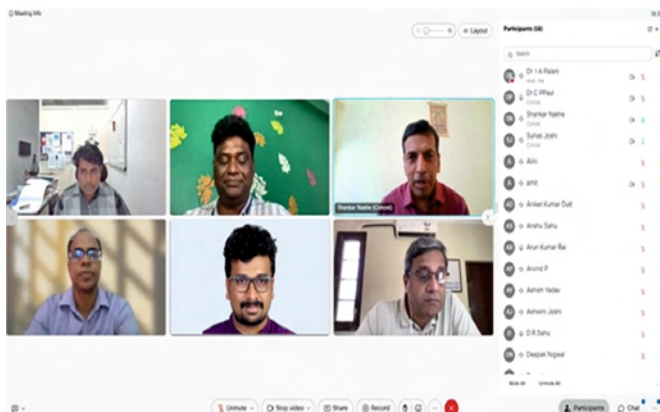


ecosystem in India.



*Snapshot of online inauguration of certificate course on additive manufacturing.*

Prof. S. S. Joshi, Director, IITI appreciated this effort and termed this joint effort as one of its own kind in the country, where a national lab (RRCAT) and IIT came together for a certificate course. He emphasized the importance of additive manufacturing and laser-based manufacturing in the present era. He highlighted the collaborative efforts between RRCAT and IIT Indore in various areas including additive manufacturing. He invited the participants to initiate/continue a long-lasting relationship with these host intuitions to achieve higher technological goals. Prof. S. K. Sahu, Head, Department of Mechanical Engineering, IIT Indore shared in brief about the various programs being offered by IITI.

Dr. C. P. Paul, Convener, Incubation Centre-RRCAT and Course Coordinator for certificate course on AM, presented the course structure and evaluation criteria to pass the certificate course. He mentioned that the course will also have interactive sessions with industrial experts/entrepreneurs discussing the real-life challenges in the AM domain.

The inauguration session was concluded with the vote of thanks by Prof. I. A. Palani, IITI. He thanked both the Directors for providing the support to conduct this course. He further thanked the course faculty members for agreeing to support the course and course participants to join the course.

*Reported by:  
C. P. Paul (incubation@rrcat.gov.in)*

### **N.3: RRCAT inks agreement for incubation of KIRTI-1010**

RRCAT has developed a new, powerful 10 MeV, 10 kW electron linear accelerator (Linac), which is named as KIRTI-1010 (कीर्ति - कीटाणु रहित्तीकरण त्वरक इकाई). This linac will be used for electron beam radiation processing and has added to the “आत्मनिर्भर भारत” capabilities in this high-tech area. It has the highest operating beam power level in the country and has been tested extensively at RRCAT. In order to take this high-

tech Indian technology for wider application in the society, it is first necessary to test this system in Indian industrial environment. This is an extremely important step towards building confidence in indigenous technologies and systems. The purpose also includes generating industrial operational feedback and performance data, which will be used for refining and ruggedizing the system design and for developing maintenance management systems, which are important for such complex technology equipment. For the above purpose, the expression of interest from industries was invited by the Incubation Centre-RRCAT and M/s Microtrol Sterilization Services Private Limited, Mumbai was chosen for the above incubation.

In the beginning of Signing Ceremony, Dr. C. P. Paul, Convener, Incubation Centre-RRCAT welcomed all to the ceremony and informed that incubation of Linac is being carried out to meet three objectives- long term process operation in Indian industrial environment, development of product recipe based integrated facility operation control system with a single control interface, and ruggedization of fail-prone subsystems.



*Dr. S. V. Nakhe, Director, RRCAT and Shri Vikram Kalia, Director, Microtrol during Signing Ceremony of the incubation agreement.*

In the opening remark, Dr. S. V. Nakhe, Director, RRCAT said, “It is a new beginning, where RRCAT is signing agreement with industry for the incubation of high-value high-tech machine for further value addition based on the industrial feedback. It is a unique initiative towards “Atmanirbhar Bharat”, as the machine will be operated by an industrial partner far away from RRCAT in Bengaluru. RRCAT developed Linac is first of its kind in the country, and the technology and capacity of building such Linacs is available with only a few developed countries.” He further informed that RRCAT followed a transparent procedure for identifying the incubatee and certainly Microtrol was the most deserving incubatee.

Shri Jishnu Dwivedi, Head, Industrial Accelerator Division, RRCAT informed about the challenges and timeline for the above incubation activity. According to present plan, the machine will be dispatched to incubatee site at Bengaluru by the end of November 2022 and it will be installed for testing by the end of December 2022. He also highlighted the challenges ahead for the incubation and requested the support of all team members to achieve the goal.

Shri Vikram Kalia, Director, Microtrol Sterilization Services Private Limited, Mumbai expressed his gratefulness to the Department of Atomic Energy (DAE) for supporting entrepreneurs through the process, from plant design, training of manpower to assured raw material, literally through the life cycle, “आदि से अंत तक”. He informed the house that earlier DAE extended gamma radiation technology for radiation processing applications and now they are selected for the incubation of e-beam radiation processing technology. He further expressed those institutions, like – RRCAT will provide appropriate handholding for this growing industry for the successful deployment of these new technologies.

Dr. S. V. Nakhe and Shri Vikram Kalia signed the incubation agreement on behalf of Incubation Centre-RRCAT and Sterilization Services Private Limited, respectively. This may be noted that Linac based electron beam radiation processing offers several advantages including being environment friendly, secure, and fast (offering quick turnaround time for the processed goods). The Linac e-beam technology is extremely useful for sterilization of medical devices. It can sterilize the medical devices in their finally packed condition and leaves no harmful residue in the medical devices. This not only saves the devices from any chances of reinfection during subsequent handling, but also provides a safer alternative to the presently prevailing sterilization method based on environmentally hazardous, toxic and carcinogenic gas, like ethylene oxide, which may also leave a residue in the product. In view of its advantages, the e-beam technology is rising rapidly around the world.

*Reported by:*  
*C. P. Paul (incubation@rrcat.gov.in)*

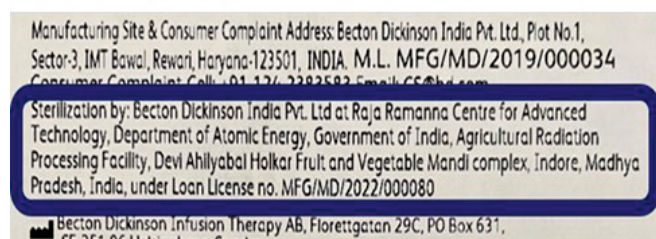
### N.4: Electron beam sterilization of 630 cartons of BD Venflon Pro I.V. Cannula at ARPF, RRCAT, Indore

Incubation Centre-RRCAT received an order under incubation services for electron beam sterilization of 630 cartons (individual devices 3.15 lakhs) of Venflon™ Pro I.V. Cannula at ARPF from M/s Becton Dickinson India Pvt. Ltd., Bawal, Rewari, Haryana. The product belongs to Risk Class-B and is used for blood/fluid transfusion. M/s Becton Dickinson (BD) is one of the largest global medical technology companies in the world.

The e-beam radiation processing was carried out during October 3-7, 2022 as per standard operating procedure under the quality management system (QMS) applicable for the

regulated medical devices (ISO 11137, Medical Device Rules-2017 and ISO 13485). With this assignment, RRCAT successfully achieved the high-quality levels required for e-beam sterilization, at par with international standards, and was audited through in-depth audit by third party agencies and the quality control division of BD.

Quality control during the processing was done by keeping the machine parameters within permissible tolerance bands, continuous logging, and verification of process data. In addition, reference dosimeters (alanine pellets) were used, which were independently read and confirmed.



*BD IV cannula Venflon.™*



*Designated storage area for BD cartons at ARPF.*

After successful inventory QC checks as per ARPF QMS requirements, the complete consignment was divided into 20