

## Brain-dedicated PET that achieves space savings but high resolution

**Vrain** Vision+Brain

The world's first Helmet-type PET with high resolution



## Advancing innovation: ATOX's cross-sector endeavors in medicine and infrastructure

How ATOX leverages its radioactive expertise to shape the future of nuclear medicine and bridge maintenance.



"We have over 1,700 employees now, and I think it's really through their dedication and commitment to this field that we've been able to expand while also achieving the recognition we have."

**Toshikazu Yaguchi**,  
President, Atox Co., Ltd.

With the advent and development of the nuclear age in Japan, ATOX entered into various business areas such as radiation control, decontamination, and maintenance, and now operates at all nuclear power plants in Japan.

After the Great East Japan Earthquake in 2011, the business environment in the nuclear industry changed dramatically, and ATOX entered the medical business by utilizing the radiation technology it had cultivated.

In the field of nuclear medicine, ATOX developed the world's first helmet-type positron emission tomography (PET) system, "Vrain", in collaboration with the National Institutes for Quantum Science

and Technology. In addition to improving the accuracy of tests for brain tumors and epilepsy, Vrain will be useful for cognitive diagnosis, and will enable imaging of abnormal proteins and the progress of their accumulation in Alzheimer's disease, in which the accumulation of a protein called amyloid- $\beta$  is believed to be involved in disease progression.

"Vrain is characterized by its small size and high performance in the form of a helmet, which en-

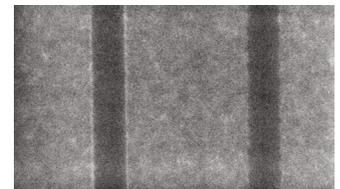
ables cost reduction compared to conventional devices, as well as high quality brain imaging and space saving. We hope to contribute to the development of testing systems as Alzheimer's disease drugs are approved," says president Mr. Toshikazu Yaguchi.

Meanwhile, ATOX has become the Japanese distributor of Belgian firm IRE ELiT's  $^{68}\text{Ge}/^{68}\text{Ga}$  generator for PET imaging. The company has supplied this leading-edge technology to Hokkaido University, as part of a joint effort to develop a revolutionary new way to detect prostate cancer.

"The traditional method of diagnosis in Japan involves taking samples directly from 20 to 30 different parts of the prostate, which can be painful," Mr. Yaguchi explains. "However, the introduction of imaging using a generator handled by ATOX reduces the need for direct sample collection and eases patient suffering."

Beyond medicine, ATOX is collaborating with Tokyo University on developing state-of-the-art bridge-maintenance technology.

The non-destructive inspection technique conventionally used for bridge maintenance and management is ultrasonic measurement. However, this method makes it difficult to visualize concrete thicker than 300mm. "To address this issue, ATOX developed an inspection system with a portable X-ray generator and a high-performance detector to visualize incomplete grout filling and PC steel fractures," Mr. Yaguchi reveals.



Visualization of concrete structure by Linear Accelerator

"We expect that this system will be well suited for the maintenance of other structures, including older structures, and we look forward to making a broad contribution to the field of social infrastructure maintenance."



$^{68}\text{Ge}/^{68}\text{Ga}$  generator



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