A dedicated talk on nuclear emergency preparedness covered essential principles, frameworks, and practical challenges associated with protecting public health, minimizing environmental damage, and ensuring coordinated action during radiological crises.

CityU Student Project Competition – Launch & Related Seminars

To foster the next generation of nuclear engineers, the division launched the City University of Hong Kong Student Project Competition, accompanied by related seminars that allowed students to present innovative research and practical solutions, while receiving feedback and encouragement from professionals and the wider community.

Public Engagement Initiatives

Beyond these core activities, the Nuclear Division engaged the public at events such as InnoCarnival and the Hong Kong Engineers Week Carnival, where booths featured interactive demonstrations, posters, and hands-on activities highlighting nuclear applications in medicine, energy, and industry, as well as nuclear safety concepts.

The division extends its sincere appreciation to all speakers, hosts, guides, volunteers, committee members, and participants whose contributions made the session’s activities

successful.

Members and interested parties can stay informed about upcoming events, access resources, and provide feedback by visiting the division's website at <http://ne.hkie.org.hk> or by emailing nuclear@ne.hkie.org.hk.