Industry

BARC's Nuclear

By TT&CD and SIRD Editorial Team

The spinoff technologies developed through nuclear energy research and development at BARC are regularly transferred to industry for commercialization. BARC provides comprehensive support to licensees by offering technology training, field demonstrations, consultancy, and detailed documentation that includes procedures, flowcharts, diagrams, troubleshooting guides, and lists of raw materials, equipment, and suppliers. During the period from July to August 2024, BARC transferred eight technologies to various industries.

Technology Transfers

BARC has transferred the technology of Bio sensor Kit (BioKit) for detecting organophosphate and organocarbamate pesticides, which was transferred to M/s. Duke Thomson's India Pvt. Ltd. in Indore. BARC has also transferred the technology of Teletherapy Source Transportation Flask to M/s. Panacea Medical Technologies Pvt. Ltd. in Karnataka.

Technology Overview: Organophosphate and organocarbamate pesticides are commonly used in agriculture and domestic applications, often contaminating soil, water, and food commodities (such as vegetables, fruits, and spices). A simple visual detection method for these pesticides in food samples would greatly benefit farmers, traders, and consumers. BARC has developed a colorimetric visual biosensor kit capable of detecting safe levels of organophosphate (including Methyl parathion, Parathion, Monocrotophos, Chlorpyrifos, Phorate, Profenfos, Quinalphos, and Dichlorvos) and organocarbamate pesticides (including Aldicarb, Carbaryl, Carbofuran, and Carbosulfan).

Technology Overview: A qualified source transportation cask is essential for shipping Cobalt-60 teletherapy source capsules between the manufacturer and the teletherapy unit (usually a cancer hospital). To protect people and the environment from harmful radiation, this package must meet stringent safety requirements for both normal and accident transport conditions, in accordance with national and IAEA safety guidelines. As part of the Indigenous Teletherapy Programme, BARC has developed a Cobalt-60 Teletherapy Source Transportation Flask, which has been approved by the AERB as Type B(U).

Other key technologies transferred to industry include

Technology for Assessing Bioavailability of Nutrients in Soil (Code AB54NABTD): Transferred to M/s. W.S. Telematics Pvt. Ltd., New Delhi, using a universal multi-nutrient soil extractant.

Rapid Composting Technology (Code AB25NABTD): For decomposing dry leaves, kitchen waste, and temple waste, transferred to M/s. Swayambhar Producer Company Ltd., Birbhum, West Bengal.

Indigenous Cold Atmospheric Pressure Plasma System - 10 MHz (ICAPPS-10) (Code EG46L&PTD): Transferred to M/s. IEEC Power Electronics Pvt. Ltd., Mumbai.

Low Carbon Ferro Alloys (Code CH21MP&CED): Transferred to M/s. Synergy Steels Ltd., New Delhi.

Compact Helical Biodegradable Waste Converter SHESHA [Code EV07NABTD]: Transferred to M/s. Eshika Engineering, Palghar, Maharashtra.

NISARGRUNA Biogas Plant for Processing Biodegradable Waste [Code EV01NABTD]: Technology transferred to M/s. Hariom Electricals, Navi Mumbai, Maharashtra.

Startup Incubation

The Atal Incubation Centre (AIC) at BARC successfully launched its first 6-week pre-incubation program for aspiring entrepreneurs from May 30 to July 4, 2024, conducted entirely online. The program welcomed twelve participants and aimed to equip them with the principles of idea validation prior to launching their

beckons

Spin-off technologies

Signing of Incubation Extension Agreement with M/s. Pratishna Engineer for BARC's Alkaline Water Electrolyzer technology.

startups. Sessions were designed to provide a framework for making informed decisions about the viability of their products, businesses, or services.

Throughout the program, teams concentrated on developing initial proposals based on their submitted technical ideas. They collaborated to build teams, create product requirement documents, and conduct customer discovery research. The program culminated in a pitching session on August 9, 2024, where teams presented their proposals to a jury panel from BARC. The best-pitched team received a cash prize of Rs.5,000, while all participating teams were awarded digital certificates of appreciation.

From June to August 2024, several agreements were established under the AIC-BARC arrangement to support startup business incubation and collaborative activities:

Startup Business Incubation Agreement: This was signed for two BARC technologies—NISARGRUNA and SHESHA.

In-house Technology Incubation Agreement: An agreement was made for the Nisarguna Biogas Plant with M/s. Gir Gau Jatan Sansthan in Rajkot, Gujarat, as well as with ONGC Energy Centre in Delhi for a process system designed to clean up dissolved oil and salt-contaminated wastewater for beneficial utilization.

Collaborative Technology Incubation: This involved the Nisarguna Biogas Plant technology in partnership with the Department of Chemistry at Raipur Institute of Technology, Raipur.

Extension of Incubation Agreements: Continued support was provided for Alkaline Water Electrolyzer technology with M/s. Pratishna Engineers, and X-band LINAC technology with M/s. Panacea Medical Technologies Pvt. Ltd. in Karnataka.

Extension of incubation agreement with M/s. Panacea for BARC's X band LINAC technology.

The signing of agreement for transfer of Teletherapy Source Transportation Flask technology in presence of (Right to left): Shri Daniel Babu P., Head, TT&CD, BARC; Dr. S. Adhikari, Director, KMG, BARC; Mr. Animesh, Senior Vice President, M/s. Panacea Medical Technologies; Dr. D. C. Kar, Head, DRHR, BARC and Shri Chandan Dey, Scientific Officer, DRHR, BARC.