The capacity of the system is as mentioned in table below:

| Parameter Description | Value |
|---|---|
| Processing throughput | 5 kGy.ton/hour |
| Dosage delivery capability (minimum) | 100 Gy |
| Dosage delivery capability (maximum) | 50 Gy |
| Typical box/bag size that can be processed*. ( lenght x width x height ) | 60 cm x 45 cm x 35 cm |
| *The box dimensions can be adjusted according to product density. User's box size and internal device packing arrangement need to be discussed with process experts at EBPF. | |

The facility has the following licences and certifications:

1. AERB licence for facility operations.
2. FDA licence for providing electron beam processing services for sterilization of class A medical devices.
3. FDA licence for providing electron beam processing services for sterilization of class B medical devices.
4. ISO 9001:2015 and ISO 13485: 2016 certifications for providing electron beam processing services for sterilization of medical devices as per the requirements of ISO 11137-1:2006/(R) 2010.

The facility is open for irradiation of medical devices such as Surgical Dressing Material, Catheter, Specimen Receptacles, Disposable Perfusion Sets, Umbilical Occlusion Device, Bolster Suture, Alcohol Swabs, and other non-notified medical products for which the FDA loan license is not required.

The above facility is now available for sterilization of medical devices to industries on chargeable basis at 50% concessional charges for a limited period up to September 30, 2023 under "Azadi Ka Amrit Mahotsav". Sterilization by electron beam is equivalent to sterilization carried out by gamma radiation. The sterilization dose required for electron beam and gamma radiation is identical (typically 25 kGy) as both have identical effect on microbial deactivation. Moreover, electron beam technology is eco-friendly, safe and is rising fast as it does not involve use of radioisotope (Cobalt-60) and radiation can be switched ON/OFF as per requirements. The dose rate in electron beam facility is very high due to which product hold time in irradiation zone (i.e., exposure time) is very less as compared to isotope-based facility. The product batch size can be customized to meet user requirements.

The services are being offered to various sectors as per the rates mentioned in table below:

| Sr. No. | Service | *Dose (kGy) | Proposed charges at ARPF |
|---|---|---|---|
| 1. | Irradiation service for medical devices non-notified and risk Class- A/B/C | 25 | ₹ 12.520 / kg |
| | | 15 | ₹ 7.50 / kg |
| 2. | E-beam irradiation service for gem stones and other industrial products | Case-to-case basis | ₹ 800/kW/hr. |
| GST and other taxes will be charged extra as per the prevailing rates and norms. | | | |
| *25 kGy 15 kGy dose are to be provided depending on the initial bio burden in accordance with Standard ISO - 11137. | | | |

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## N.4: RRCAT celebrated its 39th Foundation Day

Raja Ramanna Centre for Advanced Technology, Indore, a unit of the Department of Atomic Energy, Government of India celebrated its 39th Foundation Day on February 21, 2022. The Chief Guest on the occasion was Dr. B. Venkatraman, Distinguished Scientist and Director, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam. He is an internationally acclaimed scientist in the field of non-destructive evaluation and its applications in the area of nuclear engineering and technology. Dr. Shovan K. Majumder, Chairman, Seminar Committee, introduced the Chief Guest.

*Dr. S. V. Nakhe, Director, RRCAT, welcoming the Chief Guest, Dr. B. Venkatraman, Director, IGCAR.*

Dr. S. V. Nakhe, Director RRCAT, presented an overview of the important scientific accomplishments of the Centre achieved during the past one year. He presented the current status of the synchrotron radiation sources Indus-1 and Indus-2 highlighting, in particular, the new beamlines which have been made operational and also the improvements in the performance parameters of the machine as a result of replacement of bending magnets by the undulator insertion devices. He also briefed about the recent developments regarding Infrared Free Electron Laser (IR-FEL), the only of its kind facility in the country providing an output tunable from 12 μm to 40 μm. Another important milestone mentioned was the successful operation of Electron-beam Radiation Processing Facility, the first such facility in the country, for sterilizing medical products. Dr. Nakhe also elaborated on the contribution of RRCAT in several international collaborations, such as supply of high beta superconducting RF cavities and prototype 40 kW/650 MHz Solid State RF Amplifiers to Fermi Lab under IIFC Collaboration, and supply of power converters for FAIR, Germany. The successful commissioning of Horizontal Test Stand (HTS) for testing the SCRF cavities at cryogenic temperatures was especially highlighted. Several other important accomplishments were also elaborated, which include development of micro-welding workstation for brachytherapy capsules required for cancer therapy applications; development of disc based Nd:Glass amplifiers for use in high energy lasers; development of machine vision based system for inspection of end caps of the nuclear fuel bundles at NFC Hyderabad; development of Agni-Rakshak system based on FBG sensors; deployment of Onco-Diagnoscope in several medical camps for screening of population for oral cavity neoplasia. He informed that Onco-Diagnoscope would soon be deployed in Life-Line Express, which is a hospital on a train, and also in the mobile Health-Van being developed at IGCAR under the leadership of Dr. B. Venkatraman. Dr. Nakhe also described the activities of the RRCAT Incubation Centre, such as the transfer of technology of liquid nitrogen based refrigeration system, named SHIVAY (Shital Vahak Yantra), to Tata Motors Ltd., and FBG based sensors technology to IISc, Bengalore based start-up, Lab-2-Market, for use in railway safety applications. He concluded by emphasizing that R&D institutes, academic and industry working together with innovative ideas can write success stories for Atmanirbhar Bharat.

Another highlight of the Foundation Day function was the technology transfer ceremony, where three biophotonics based technologies developed at Laser Biomedical Applications Division of RRCAT were transferred to Indian industry. These include; (i) OncoVision, a low cost fluorescence imaging tool for enhanced visual identification of malignant and potentially malignant lesions of oral cavity, (ii) TuBerculoScope, a low cost and an easy-to-use, compact and portable fluorescence imaging instrument intended for point-of-care sputum microscopy for rapid detection of Mycobacterium tuberculus (the bacteria responsible for TB disease), and (iii) Raman Probe, a hand-held opto-mechanical module for in-situ measurement of artefact-free Raman spectra from low Raman active materials like biological tissues. While the technology of Onco Vision was transferred to M/s Applied Optical Technologies Pvt. Ltd., Thane, the technologies of Tuberculoscope and Raman probe were transferred to M/s Research India, Bhopal.

*Director, RRCAT presenting the technology transfer documents to Shri C. K. Patel, M/s Research India, Bhopal.*

Dr. Venkatraman, the Chief Guest of the function, delivered a motivating and engrossing talk to the staff members of the Centre. He congratulated RRCAT fraternity for its stupendous scientific and technological accomplishments achieved during the past one year under the leadership of Dr. Nakhe. He urged everybody to introspect, and devise ways to ensure that the technological innovations being brought out from DAE Centres reach every corner of the society. In this direction, he suggested to organize a two-day brainstorming theme meeting involving RRCAT-IGCAR scientists/engineers, to identify areas of collaboration, where rigorous efforts could be channelized. He further suggested that all DAE Centres should strive to become Centres of Excellence in some advanced technological areas, in addition to their main departmental mandates. These pockets of excellence could be utilized by the students for their academic pursuits, by scientists for accomplishing the departmental mandates, and by the industry in building their capacity further. He asked younger colleagues to plan in this direction so that a long-term policy could be evolved.

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## N.5: National Science Day celebrated at RRCAT under "Azadi Ka Amrit Mahotsav"

National Science Day (NSD) is celebrated in India every year on 28$^{th}$ February to commemorate discovery of the Raman effect by Prof. C. V. Raman who was awarded Nobel Prize in Physics in the year 1930 and Bharat Ratna in 1954. Each year RRCAT celebrates the NSD by holding an open house for the school and college students, teachers, family members and guests of RRCAT staff members and invitees from the