ACCELERATING YOUR AMBITIONS
TARGETBEAM AXIS

X-ray radiation line

- The electron beam is generated by a 3.5 MV Singletron designed and produced by HVE for ATRON.

- This electrostatic electron accelerator has a floor space requirement of 10.4 x 6.9 m².

- The continuous electron beam, delivered on a removable conversion target, is adjustable in current (from pA to mA) and in voltage (from 0.2 to 3.5 MV) so that a very wide dose-equivalent rate range can be achieved from 0.1 μSv/h to 500 Sv/h at 1 m from the target.

- The electron source consists of a 100 μm LaB₆ cathode.

- The emission current is controlled both by the current of the filament and the voltage of a Wehnelt cylinder which surrounds it.

- It has a service life of 4000 hours at 1 mA.

ACCELERATOR ACCURACY

- The stability of the accelerating voltage is ensured by the measurements of a calibrated resistor string and a potential difference (GVM).

- The calibration string presents an accuracy of 0.15% and preliminary studies have shown a drift of less than 0.1% over an eleven-month period.

BEAM OPTICS

- The energy spectrum of the X-ray radiation field produced by braking radiation (bremsstrahlung) extends from zero up to this energy and the resulting dose-equivalent rate is proportional to the current of the beam.

RADIATION FIELD

- The conversion target, measuring 40 x 220 mm², consists of a 1.5 mm tantalum layer attached to a copper support which facilitates its cooling.

- The 2.5 kW beam power is distributed on the target by a 1 kHz vertical scan. In addition, a triangular-shaped 2 kHz horizontal scan is applied in order to uniformise the radiation field over a range of ±15° with respect to the normal of the incident field.

- For a given beam energy, the energy spectrum of the X-ray radiation field produced by braking radiation (bremsstrahlung) extends from zero up to this energy and the resulting dose-equivalent rate is proportional to the current of the beam.

- Uniformity < 2% at ±15°

3.5 MeV Singletron HVE e⁻-beam & X-rays
A technological platform

**ATRON IS BASED ON A BREAKTHROUGH TECHNOLOGY IN NUCLEAR INSTRUMENTATION WHICH AIMS TO ABANDON THE USE OF RADIOACTIVE SOURCES IN FAVOUR OF CONTROLLED RADIATION.**

In partnership with CNRS and CEA laboratories, we have designed the principle of an electron beam and X-ray radiation field connected to a primary source to enable checking of the calibration of radiation meters.

In order to implement this method, ATRON has invested in an electrostatic electron accelerator equipped with a removable X-ray target.

This high-tech equipment offers wide energy and dose rate ranges, enabling a broad variety of irradiation needs to be met.

In addition, with the aim of ever greater customer satisfaction, we are in line with the general requirements for the competence of testing and calibration laboratories and are committed to a policy of accreditation under the ISO-17025 standard.

**OUR PLATFORM THUS MEETS THE HIGHEST ORGANISATIONAL, ENVIRONMENTAL AND CONFIDENTIALITY REQUIREMENTS AND PROVIDES OUR CUSTOMERS WITH A FLEXIBLE, APPROPRIATE AND ACCURATE MEANS OF IRRADIATION.**
The company was born out of CERAP’s determined ambition to expand its position in the nuclear instrumentation sector by building a tool to serve innovation in the ionising radiation field. This application, for which a patent has been filed, was developed with the help of ATRON’s in-house expertise in metrology and modelling and regional scientific and technical support.

Our centre, based in the heart of Normandy (a region rich in nuclear skills), is able to mobilise the necessary external expertise to offer its customers a in-depth understanding of physico-chemical phenomena and new areas of application.

We thus contribute to the drive to constantly improve your industrial performances by optimising your processes and making them reliable, in fields as diverse as energy, aerospace and plastics technology.

ATRON, A TECHNOLOGICAL PLATFORM WITH A WEALTH OF SCIENTIFIC EXPERTISE, AT THE HEART OF A REGION RICH IN SKILLS, THUS GUARANTEES CUSTOMISED ASSISTANCE IN YOUR PROJECTS, FROM QUALIFICATION OF YOUR R&D (RESEARCH AND DEVELOPMENT) WORK TO YOUR INDUSTRIAL PROCESS.
Contributing to your industrial performances

NUCLEAR
- Development of detectors
- Calibration of radiation measurement instruments
- Ageing tests

ELECTRONICS
- Semiconductor doping
- Fault measurement
- Qualification of components for aerospace

NEW MATERIALS
- Cross-linking, polymer grafting
- Thin film surface treatment
- Fireproofing of cables and tubes

CONSULTANCY
- Professional training
- Drafting of certification application files

HEALTHCARE
- Sterilisation of medical equipment
- Research in radiobiology

ENVIRONMENT
- Phytosanitary water treatment
- Improvement of food preservation