

Founder's Day
Thursday, October 30, 2025
Venue: Bhabha Atomic Research Centre
Address by
Dr. A. K. Mohanty
Secretary DAE & Chairman AEC

Respected Seniors, Dear Colleagues, Ladies & Gentlemen,

I extend a warm welcome to you all on the occasion of 116th birth anniversary of Dr. Homi Jehangir Bhabha.

As we all know, Dr. Bhabha was the founding director of TIFR and the founding director of the Atomic Energy Establishment, Trombay (AEET) which is now named Bhabha Atomic Research Centre in his honour. He was a scientist, an engineer and an artist who was bestowed with a very deep understanding of these fields. He was a polymath, a visionary, an implementer and an institution builder who chose to take up atomic energy as his calling and mission for life. He not only dared to dream but took steps to realise these dreams, much ahead of his time. The best example of this is the fact that today while the whole world is focusing on critical minerals and rare earths, he thought of it more than 75 years ago and laid emphasis on preserving our beach sand minerals. It is indeed worth

mentioning that "Atma-Nirbhar-Bharat" and "Make in India" were integral to Dr Bhabha's actions and vision.

The announcement of "Nuclear Energy Mission" in Union Budget 2025-26 is a befitting act-of-honour to this great son of soil. Our true homage to Dr. Bhabha will be a resolve to collectively rise to this occasion as a nation and achieve the targets set out in the Mission, over the next 2 decades.

Dear Colleagues,

With that hope and ambition, I will now go through the many achievements of DAE since the celebration of Founder's Day last year.

I will start by highlighting the achievements in our Nuclear Power Programme. The leading DAE institutes which contribute towards nuclear power production in our country are AMDER, UCIL, NFC, HWB, ECIL, NPCIL, BHAVINI, BARC & IGCAR.

1. NFC has successfully developed the technology for production of high Residual Resistivity Ratio Niobium ingots and sheets. This material is a critical material required for a range of advanced accelerator programs and is aimed at strengthening India's capabilities in nuclear energy, materials research and critical applications.

2. The loading of fuel through an alternate route into India's first Prototype Fast Breeder Reactor (PFBR), Bhavini, began on 18th October this year. On the same day, the Fast Breeder Test Reactor which is the flagship reactor for the 2nd stage of our Nuclear Power Program, completed 40 years of safe and successful operation.
3. Hon'ble Prime Minister has laid the foundation stone for 4 units of 700 MWe PHWR at Mahi Banswara NPP in Rajasthan on 25th Sept, 2025. This project will be executed by the NPCIL-NTPC JV, named ASHVINI.
4. First two units of the indigenous 700 MWe PHWR at Kakrapar, Gujarat (KAPS – 3 & 4) have received AERB license for regular operation. Rawatbhata Atomic Power Project (RAPP) Unit 7 – the 3rd indigenous 700 MWe PHWR in a series of 16 sanctioned reactors, has started commercial operation on April 15, 2025.
5. For fulfilment of the Nuclear Energy Mission of India, the design and development of different reactor systems such as BSMR-200, SMR-55 and HTGCR is being pursued vigorously. Along with these, project proposals of IPR and HFRR research reactors are in advanced stage.
6. In the area of high level radioactive waste management, a new vitrification unit, AVS-3, has been successfully completed and hot commissioned at Tarapur, which incorporates advanced off-gas treatment systems and implementation of roll-in-roll-out concept for Joule Melter. In a separate development, BARC has

developed and demonstrated the operation of a 25 kW all copper, hollow cathode, reverse polarity thermal plasma torch, which could be useful in active waste incineration.

7. Towards the 2nd stage of Nuclear Power Program, a large experimental sodium test facility has been commissioned at Sodium Technology Complex, IGCAR in June, 2025. This facility is to be used as test bed for improving and optimizing the design concepts and providing inputs for the design of future FBRs. ALSO, In-Principle approval for Fast Breeder Test Reactor – II (FBTR-II) has been obtained, whose major objective is to test metal fuels for next-gen FBRs.

In the field of health care, DAE continues to contribute to the indigenous development, commercialization & supply of therapeutic/ diagnostic radiopharmaceuticals and Cancer Care. These activities are being pursued at BARC, BRIT, VECC, TMC and also HWB.

1. The 150-bed Homi Bhabha Cancer Hospital and Research Centre, Muzaffarpur, Bihar, was inaugurated by the Hon'ble Prime Minister of India on 22.08.2025.
2. HWB is regularly supplying Deuterium Depleted Water (DDW) of around 125 ppm deuterium in domestic market to healthcare industries. HWB has successfully produced, O-18 water, which has got clearance from the Radio Pharmaceutical Committee.

This compound is being supplied to RMC, Mumbai and VECC, Kolkata through BRIT.

3. A novel therapeutic intervention, ^{177}Lu -DOTA-FAPI-2286 Therapy, and five new diagnostic interventions with enhanced precision have been introduced, which are being offered in routine clinical practice, thereby enhancing the scope of patient care. The technology for isotopic separation and enrichment of ^{176}Lu was successfully demonstrated in the indigenous Electromagnetic Isotope Separation Facility.
4. A High-Intensity Gamma Irradiator with Category II type design, ISOMED 2 was completed in May 2025 to serve healthcare industry for terminal sterilisation of healthcare products. ISOMED 2.0 is the only High Intensity Land Based Stationary Gamma Irradiator in the world today with Category II design.

Dear Colleagues,

We continue to prioritise our basic and directed research and our scientists are delivering on several front-end research areas. Few achievements are as follows.

1. High-performance reinforced green concrete with fly ash and nanoparticles of CaCO_3 and TiO_2 were developed at IGCAR for nuclear power plants in coastal environments. This concrete inhibits the ingress of aggressive chlorides and showed no

- significant corrosion degradation even after one year of exposure to seawater.
2. For the first time, NFC, in collaboration with BARC & ARCI, has developed a process for hot extrusion of a 12CrFeAl alloy rod of 18mm dia. using the powder metallurgy route for manufacture of Accident Tolerant Clads.
 3. Capsules containing Yttria pins and Strontium pellets, irradiated at FBTR, were reprocessed for extraction of Strontium-89 (Sr-89) and Phosphorous-32 (P-32) radioisotopes. P-32 is being produced for the first time in FBTR. Also, recovery of Neptunium-237 from the PUREX process stream has been successfully demonstrated.
 4. IMSc researchers have developed a simple, intuitive, and highly accurate growth model using the Gompertz formula to predict the weight of a newborn. The model requires only four standard foetal measurements from at least three routine ultrasound scans. This breakthrough allows for the early detection of foetal weight deviations linked to risks of neonatal complications and stillbirth, enabling timely clinical interventions.
 5. The first run for the dark matter direct search experiment, Indian Dark matter search Experiment (InDEx) has been initiated by SINP at the Jaduguda Underground Science Laboratory to explore the low mass region of dark matter.

Next sector where DAE institutes are making their presence felt is in high technology areas such as particle accelerators, laser, plasma, cryogenic, quantum, space applications, fusion, internal as well as cyber security etc. and are contributing in each and every aspect of it, starting from critical minerals and rare earths to advanced materials, technologies & systems. DAE units belonging to Industry & Mineral Sectors (both PSUs and Industrial Organizations), supported by R&D centres have contributed significantly.

1. Towards Internal Security, ECIL has successfully developed, integrated and installed Chemical, Biological, Radiological and Nuclear (CBRN) System for protection from threats at vital installation. Also, first production module for

Akash-Prime system, capable of 360° engagement of multi directional attacks from enemy aircrafts / drones, have been integrated.

2. Samarium-Cobalt magnets produced at Rare Earth Permanent Magnet facility in BARC Campus, Vizag have been supplied to end user for acceptance test & performance level trials on end use component.
3. BRIT has launched ROTEX-I, India's first tungsten-shielded, Iridium-192-based industrial radiography device, and COCAM-A – a Cobalt-60 based Radiation Exposure Device, approved as

Type-A radioactive material transportation package. Both the devices find wide ranging applications across chemical industry, energy sector, aerospace sector, nuclear industry, and defence sector.

In application of radiation-based technologies for Agriculture & Food Preservation, work is being done at BARC and the positive impact that it is now being recognised by various stakeholders in the country. I will also touch upon on the progress made as spin-offs and technology transfer from non-power applications of nuclear energy for societal benefits like water treatment, waste management, post-harvest cold chain, etc. BARC, IPR, IGCAR, RRCAT and UCIL are making steady progress in this area.

1. An early maturing mutant banana variety – TBM-9 has been developed and notified in collaboration with National Research Centre for Banana (NRCB), Trichy. An early-maturing Sorghum mutant-variety, with 15-20% higher grain yield, RTS-43, was gazette notified. These has taken the number of varieties released by BARC to 72. Apart from this, 6 previously released BARC oilseed varieties have been now extended for cultivation to additional states.
2. 17 MoUs were signed for setting up gamma radiation processing facilities in private and state government sectors and 6 such facilities were commissioned during this period, taking

the total number of such facilities operating in the country to 40. BRIT is supporting these facilities by supplying Co-60 sources and establishing the plant operational parameters.

3. UCIL has successfully developed an in-house chemical treatment method to address the challenge of decontamination of mine water at the Tummalapalle underground mine. In this process sulphuric acid, barium chloride, lime and phosphoric acid are used to remove uranium and radium effectively from mine water, ensuring environmental safety and sustainable operations.

Considering all these achievements, it is not surprising that quite a few National & International accolades have been bestowed upon the DAE fraternity – both in organizational and individual category. I would like to share some of these recognitions with you.

1. Dr. S. M. Yusuf, Director DAE-CEBS has been awarded the prestigious Vigyan Shree award this year.
2. Dr. S. M. Yusuf, DAE-CEBS and Dr. D. K. Tyagi , HBNI have been awarded the UNESCO fellowship of The World Academy of Sciences (FTWAS) 2025, Dr. Yusuf has also been elected as a fellow of the Indian National Academy of Engineering (INAE) 2025.
3. Dr. Aradhana Srivastava from BARC and Dr. Mythili Ramasamy from ICTS, TIFR Hyderabad have been awarded the INSA

fellowship while Prof. Sanjib Kumar Agarwalla from IoP has been elected as the Fellow of National Academy of Sciences, India (NASI), Prayagraj

4. Smt. Sonia Kapoor, Headmistress, AECS-2 Mumbai has been conferred the National Award for Teachers 2025 by the Honourable President of India, a recognition that shines as a testament to the excellence of our faculty.
5. On the occasion of Hindi Diwas on September 14, DAE has been awarded the Rajbhasha Kirti Puraskar for the second consecutive year.
6. Indian students, mentored by TIFR, have registered stellar performances at the 5 International Olympiads in Biology, Mathematics, Physics, Chemistry and Astronomy & Astrophysics.
 - a) At the 57th International Chemistry Olympiad (IChO) held in Dubai, UAE, from July 5 to 14, the team secured 2 Gold and 2 Silver medals.
 - b) At the 55th International Physics Olympiad (IPhO) held in Paris, France, from July 18 to 24, the Indian team secured 3 Gold and 2 Silver medals.
 - c) The 36th International Biology Olympiad (IBO), held in Quezon, Philippines, from July 20 to 27, saw India win 2 Gold and 2 Silver medals, further demonstrating their scientific excellence.

- d) In the 66th International Mathematical Olympiad (IMO), hosted at Sunshine Coast, Australia, from July 10 to 20, the Indian team secured 3 Gold, 2 Silver, and 1 Bronze medal.
- e) Finally, at the 18th International Olympiad on Astronomy and Astrophysics (IOAA), held in India this year and hosted by TIFR, the team achieved an exceptional performance, winning 4 Gold and 1 Silver medal.

While our scientists, technologists, engineers and teachers continue their efforts to deliver their best, the families of our colleagues have also been making us proud. It is always a feeling of immense joy to share some of those achievements.

1. Five students of Std IX & X from AECS Mysuru, OSCOM & Rawatbhata have presented their projects and got selected for INSPIRE-MANAK Awards 2024–25, constituted by Department of Science & Technology.
2. In the true spirit of Sab-ka-Vikas, AEES takes pride in its Societal Enrichment & Education Programme (SEEP), by extending quality education to economically disadvantaged children from rural and tribal areas surrounding project sites. Currently operational at nine centres, the program supports 958 students, offering them free education and additional facilities to empower their academic journey.

To create an enabling environment towards effective functioning of all our units, DCSEM, DPS and GSO have not only continued to support, facilitate and augment the department's infrastructure but have also efficiently managed real estate and maintained the landscape and biodiversity in all the DAE campuses. Community infrastructure like New CRECHE and Extension to Indradhanush cultural centre has been augmented, besides several official & residential buildings. Steps have also been taken to enhance patient care for our employees. In BARC hospital, a modern operation theatre complex, equipped with advanced surgical facilities, including the ability to perform complex cardiac procedures, has been commissioned.

At the end, I would like to thank all the members of our Scientific & Technical; Administration & Security and last but not the least, health care professionals, who are working hand-in-hand round the clock and bringing in all possible efforts, in making the program of the Department a success.

Dear Colleagues,

Before concluding, I would like to reiterate that the nation has awoken to the potential of atomic energy and it's far reaching positive impact on the society. This puts the program of the Department on an accelerated track. I would like to urge all the

members of DAE family to stand up to the occasion in all possible ways and work with dedication to make country's Nuclear Power Program a resounding success. There can be no better day than today's occasion to renew our oath and rededicate ourselves to the high values and standards, which Dr Bhabha had practised throughout his life.

At the end, I once again extend my good wishes to all members of DAE and their families on this august occasion.

Jai Hind.