# Founder's Day

**Friday, October 30, 2026**

**Venue: Bhabha Atomic Research Centre**

***Address by***

## Dr. A. K. Mohanty, Secretary DAE & Chairman AEC

Respected Seniors, Dear Colleagues, Ladies & Gentlemen!

It is my great privilege to stand before you and address on the occasion of Founder's day remembering Dr. Homi Jehangir Bhabha on his 117$^{th}$ birth anniversary. An extraordinary scientist, brilliant engineer, a passionate artist, a visionary administrator and a nation builder who recognised much ahead of his time, that scientific and technological self-reliance, also called "*Atmanirbharata*" would be fundamental to India's progress. His vision laid the foundation of many institutions including TIFR and BARC that have over the decades, expanded into a symbol of scientific excellence, technological capability and national security.

Dr. Bhabha's extraordinary and futuristic vision of the three stage Indian nuclear power program which was adopted by Indian Government as early as 1958, a strategy with closed fuel cycle and thorium utilisation stood in marked contrast to all other countries in the world.

Today India has achieved a major milestone in the second stage of its program with the attainment of first criticality of the 500 MWe Prototype Fast Breeder Reactor at Kalpakkam, making India the second country in the world to operate a breeder reactor at the commercial scale once connected to the grid by early next year. As India is advancing towards the goal of a Viksit Bharat by 2047, Dr. Bhabha's vision acquires renewed significance with the announcement of Government of India to achieve 100 GW of nuclear power by 2047 and with the passage of a historic reform "The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming

India"- the SHANTI Act 2025 that allows private participation for the accelerated expansion of the nuclear energy program in India.

Dear Colleagues, I will now go through some of the achievements of DAE during last one year.

**Nuclear Power Program:**

India's nuclear power program has progressed with the advancement of indigenous 700 MWe reactors, important milestones in the fast reactor program and continued progress towards advanced reactor systems including small modular and high-temperature gas cooled reactors.

As you know, at present NPCIL is operating 24 Nuclear Reactors with an installed capacity of 8780 MW comprising of 2 BWRs, 20 PHWRs and 2 LWRs. With the addition of another 18 reactors which are at various stages of construction and installations, the total power will reach up to 22.38 GW by 2032. Another important milestone has been the extension of the operational life of TAPS-1&2, the world's oldest operating BWRs by another 10 years following the successful completion of two major refurbishment activities which are very complex in nature, thus reflecting the department's strong engineering and technical excellence.

- NPCIL has achieved continuous operations for more than a year 54 times which shows the professionalism of NPCIL for safe and reliable operation of all its reactors.
- The average Plant Load Factor of the currently operational fleet of reactors have registered a remarkable level of 89% in the ongoing financial year in spite of the fact that two of the reactors (RAPP Unit-1 and MAPS Unit-1) are non-operational.
- RAPP Unit-8 is in an advanced state of commissioning with the beginning of Initial Fuel Loading and is expected to attain criticality in the current financial year.
- The construction of the Kaiga-5&6 units, which are part of the first fleet of 10 x 700 MWe PHWRs, commenced with the 'First Pour of Concrete' on March 1, 2026, after obtaining AERB clearance. The construction of Kaiga-5&6 is being executed through a first-of-its-kind EPC contract.

- First Pouring of Concrete for the Emergency Core Cooling System (ECCS) pit of the Nuclear Building - 01 commenced on August 14, 2026, at the Gorakhpur, Haryana GHAVP Units 1&2.
- KKNPP unit -2 has set a new benchmark with a record 56 day of refueling shutdown. KKNPP unit-3 has reported various commissioning milestones, and the KKNPP unit-4 has reported accomplishment of crucial construction milestones, setting new benchmarks.
- In the 2nd stage of nuclear power generation, fuel loading in the 500 MWe PFBR employing alternate fuel handling method was completed on 25th March 2026 and first criticality on 6th April 2026. Low power physics experiments to validate design parameters have been completed. Raising of power in steps towards synchronization to grid and full power operations will be done post regulatory clearance.

It is important to mention here that the enriched boron is supplied by HWB, fuel pins are fabricated at NRB, Fuel bundles are fabricated at the Intermediate Fuel Storage facility at Kalpakkam by experts from NFC and reactor components are supplied by Indian manufactures. Thus, making the PFBR program completely indigenous.

- Further possible capacity addition through development / deployment of BSRs which are PHWRs with 220 MWe capacity, Bharat Small Modular Reactors of capacity 220 Mwe / 300 MWe, twin unit of 55 MWe Small Modular Reactors and 5 MWth High Temperature Gas Cooled Reactors is also in progress.
- In alignment with national clean energy goals, the Copper–Chlorine Thermo-chemical Cycle for hydrogen production developed by BARC was integrated with the secondary sodium heat loop of Fast Breeder Test Reactor and successfully commissioned, marking the first successful production of green hydrogen employing nuclear heat in the world. This achievement marks a pioneering technological breakthrough and opens a promising pathway for large-scale, carbon-free hydrogen production using advanced nuclear reactors. This facility was operated round-the-clock at the nominal design capacity (50 N L/h hydrogen), clocking total ~85 hours of operation.

- AMDER has continued sustained exploration in augmenting in-situ Uranium Oxide ($U_3O_8$) in the states of Andhra Pradesh, Jharkhand and Rajasthan.

- A highly cost-effective and sustainable approach to augmenting indigenous uranium production by recovering uranium from existing copper tailings has been initiated by UCIL for uranium recovery at the proposed Mosabani Uranium Recovery Project (MURP) by securing an agreement with Hindustan Copper Limited to supply copper tailings.

- A total of 70,450 t in situ Rare Earth Oxide (REO) resource has been augmented in hard rock terrains of Rajasthan, and country's total in situ RE-oxide resource is updated to 1.36 million tonnes.

- Nuclear Fuel Complex produces and successfully meets the requirement of fuel bundles required to support the reactors which are currently operational. NFC-Kota, a green field project for production of PHWR Fuel and fuel tubes for 700MWe PHWRs is successfully commissioned on 31.03.2026 and obtained AERB license for operation.

- A modular unit for Metallic Sodium purification to reactor grade for next generation fast reactors with a 24 kA current capacity corresponding to a production capacity of around 150 MT per annum has been inaugurated at HWB Facility at Vadodara, Gujarat in June 2026. The capacity of this facility can be scaled up by multiplying the modular units. By adding 4 to 5 such modular units, the present annual demand of nearly 600 MT of reactor grade Sodium for the fast breeder reactor program can be met indigenously.

- The indigenously established Demonstration Fast Reactor Fuel Reprocessing Plant (DFRP) has successfully completed eight campaigns of limited hot runs for the reprocessing of FBTR spent fuel pins. The consent for regular operation of DFRP from April 2026 to March 2031 has been approved by the regulatory authority.

**Basic and Applied Science:**

Now I draw your attention towards our progress in the field of basic and applied sciences.

- MACE telescope - the Major Atmospheric Cherenkov Experiment Telescope, which is the largest gamma ray telescope in Asia and the second largest gamma ray telescope in the northern hemisphere, has detected strong gamma-ray flares from a distant galaxy OP 313, which is at a distance of 8 billion light years from earth, suggesting that gamma rays were emitted 8 billion years ago, which is nearly twice the age of Earth. Another detection by the MACE telescope on 19 September 2026 was of a strong, very-high-energy gamma-ray flare from the radio galaxy NGC 1275, which is about 240 million light-years from Earth. These observations help to understand the mysteries of the deep Universe.
- A new project for developing the Stereo-MACE telescope system at Thangchungiri, Hanle, Ladakh with enhanced detection sensitivities of gamma rays from astrophysical sources has been initiated.
- Researchers at TIFR have predicted the most precise mass of the Ωccc baryon, a rare particle made entirely of charm valence quarks and almost 5 times heavier than proton, reinforcing India's growing role in cutting-edge subatomic particle physics research.
- Condensed-matter physics researchers at the Harish-Chandra Research Institute in Prayagraj have demonstrated that positional disorder, often considered a limitation, can be harnessed to engineer localized carrier populations in extended quantum systems.
- HWB has achieved a significant milestone in enrichment of B-11> 99.8% purity (semiconductor grade) at the Boron Exchange Distillation Facility, HWBF-Talcher. The enriched product has been successfully converted into purified enriched Boric acid for subsequent transformation into B-11 enriched $BF_3$ gas. Supply-demand scenario for B-11 enriched compounds is encouraging and under review.

**Nuclear Technology:**

Next sector where DAE institutes are making their presence felt is in high technology areas such as particle accelerators, laser, plasma, cryogenic, and fusion etc.

- Synchrotron radiation sources, Indus-1 and Indus-2 operated in round-the-clock mode for 337 days with average beam availability of ~ 22.5 hr/day in Indus-1 and ~19.2 hr/day in Indus-2. Nearly 1050 user experiments were performed at Indus beamlines by the researchers from pan-India institutions/organizations including 12 users from industries resulting in nearly 200 publications in peer reviewed international journals.

- Development of ultra-pure high Residual Resistance Ratio (RRR) Niobium Sheet in two sizes has been carried out for the first time at NFC for Super Conducting Radio Frequency applications in line with the Aatma nirbhar Bharat initiative of the Department. RRCAT has successfully fabricated a Super Conducting RF cavity, using the sheet supplied by NFC, meeting all technical requirements.

- First iteration of magnetic field mapping was completed for the 18 MeV indigenous Medical Cyclotron MC18 at VECC. Nitrogen ion-beam has been accelerated to energy of 1 MeV/u in the VECC RIB facility and 580 MeV Krypton beam accelerated in the K500 Superconducting Cyclotron and delivered for user experiments.

- The Facility for Research in Experimental Nuclear Astrophysics - FRENA of SINP houses a 3MV tandem accelerator capable of delivering high intensity ion beams at low energies relevant for nuclear astrophysics research. During 2025-26, FRENA ran for more than 7 months, till August 2026 with several beam time experiments performed, as a part of accelerator stability tests as well as addressing nuclear astrophysics problems.

- RF seeker developed by ECIL for Long-Range Anti-Ship Hypersonic Missile, flawlessly acquired and locked onto a designated maritime target over a full 1,500 km range trajectory, providing accurate terminal guidance to achieve pin-point impact strike during a successful trial on 01 May 2026 at Dr APJ Abdul Kalam Island off the coast of Odisha.

- As an in-kind contribution to the 'Proton Improvement Plan-II' project under 'Indian Institutions and Fermilab Collaboration', BARC has delivered cryogenic plant having capacity more than 2 kW to generate super-fluid helium at 2 K temperature for superconducting accelerating structures of linear proton accelerator being constructed at Fermi Lab.

- In May 2026, ADITYA-U Tokamak recorded a breakthrough in plasma operations, with a plasma pulse length of ~0.643 Sec, with improved plasma current flattop in pure Ohmic Hydrogen circular plasmas.

- IPR completed the manufacturing, delivery, and positioning of essential components, fulfilling India's commitment to the ITER project in France.

- A major milestone namely, placing of work order for the construction of Civil and Vacuum infrastructure for the LIGO setup has been done with M/s. L&T on March 5, 2026.

**Science and Society:**

The positive impact of work done by the department in the area of Cancer Care and application of radiation-based technologies for Health Care, Agriculture & Food Preservation etc. are now being recognised by various stakeholders in the country. I will also now touch upon some of these important developments.

- Homi Bhabha Hospital and Research Centre at, Visakhapatnam, a unit of Tata Memorial Centre, achieved a major mile stone by successfully performing India's first Tandem Autologous Stem Cell Transplant for a rare and most aggressive childhood brain tumor on a three-year-old child diagnosed with Embryonal Tumor with Multi-layered Rosettes.

- The Nuclear Medicine community has responded enthusiastically to Bhabhaspheres

- and the indigenously designed dose delivery system for the treatment of liver cancer. Feedback from a Nuclear Medicine physician has highlighted the excellent clinical outcome achieved.

- In a significant milestone for the nation's scientific and industrial progress, HWB has successfully produced, O-18 water of > 97 % O-18 in H2O18 form, which is at par with international quality and satisfactorily accepted for its use in cyclotron for PET scanning by RMC, Mumbai. As per demand, O-18 water is being supplied to RMC, Mumbai and VECC, Kolkata through BRIT.

- A 100 kg per year Oxygen-18 Enriched Water production facility has been successfully set up and inaugurated in January 2026 at Heavy Water Plant (HWP), Manuguru, Telangana. This is India's first facility of its kind, marking an important step towards self-reliance in this critical compound. With this achievement, India joins the elite group of global O-18 producers.

- Tetrofosmin, an organic ligand extensively used for myocardial perfusion imaging in the $^{99m}$Tc-Tetrofosmin radiopharmaceutical was successfully synthesized at BARC as an import substitute. BRIT has launched Cold Kits for clinical use using the in-house developed ligand.

- The production capability of enriched Lutetium-176 (Lu-176) has been doubled. The enriched Lu-176 with >85% purity was produced and used for preparation of 1200 Curie of Lu-177 based radiopharmaceuticals contributing to treatment of approximately 4800 patients across India in the last year.

- The EPC contract for construction of the dedicated Isotope Production Reactor at BARC-Vizag campus, for large scale production of radioisotopes for medical, industrial, and research applications, is in an advanced stage of finalisation.

- The electron LINAC setup by RRCAT at the Agricultural Radiation Processing Facility was operated for nearly 1225 hours for commercial sterilization of nearly 1 Crore medical devices. ARPF is the first facility in India licensed for e-beam sterilization of all risk class medical devices (A, B, C & D).

- Phosphorus-32 (P-32) radioisotope was successfully produced as an import substitute for the first time in Fast Breeder Test Reactor.

- On the Agriculture and food preservation front, seven crop varieties comprising of 1 rice, 2 wheat, 1 sorghum, 2 mung bean and 1 sesame variety, developed by BARC in collaborations with various State Agricultural Universities, have been released and gazette-notified for different states of India, taking the total Trombay crop varieties to 79.

- Two Trombay mutant rice varieties, Vikram TCR and Trombay Chhattisgarh Sonagathi Mutant, together represented approximately 37% of the total indented foundation paddy seeds for the state of Chattisgarh in Kharif 2026, while Maharashtra State Seed Corporation Limited (Mahabeej) sold over 17100 quintals of Trombay seeds in 2025.

- 12 MoUs were signed for setting up gamma radiation processing facilities in private and state government sectors and 4 such facilities were commissioned during this period. Total 41 facilities are operating in India, supported by BRIT, catering to domestic and export requirements for healthcare products, sterilization and hygienization of agro products like mangoes, spices, onions and herbal products.

- Technology transfer licenses for $LiNbO_3$ crystal growth technology, relevant to National Quantum Mission and deep penetrating flux formulation for TIG welding, a patented IGCAR technology were handed over to DeepTech startups on 24 July 2026.

Dear Colleagues,

The year 2026 marks an important milestone as India assumed the position of Chair of the IAEA-Regional Cooperative Agreement (RCA) for Asia Pacific region, in May 2026 after 26 years. India conducted the 48$^{th}$ National Representatives Meeting of the RCA Government Parties at Navi Mumbai from 18$^{th}$ to 22$^{nd}$ of May 2026 which was a well-attended event in which 22 out of the 26 Member Government Parties, AFRA and FNCA participated. It is worth mentioning here that during the current tenure of India as its Chair, RCA expanded its membership base to 27 Government Parties with the admission of Cook Islands.

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. Several of our colleagues became the elected fellows of prestigious national and international scientific and engineering academies like Indian National Science Academy, National Academy of Sciences, Indian Academy of Sciences, Indian National Academy of Engineering, The World Academy of Sciences etc. and also received recognitions from many scientific societies.

- Prof. Ashoke Sen, from ICTS, became the first Indian to be awarded with the prestigious Oskar Klein Medal for 2026.

- Prof. Deepak Dhar, Ex- TIFR Professor was awarded with most prestigious Dirac Medal of ICTP.

- The Town Official Language Implementation Committee - 4 (TOLIC-4) awarded AMD, Hyderabad for the best implementation of Official Language and the Scientific e-Magazine of AMDER, 'Khanij Bharati' was awarded with first prize for the seventh consecutive time for 2024-25 and AMD, Northeastern Region, Shillong was awarded with Rajbhasha Shield as first prize for 2025-26 by TOLIC-1, Shillong.

- ECIL received Best Industry Award 2025 (Gold, Category -II) in DRDO Industry Synergy Meet – 2025 in Nov 2025.

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

- India achieved a golden sweep at the 56th International Physics Olympiad 2026, with all the five students winning Gold medals,

- Best-ever performance at the 58th International Chemistry Olympiad 2026, with all 4 students winning Gold in the first ever all gold haul.

- The Indian team of six contestants excelled at the 67th International Maths Olympiad 2026, winning 2 Gold and 4 Silver medals.

- India performed well at the 37th International Biology Olympiad 2026, with all 4 students winning medals comprising 1 Gold & 3 Silver medals.

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.

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 putting in all possible efforts, in making the program of the Department a success.

Dear Colleagues,

Before concluding, I would like to reiterate that the world has awakened to the potential and indispensability of nuclear power in the overall energy mix profile to meet the ever-growing power demands. DAE is in the limelight which necessitates implementation of the multi-pronged activities 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 the country's Nuclear Power Program a resounding success. Today's occasion is the most appropriate one to renew our oath and rededicate ourselves to the high values and standards, practiced by Dr Bhabha, 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!