



इस अंक में:

- नाभिकीय नारे
- तकनीकी सत्र
- नाभिकीय आंकड़ा
- नाभिकीय समाचार
- शब्द कोश
- आपको मालूम है?
- विशेष आलेख
- नाभिकीय सामान्य ज्ञान

तैयारकर्ता एवं संपादक:

जाशी केबी ,
प्रभारी अधिकारी,
टीएलडी प्रयोगशाला
kbjashi@npcil.co.in

पुनरीक्षणकर्ता :

विजयकुमार बा
प्रभारी अधिकारी, ईएसएल
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संजीव भारद्वाज ,
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जारीकर्ता:

अशोक भाटिया,
स्थल निदेशक,
कुडनकुलम न्यूक्लियर
पावर प्रोजेक्ट

प्रिय पाठकगण ,

सितंबर 2026 ने भारत के नाभिकीय स्पेक्ट्रम में गतिशील प्रगति को चिह्नित किया है। अंतरराष्ट्रीय स्तर पर, माननीय प्रधानमंत्री मोदी की उज्बेकिस्तान यात्रा ने दीर्घकालिक यूरेनियम आपूर्ति व्यवस्था सहित नीतिगत साझेदारी पर प्रकाश डाला। स्वदेशी स्तर पर, एनपीसीआईएल ने बीएआरसी के साथ स्वदेशी छोटे मॉड्यूलर रिएक्टरों (एसएमआर) के लिए दर्शन हब, ड्राइविंग हाई-परफॉर्मेंस कंप्यूटिंग और 3डी डिजिटल सिमुलेशन का उद्घाटन किया।

प्रचालनात्मक रूप से, एनपीसीआईएल ने नवीनीकरण के बाद आरएपीपी-8 में ईंधन भरण और कैगा-1 में ईंधन भरण के साथ प्रमुख उपलब्धियां हासिल किया। वैज्ञानिक सीमाओं को आगे बढ़ाते हुए, भारत ने गुजरात में एसएसटी-1 टोकामक संलयन रिएक्टर के लिए 82.6 गीगाहर्ट्ज जॉयरोट्रॉन प्रणाली शुरू किया। ये उपलब्धियां सतत ऊर्जा सुरक्षा और तकनीकी उत्कृष्टता के प्रति हमारी प्रतिबद्धता को दर्शाती हैं। जानकार बनें, जागरूक रहें।

अध्यक्ष, जन जागरूकता समिति



सितम्बर 2026 के विशिष्ट बिंदु

1

केकेएनपीपी स्थल पर 41 और स्थल के बाहर 06 जन संपर्क कार्यक्रम आयोजित किए गए

2

1,812 घंटों का जन संपर्क, 7,026 लोगों से संपर्क

3

27,703 जन जागरूकता प्रकाशन वितरित किए गए



केकेएनपीपी का जलवायु परिवर्तन के न्यूनकरण में योगदान

जलवायु परिवर्तन आज वैश्विक पर्यावरण मुद्दों में सर्वाधिक महत्वपूर्ण है। नाभिकीय विद्युत न्यूनतम कार्बन प्रौद्योगिकियों में से एक है जो बढ़ती हुई आबादी एवं सामाजिक-आर्थिक विकास के लिए विद्युत उत्पादन करते हुए ग्रीन हाउस गैसों (जीएचजी) के उत्सर्जन (अधिकतर CO_2) में कमी लाती है। CO_2 के उत्सर्जन में कमी लाने में केकेएनपीपी का योगदान (दिनांक 31 सितम्बर 2026 को) अब तक इस प्रकार है।



कुल उत्पादित विद्युत इकाई

134,584
मिलियन यूनिट



केकेएनपीपी द्वारा कुल CO_2 उत्सर्जन में कमी

115,607,297
टन

नोट: कोयले एवं नाभिकीय ऊर्जा के औसत जीवन चक्र ग्रीन हाउस गैस उत्सर्जन क्रमशः 888 एवं 29 (टन/गीगावाट घंटा) है।

Public Awareness e-Newsletter

Kudankulam Nuclear Power Project

September 2026

Issue –171

In this issue:

- Nuclear Slogan
- Technical session
- Nuclear Database
- Nuclear News
- Lexicon
- Did you know?
- Feature article
- Nuclear Trivia

Snap shot



A glimpse of a **Blue-tailed bee-eater** spotted near Anuvijay Township, Chettikulam

Photo Credit:
Sh Rathina Pandi
Senior Technician/H
MMU, KKNPP

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Coraciiformes
Family:	Meropidae
Genus:	Merops
Species:	<i>M. philippinus</i>

Binomial name:
Merops philippinus

Source: en.wikipedia.org

Dear Readers,
September 2026 marked dynamic progress across India's nuclear spectrum. Internationally, hon'ble PM Modi's visit to Uzbekistan highlighted strategic partnership, including long-term uranium supply arrangements. Domestically, NPCIL inaugurated the DARSHAN Hub, driving high-performance computing and 3D digital simulations for indigenous Small Modular Reactors (SMRs) alongside BARC.

Operationally, NPCIL celebrated key milestones with fuel loading commencing at RAPP-8 and fuel loading in Kaiga-1 following its refurbishment. Pushing scientific frontiers, India commissioned an 82.6 GHz gyrotron system for the SST-1 Tokamak fusion reactor in Gujarat. These achievements showcase our commitment to sustainable energy security and technical excellence. Stay Informed, Stay Aware.

-Chairman, PA Committee



Spotlight of September 2026

1

41 on-site & 06 Off-site outreach programme organised

2

1,812 hours of Public Outreach, reached 7,026 people

3

27,703 PA Publications distributed



KKNPP's contribution to climate change mitigation

Climate change is the foremost global environmental issue today. Nuclear power is one of the low carbon technologies that can contribute for reducing greenhouse gas (GHG) emissions (mostly CO₂) while generating electricity for growing populations and socioeconomic development. KKNPP's contribution in preventing the CO₂ emissions till now (As on Aug 31, 2026) is given below.



No. of units of electricity generated 134,584 Million Units



Total CO₂ emissions avoided by KKNPP 115,607,297 Tonnes

Note: Average lifecycle GHG emissions for Coal & Nuclear is 888 & 29 (tonnes/GWh) respectively.

The Electrical Revolution: Modernizing Energy with Micro-Modular Reactors

“
My entry point was the nuclear battery, the micro-modular reactor—I was amazed to discover that something container-sized, with a co-generator, another similar-sized container of six metres/20 feet, could power a small town or community... Nuclear's ability to provide a vast amount of power with a tiny imprint means micro-modular power units should be produced at industrial-scale, like jet engines, moving beyond the obsolete idea of a grid.”



Lord Norman Foster
Architect

Source: Excerpts from Speech at World Nuclear Symposium, London — 17 Sep 2026, wikipedia





(A GOVT OF INDIA ENTERPRISE)
(ஓடு இந்திய அரசு நிறுவனம்)
KUDANKULAM NUCLEAR POWER PROJECT
கடங்குளம் அணுவின் திட்டம்

PUBLIC AWARENESS PROGRAM - FEED BACK FORM

விழிப்புணர்வு நிகழ்ச்சி - கருத்து பதிவுத் தாள்

Name of the Educational Institution / Village / Organization கல்வி நிறுவனம் / கிராமம் / நிறுவனத்தின் பெயர் <i>Sadakkathullah appa college</i>	Date / தேதி: <i>16/09/26</i>
Name of KRNPP officials conducted the PA program விழிப்புணர்வு நிகழ்ச்சியை நடத்திய கடங்குளம் அணுவின் தலைமை அதிகாரிகளின் பெயர் <i>A V Sathish & R velmail murgan</i>	
No. of participants பங்கேடுபெற்றவர்களின் எண்ணிக்கை <i>47</i>	
Date and duration தேதி மற்றும் நேரம் <i>16/09/26 9:30 to 4:00</i>	
Visitors Feedback / பார்வைப்பயணிகளின் கருத்துக்களை <i>This industrial visit has benefitted us in many ways. we gained practical knowledge about the working of nuclear power plant. we were able to understand it in very better way. we were also cleared about the mythh myths about kudankulam. we are grateful for this opportunity. Thank for this incredible opportunity.</i>	
Signature / கையெழுத்து <i>Farisha.M</i> Name / பெயர் <i>Farisha M</i>	Designation / பதவி <i>II Bx physics</i>

**NPCIL Mission:**

To develop nuclear power technology and to produce Nuclear Power as a safe, environmentally benign and economically viable source of electrical energy to meet the increasing needs of country.

Italy's Senate approves a return to nuclear power

"Today, Italy is taking a step toward the future: the approval of the government's mandate for new, sustainable nuclear power completes a process begun three years ago, aimed at exploring the potential of this new, clean, and sustainable technology. Nuclear power is not a return to the past: it is a winning technology, which, when integrated with renewables, can deliver extraordinary results for our energy security, toward neutrality by 2050."


Gilberto Pichetto Fratin

Minister of the Environment and Energy Security, Italy

Source: www.world-nuclear-news.org dated 24 Sep 2026, Wikipaedia



Technical session



Electricity and Energy Storage

(Source: World Nuclear Association)

Pumped hydroelectric storage:

The largest pumped storage facility is in Virginia, USA, with 3 GW capacity and 30 GWh of stored energy. However, useful facilities can be quite small. They also do not need to be supplementary to major hydroelectric schemes, but can use any difference in elevation between upper and lower reservoirs of over 100 metres if not too far apart. In Okinawa seawater is pumped to a cliff-top reservoir.

Okinawa Yanbaru Seawater Pumped Storage Power Station, Japan



The seawater intake/outlet faced the Pacific Ocean, which served as the lower reservoir for this power station. Source: Wikipedia

In Australia a disused underground mine was considered for a lower reservoir. Israel plans the 344 MW Kokhav Hayarden two-reservoir system.

In Montana, USA, the \$1 billion, 4 x 100 MW Gordon Butte Pumped Storage Hydro Project in the central part of the state will use excess power from the state's 665 MWe of wind turbines, though this is less predictable than off-peak power designed to supply base-load. Absaroka Energy will build the elevated reservoir on a mesa 312 metres above the lower reservoir from 2018. It expects to supply 1300 GWh per year to supplement wind, with ancillary services.

A pilot project in Galdorf, Germany connects wind turbines, via an underground penstock, to a pumped storage power station. It comprises 13.6 MWe of wind turbines and 16 MWe of hydro capacity from pumped storage.

To be continued in Oct 2026



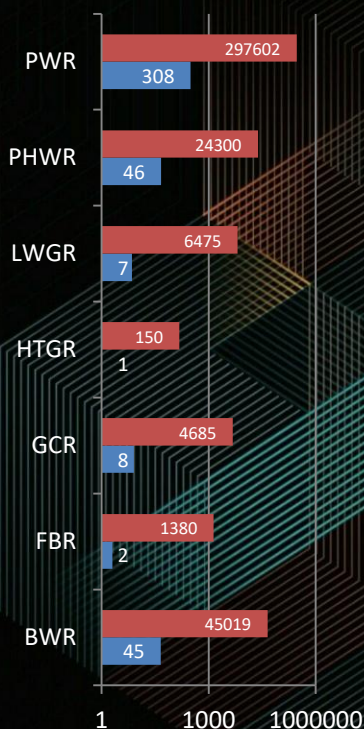
Updated as on Sep 09, 2026

Source: <https://pris.iaea.org/PRIS>

OPERATIONAL REACTORS

■ Net electrical capacity MW(e)

■ No of reactors



Type	Number of reactors	Net electrical capacity MW(e)
BWR	45	45019
FBR	2	1380
GCR	8	4685
HTGR	1	150
LWGR	7	6475
PHWR	46	24300
PWR	308	297602
Total	417	379,611

Source:

<https://pris.iaea.org/PRIS>

Current Status:

NUCLEAR POWER REACTORS
IN OPERATION

417

TOTAL NET INSTALLED
CAPACITY

379 611 MWe

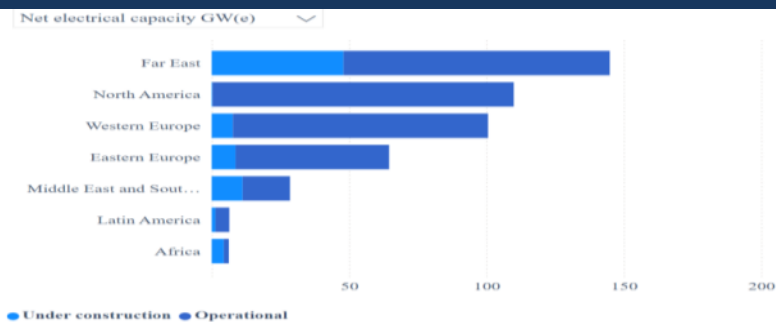
NUCLEAR POWER REACTORS
UNDER CONSTRUCTION

78

REACTOR-YEARS OF
OPERATION

20,763

Regional Distribution of Nuclear Power Plants:



New connections to the grid: (Year 2026)

SANAO-1 (1117 MW(e), PWR, CHINA) on 12 March)

- ❖ Construction Start Date : 31 Dec, 2020
- ❖ First Criticality : 14 Feb, 2026
- ❖ Grid Connection : 12 Mar, 2026

TAIPINGLING-1 (1116 MW(e), PWR, CHINA) on 13 Feb)

- ❖ Construction Start Date : 26 Dec, 2019
- ❖ First Criticality : 03 Feb, 2026
- ❖ Grid Connection : 13 Feb, 2026

TAIPINGLING-2 (1116 MW(e), PWR, CHINA) on 04 Jul)

- ❖ Construction Start Date : 15 Oct, 2020
- ❖ First Criticality : 15 Jun, 2026
- ❖ Grid Connection : 04 Jul, 2026

Changjiang 3 (1110 MW(e), PWR, CHINA) on 01 Aug)

- ❖ Construction Start Date : 31 Mar, 2021
- ❖ First Criticality : 10 Jul, 2026
- ❖ Grid Connection : 01 Aug, 2026



NPCIL Inaugurates DARSHAN Hub for Advanced Nuclear Technologies Sep 19



Nuclear Power Corporation of India Limited (NPCIL) inaugurated the DARSHAN (Development of Advanced Reactors, Simulation & High-end Analysis) Hub to support activities related to Small Modular Reactors (SMRs) in India. The state-of-the-art facility was inaugurated by Shri Rajesh V., CMD, NPCIL, in the presence of senior officials from NPCIL and BARC. The DARSHAN Hub is equipped with high-performance computing and advanced simulation capabilities for 3D plant engineering, digital simulations, high-end analysis and other engineering applications for indigenous SMRs being developed jointly by NPCIL and BARC.

Source: www.world-nuclear-news.org

Indian plants celebrate fuel loading milestones Sep 21



As fuel loading begins at Rajasthan Atomic Power Project (RAPP) unit 8, Nuclear Power Corporation of India Ltd has started geotechnical investigations for the next two units at the site. Meanwhile, fuel loading has begun at Kaiga unit 1 as the unit begins the process to return to service after refurbishment. Unit 8 is the second of two Indian-designed 700 MWe pressurised heavy water reactors (PHWRs) built as a pair at the RAPP

Source: <https://world-nuclear-news.org/>



Nuclear News

India and Uzbekistan eye uranium deal as ties grow

Sep 01



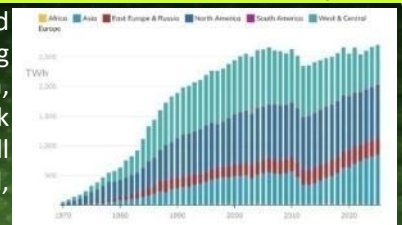
The leaders of India and Uzbekistan have announced plans to increase bilateral trade to USD 5 billion per year. A long-term uranium supply arrangement looks likely to be part of that. Prime Minister Narendra Modi and President of Uzbekistan Shavkat Mirziyoyev "held wide-ranging and substantive discussions on the entire gamut of the bilateral strategic partnership", India's Ministry of External Affairs said following a state visit by the Indian Prime Minister to Tashkent. The leaders agreed to explore cooperation in areas including geology, mining, nuclear energy, industrial cooperation, and critical & strategic minerals, including projects for the processing of mineral resources, production of value-added products and recycling initiatives, according to a joint statement issued after PM's visit.

Source: <https://dae.gov.in> & www.world-nuclear-news.org

Fresh record set for nuclear generation in 2025

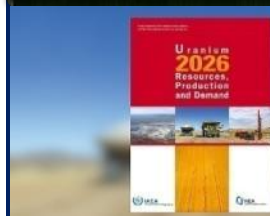
Sep 07

Nuclear reactors worldwide generated **2,702 TWh** of electricity in 2025, beating the previous year's record of 2,667 TWh, according to the World Nuclear Outlook Report, which also calculates that if all national nuclear targets were achieved, total capacity would more than triple by 2050. The World Nuclear Association report includes an assessment of progress towards the widely-shared ambition - which 38 countries have signed up to - for a tripling of global nuclear energy capacity by 2050. It also sets out a series of policy recommendations. Focusing on the existing fleet, the report notes that there has been a recent increase in construction starts, which shows how it has fluctuated over the past 75 years. It also finds that the reliability of nuclear energy plants remains high across the global fleet and across the life of reactors, even as individual units age. The average capacity factor was **83.7%** in 2025



Source: www.world-nuclear-news.org

Red Book confident on uranium resources to meet future growth Sep 14



The global uranium sector is responding to growing interest in nuclear capacity expansion, according to the latest assessment by the Organization for Economic Cooperation and development (OECD), Nuclear Energy Agency and the International Atomic Energy Agency. But investment is needed to turn resources into supply. Uranium 2026: Resources, Production and Demand (commonly known as the 'Red Book') published jointly by the OECD Nuclear Energy Agency (NEA) and the International Atomic Energy Agency is the 31st report in a series dating back more than 60 years and is based mostly on government-provided data. Launched during the 70th IAEA General Conference in Vienna, the report covers the years 2023 and 2024, as well as including some information from 2025 and 2026. As of 1st January 2025, currently identified uranium resources recoverable at costs below USD260/kgU were more than 8.1 million tonnes of uranium (tU) globally - up 2.1% from the figure reported in the previous edition, published in 2025.

Source: www.world-nuclear-news.org



QUICK FACTS

World Nuclear Outlook Report 2025/2026

Generation & Performance (2025)

❖ **Global Generation:** Reached a record 2,702 TWh (up from 2,667 TWh in 2024), accounting for roughly 9% of world electricity.

❖ **Regional Growth:** Primarily driven by expansion in Asia, with other regions holding steady.

❖ **Capacity Factor:** Remained exceptionally high at 83.7% across the global fleet, proving strong reliability even as units age.

Capacity & Future Targets (2050 Goals)

❖ **Current Operating Capacity:** 423 GWe.

❖ **2050 Projected Capacity:** Could reach 1,457 GWe if national goals are met and the existing fleet continues running.

Breakdown of 2050 Target:

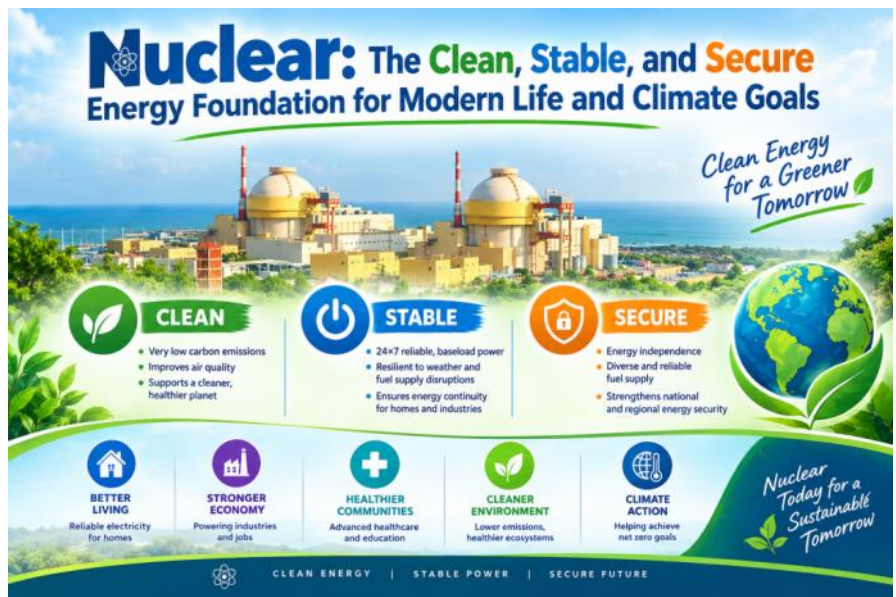
❖ 1,303 GWe in countries with existing nuclear programs.

❖ 154 GWe in newcomer or first-time reactor countries.

Source: <https://world-nuclear.org>



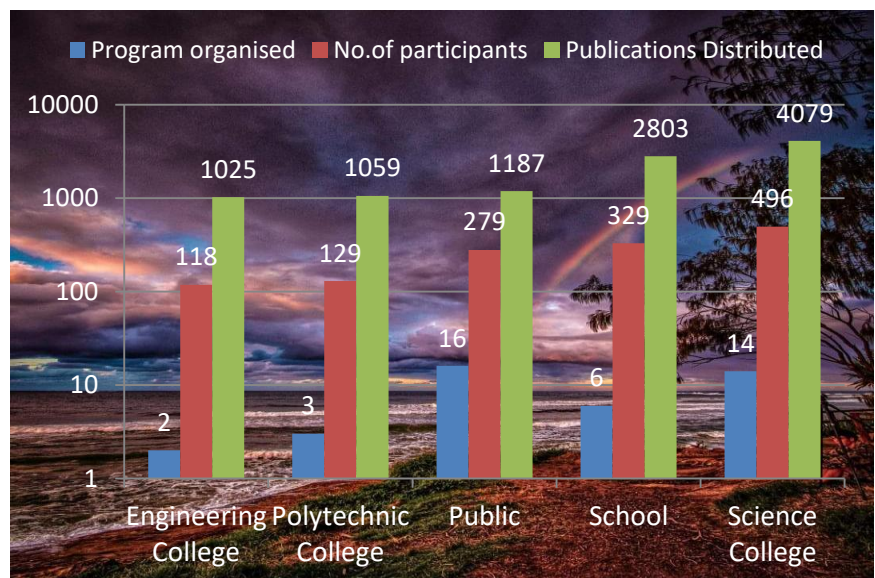
Nuclear Slogan



PA activity conducted at KKNPP Site

At site

As a part of public awareness programme, visits of Public from districts such as Tirunelveli, Kanyakumari and Tuticorin and also from Kerala to KKNPP were organised. The visitors of KKNPP were provided with a detailed information on nuclear power generation and its safety principles.





Few glimpses from Site Visit

At
site

**St. Joseph's Higher
Secondary School , Kootapuli
(01 Sep)**



**Visitors from Enmass Team,
Kudankulam
(02 Sep)**



**Government Polytechnic
College, Tuticorin
(02 Sep)**



**Government Higher
Secondary School,
Chettikulam
(03 Sep)**





Few glimpses from Site Visit

At
site

Medical Officers from
Training program on
“Medical Management of
Radiation Emergencies”
KKNPP Hospital
(03 Sep)



Viswajyothi College of
Engineering & Technology ,
Ernakulam
(05 Sep)



St. Joseph's Higher Secondary
School, Kootapuli
(07 Sep)



Amrita Vidyalayam Senior
Secondary School ,
Agastheeswaram
(07 Sep)





Few glimpses from Site Visit

At
site

**Angelo Matric Hr.Sec.School,
Palayamkottai
(09 Sep)**



**Government Higher
Secondary School,
Chettikulam
(10 Sep)**



**A.P.C. Mahalaxmi College for
Women, Tuticorin
(11 Sep)**



**Ayyanadar Janakiammal
Polytechnic College, Sivakasi
(15 Sep)**





Few glimpses from Site Visit

At
site

**Sri Kumara Gurupara
Swamigal Arts College,
Srivaikuntam
(15 Sep)**



**Sadakathullah Appa College
(Autonomous), Tirunelveli
(16 Sep)**



**Yadava College,
Madurai
(17 Sep)**



**Theni Kammavar Sangam
College of Arts and Science,
Theni
(18 Sep)**





Few glimpses from Site Visit

At
site

Members from Viricode
Sunday School Kanyakumari
Diocese, Kanyakumari
(19 Sep)



Nazareth Margoschis College
at Pillaiyanmanai, Nazareth
(21 Sep)



KKNPP Ladies Club,
Anuvijay Township
(22 Sep)



Vivekananda College,
Madurai
(22 Sep)





Few glimpses from Site Visit

At
site

**Udaya School of
Engineering,
Kanyakumari
(23 Sep)**



**Ethiraj College for Women
(Autonomous), Chennai
(24 Sep)**



**St. Berchmans College,
Kerala
(25 Sep)**



**Government Women's
Polytechnic College,
Thiruvananthapuram
(25 Sep)**





Few glimpses from Site Visit

At
site

Members from Voice of
Christ Adumancadu
Parasuvaikkal,
Thiruvananthapuram
(26 Sep)



Noorul Islam College of Arts
& Science, Kanyakumari
(28 Sep)



Members from Rotary Club of
Marthandam
(28 Sep)





Few glimpses from Site Visit

At
site

**Maria Arts and Science
College for Women,
Vallioor
(29 Sep)**



**Department of PG Chemistry,
Aditanar College of Arts and
Science, Tuticorin
(30 Sep)**



**Department of UG Chemistry,
Aditanar College of Arts and
Science, Tuticorin
(30 Sep)**



**Mar Theophilus Training
College, Thiruvananthapuram
(30 Sep)**



More on IAS

Foaming: Identifies foam build-up above liquid interfaces that degrades vapor-liquid separation.

Liquid Level Tracking: Measures baseline liquid levels in base sumps, side-draw chimneys, and phase separators.

Key Advantages for Industry

- 1) **Zero Downtime:** Scans are conducted on live, operating columns.
- 2) **Turnaround Planning:** Helps refineries and petrochemical plants identify exact internal defects beforehand.
- 3) **Safety & Non-Invasive:** Uses sealed radiation sources; no radioisotope is injected into the process stream, leaving the product completely uncontaminated.
- 4) **Cost Benefit:** Prevents unneeded shutdowns (which can cost millions in revenue loss) by distinguishing between minor operational fluctuations and structural mechanical failures.

Source: www.barc.gov.in,
wikipedia,
www.pnri.dost.gov.ph



IAS

The **Board of Radiation and Isotope Technology (BRIT)**—a unit of the Department of Atomic Energy (DAE), India—provides **Isotope Application Services (IAS)** as a specialized industrial consulting service. One of their primary non-destructive testing (NDT) capabilities offered on a commercial basis is **Gamma Scanning of Industrial Process Columns** (such as distillation towers, absorption columns, and chemical reactors).

Working Principle

Gamma column scanning operates on the principle of **radiation transmission and attenuation**:

$$\ln \left(\frac{I_0}{I} \right) = \mu \rho x$$

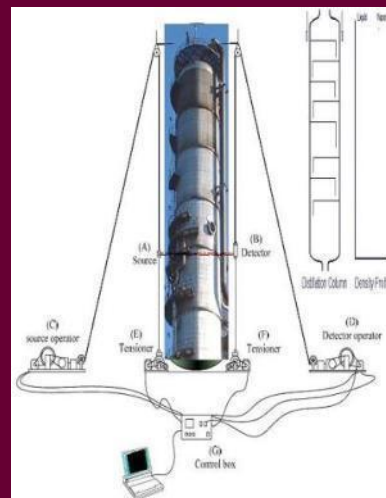
Where:

I_0 = Initial gamma intensity from the radioactive source. I = Transmitted intensity reaching the detector.

μ = Mass attenuation coefficient of the intervening media.

ρ = Mean density of the internal column contents. (vapour, liquid, metal components).

x = Internal path length (column diameter).



Source:
www.indiaids.com

A small, sealed gamma-emitting source (typically **Cobalt-60** or **Cesium-137**) and a radiation detector (such as a NaI scintillation detector) are suspended on opposite sides of the outer wall of an operating column. Controlled by synchronized winches, both source and detector are raised or lowered along the height of the column simultaneously. The variation in transmitted radiation density produces a **density profile plot** (Height vs. Relative Radiation Intensity).

Commercial Application & Problem Detection

Because the inspection is performed while the plant is online under full operational pressure and temperature, BRIT's IAS allows process engineers to "see" inside the vessel without interrupting production. It diagnoses several critical process and mechanical anomalies:

Tray Diagnostics: Identifies collapsed, bent, missing, or displaced distillation trays.

Flooding & Weeping: Pinpoints trays experiencing liquid hold-up (flooding) or premature liquid dropping (weeping/dumping).

Packed Bed Inspection: Detects packing settlement, channeling, Liquid maldistribution, or local fouling/coking in packed columns.

See left

As a part of PA outreach activity, Seminars, Workshop, Lectures and exhibitions were conducted at Educational Institutions and Organizations.

PA lecture
at Rohini College of
Engineering and
Technology
Anjugramam
KK District

Under the ongoing Memorandum of Understanding between NPCIL and the National Cadet Corps (NCC), a public awareness lecture on the **"Peaceful Uses of Nuclear Energy"** was organized at Rohini College of Engineering and Technology, Anjugramam.

Date: Sep 09, 2026

The session was delivered by Shri A. V. Sathish, Scientific Officer/F, KKNPP, upon request from the 11(TN) Battalion NCC, Nagercoil. The session enlightened NCC cadets and students on clean nuclear power generation, robust safety protocols, and the technology's contribution to national development.



PA outreach programme conducted outside KKNPP:

Outside
KKNPP

Date	Name of the Institution	No. of participants	Publications distributed
Sep 07-08	Mar Ephraem College of Engineering and Technology	2500	9000
Sep 09	Rohini College of Engineering and Technology	300	0
Sep 15	District Science Center	150	0
Sep 17	PSN College of Engineering	225	0
Sep 18	Sankar Polytechnic College	1500	4750
Sep 25	Rohini College of Engineering and Technology	1000	3800
Grand Total		5675	17550



Few glimpses

PA lecture at at Rohini College of Engineering and Technology
Anjugramam KK District on Sep 09, 2026



No. of participants

300

**KKNPP Exhibits
at MARVEXA
2026 National
Science and
Technology
Exhibition**

KKNPP actively participated in "MARVEXA 2026," a prestigious National-Level Science and Technology Exhibition held at Mar Ephraem College of Engineering and Technology, Elavuvilai, Kanyakumari District.

Date: Sep 7-8, 2026

Organized alongside premier R&D institutions like ISRO, IISER, and IREL, the event drew over 6,000 school students. Deputed KKNPP officials set up an interactive public awareness exhibition stall featuring working models, clean energy innovations, and technical insights, successfully inspiring young minds toward careers in science, engineering, and sustainable nuclear technology.

**No. of
participants**

2500

**Publications
distributed**

9000



Few glimpses

PA exhibition at Mar Ephraem College of Engineering and Technology, Elavuvilai during Sep 7-8, 2026

**Outside
KKNPP**



PA lecture
at
District Science
Centre
Tirunelveli

National Engineers' Day was celebrated at the District Science Centre, Tirunelveli.

Date: September 15, 2026

Shri Abraham Jacob, Project Director, KKNPP 3-6, inaugurated the event and delivered an insightful lecture highlighting engineering innovations, sustainable development, and the pivotal role of nuclear power in national nation-building.

PA lecture
at PSN Institute of
Technology and
Science
Tirunelveli

At the National Level Technical Symposium organized on **September 17, 2026**, by PSN Institute of Technology and Science, Melathediyoar, Sh Ramesh Moorthy B, Scientific Officer-F, E&I, KKNPP delivered an insightful Chief Guest lecture. Addressing students of IT, AI, and Data Science, the session highlighted nuclear energy safety, technological advancements, and clean energy solutions.



Few glimpses

Outside
KKNPP

PA lecture at District Science Centre Tirunelveli during Sep 15, 2026



No. of
participants

150

PA lecture at PSN Institute of Technology and Science Tirunelveli district on 17 Sep 2026



No. of
participants

225

PA exhibition cum lecture at Sankar Polytechnic College Tirunelveli.

KKNPP participated in the State-Level Technical Symposium-cum-Exhibition "NUCLEUS 2026" held at Sankar Polytechnic College, Tirunelveli.

Date: on Sep 18, 2026

Deputed KKNPP officials hosted a Public Awareness exhibition stall, while Shri Silas Pope Rajiv J, Shift Charge Engineer, KKNPP 1&2 delivered a technical lecture highlighting sustainable engineering innovation, nuclear safety, and clean energy contributions.

PA exhibition at Rohini College of Engineering and Technology Anjugramam KK District

KKNPP set up a Public Awareness exhibition stall at "SPECTRA 2026," a Mega Technical and Innovation Fest organized on **September 25, 2026**, at Rohini College of Engineering and Technology, Palkulam. Over 1,000 participating students and visitors were sensitized on nuclear power generation, safety systems, clean energy benefits, and career opportunities at NPCIL.



Few glimpses

Outside KKNPP

PA exhibition cum lecture at Sankar Polytechnic College Tirunelveli. during Sep 18, 2026



No. of participants	1500
Publications distributed	4750

PA lecture Rohini College of Engineering and Technology Anjugramam KK District on 25 Sep 2026



Publications distributed	3800
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Did
you know?

India's 'Artificial Sun'

India has commissioned a new 82.6 GHz and 400 kW gyrotron system for its SST-1 Tokamak fusion reactor in Gujarat to better heat and control ultra-hot plasma during sep 2026.



What the Gyrotron Milestone Means

► **High-Power Heating:** The new 82.6 GHz, 400-kilowatt gyrotron acts as a powerful source of microwave energy.

► **Electron Cyclotron Resonance Heating (ECRH):** It delivers precise electromagnetic energy to heat electrons, help start plasma, and control instabilities.

► **Major Upgrade:** It replaces older 42 GHz heating tech, improving India's ability to handle plasma at temperatures over 100 million°C.

► **Research Step, Not a Plant:** This is an experimental milestone for nuclear fusion research, not a commercial power generator.

Source: <https://thefederal.com>



Feature article

Nuclear Energy and Sustainable Development

Source: World Nuclear Association

The social pillar

Employment

A study of the European nuclear industry by Deloitte suggested that nuclear provides more jobs per TWh of electricity generated than any other clean energy source.



To be continued in Oct 2026



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Disclaimer:

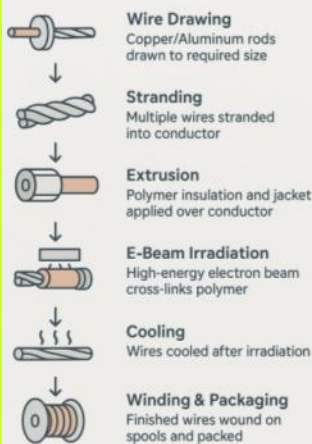
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What invisible high-energy 'zap' can turn ordinary plastic into tough, heat-resistant wire insulation?

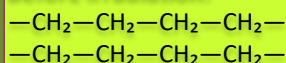


Electron-beam irradiation of wire/cable insulation. After cross-linking, they become interconnected, so the insulation **doesn't soften and flow as readily at elevated temperature.**

How the "zap" works

Think of polyethylene (PE) chains as long spaghetti molecules:

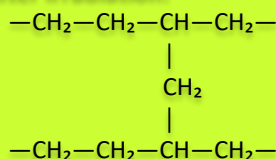
Before irradiation:



When a high-energy electron beam passes through the plastic, it deposits energy and **breaks chemical bonds**, producing highly reactive **free radicals** on the polymer chains.

These radicals then react with radicals on neighbouring chains:

After irradiation:



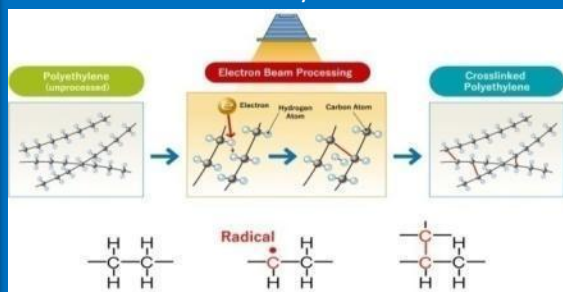
This creates **C-C cross-links**, turning the collection of individual polymer chains into a **three-dimensional network**.

Source: IAEA

The "high-energy invisible zap" is **ionizing radiation**—most commonly an accelerated electron beam (EB), and sometimes gamma rays—used for radiation cross-linking of polymers.

Free Radical Generation: When this high-energy radiation interacts with monomers or polymers, it causes radiolysis (homolytic bond cleavage), stripping electrons and producing highly reactive species with unpaired electrons known as free radicals.

Polymerization Industry Application: These radiation-generated free radicals serve as active initiators that rapidly trigger chain-growth reactions, leading to cross-linking, grafting, or curing of polymers without needing chemical initiators or thermal catalysts.



Key Industrial Uses

Cross-linking: Enhances thermal stability, mechanical strength, and chemical resistance in plastics and elastomers (commonly used in wire and cable insulation, heat-shrinkable tubing, and PEX pipes).

Radiation Curing: Rapidly hardens coatings, inks, and adhesives solvent-free at room temperature using electron beam (EB) or UV processing.

Graft Polymerization: Modifies the surface properties of existing polymers to introduce hydrophilicity, biocompatibility, or dyeability.

Cross-linking generally gives the polymer:

- ☑ Higher temperature resistance
- ☑ Better mechanical strength
- ☑ Improved electrical insulation
- ☑ Better chemical/solvent resistance
- ☑ Better dimensional stability
- ☑ Better long-term durability

See left