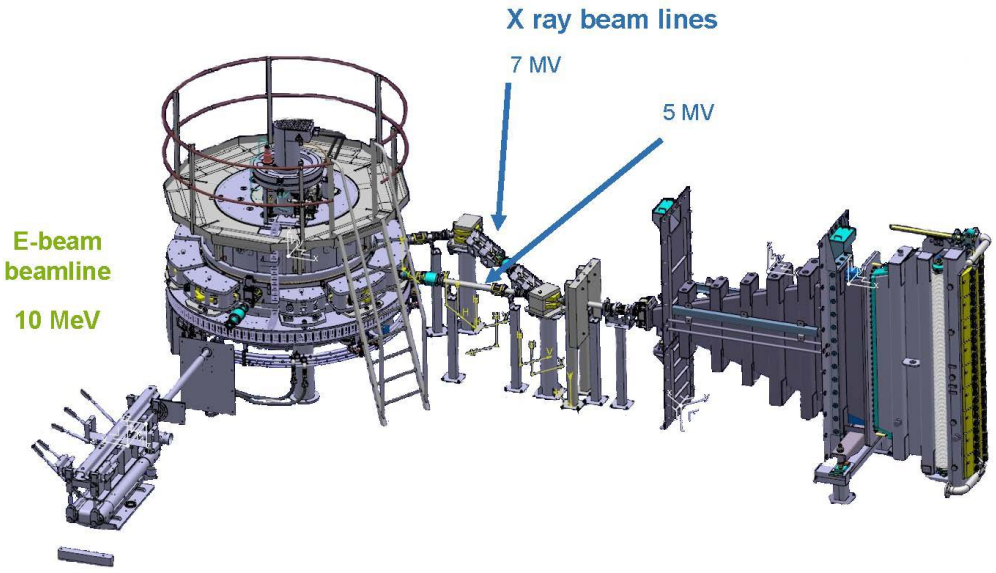
FEERIX, A NOVEL IRRADIATION PLATFORM FOR R&D, EDUCATION AND TRAINING

Florent KUNTZ [1], Abbas NASREDDINE [1*], Nicolas LUDWIG[1], Alain STRASSER [1]
[1] Aerial, 250 Rue Laurent Fries, 67400 ILLKIRCH GRAFFENSTADEN (France)

Nowadays, a clear growth in switching from industrial radioactive source based (^{60}Co) irradiators to X-ray and Electron Beam irradiators is observed in the field of industrial radiation processing as well as for health or research applications needing smaller irradiators. This switch is driven by the difficulty to purchase, transport and reload radioactive sources as well as dealing with potential radioactive wastes. Electron beam or X-ray irradiation is a cold, and residue-free physical treatment that has been used for several decades. Among the desired effects on irradiated products one can mention, the microbiological decontamination or sterilization, the modification of the physico-chemical properties of materials, the radical degradation of molecules of interest or the radiochemical creation of neoformed molecules.

The feerix facility, setup in 2019, is an industrial like, novel and unique high energy and high power irradiation plant with its multiple beam lines producing 10 MeV electrons and 5 and 7 MV X-rays.

It is a complementary tool to Aerial's existing platform of irradiation facilities based on electron accelerators. Low, medium and high energy electron and X-ray beams are now available at Aerial for R&D, education and training purposes on radiation applications, innovative approaches of irradiation process control and more over on high dose dosimetry.



Absorbed dose and dose measurement is indeed of prime importance for the control of all the above listed applications. The absorbed dose, which is not only process parameters dependent but also product dependent, is the primary factor to master while processing a specific product. It can be assessed through complementary approaches, practical measurement and in silico with Monte Carlo simulation tools.

There is clearly a growing demand from the industry and researchers for accessing fully qualified training and R&D facilities and capabilities.

Education and training as proposed at Aerial in the field of radiation processing is based on three pillars, know, understand and execute.

It is therefore clear that both a theoretical and a practical approach are used to address, during the proposed training sessions, the importance of process control and traceable dosimetry measurements.

The education and training program is dedicated and customized to each of the key positions of the radiation processing activity i.e. irradiation plant operators, plant managers, quality assurance managers, dosimetrists, auditors, regulation bodies.

With its unique platform of Electron Beam and X ray facilities covering low, medium and high energy radiation fields and “industrial like” innovative irradiation configurations, associated to an accredited dosimetry laboratory with state-of-the-art equipment, Aerial, as IAEA Collaborating Centre, is open for international collaborative research and training.