Energy

# Nuclear Energy

May 28, 2026

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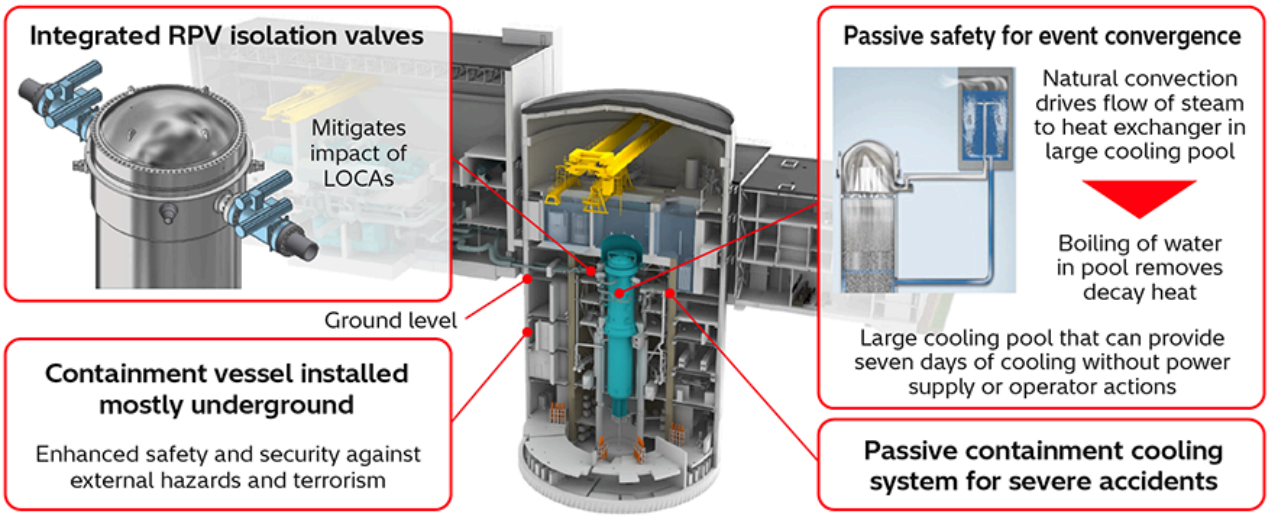
## 1. Construction of First BWRX-300 Small and Innovative Light Water Reactor with Equipment from Hitachi GE Vernova

Nuclear power generation is being reassessed as a key source of clean energy for realizing a carbon-neutral society. Meanwhile, small modular reactors (SMRs) are attracting attention worldwide as liberalized electricity markets drive demand not only for lower generation costs, but also for minimizing construction costs to reduce investment risk. In collaboration with its US partner, GE Vernova Hitachi Nuclear Energy (GVH), Hitachi GE Vernova Nuclear Energy, Ltd. is proceeding with the commercialization of the BWRX-300, a small and innovative light water reactor with an electrical output of 300 MW.

Canada's regulatory agency, the Canadian Nuclear Safety Commission (CNSC), authorized construction of the BWRX-300 in April 2025, recognizing its high level of safety, economic performance, and viability. Subsequently, Ontario Power Generation made the decision in May 2025 to proceed with the construction of BWRX-300 reactors, with operation scheduled to commence in 2030. This will make Canada the first G7 nation to embark on actual SMR construction.

In the construction of BWRX-300 reactors, high manufacturing accuracies are required for those items of equipment that directly influence plant performance and safety. In recognition of the company's past experience and high level of technical capabilities, Hitachi GE Vernova Nuclear Energy has been commissioned to supply Reactor Internals, Fine Motion Control Rod Drives, and Hydraulic Control Units. These critical items of plant equipment will be made in Japan for supply to Canada. As a partner of GVH, Hitachi GE Vernova Nuclear Energy intends to play its part in the successful construction of the first BWRX-300 and in finding new markets for the design.

(Hitachi GE Vernova Nuclear Energy, Ltd.)




**[1] Overview of BWRX-300 Small and Innovative Light Water Reactor**

* RPV: reactor pressure vessel, LOCA: loss of cooling accidents

## 2. Successful Restart of Unit 2 at Shimane Nuclear Power Plant of Chugoku Electric Power Company

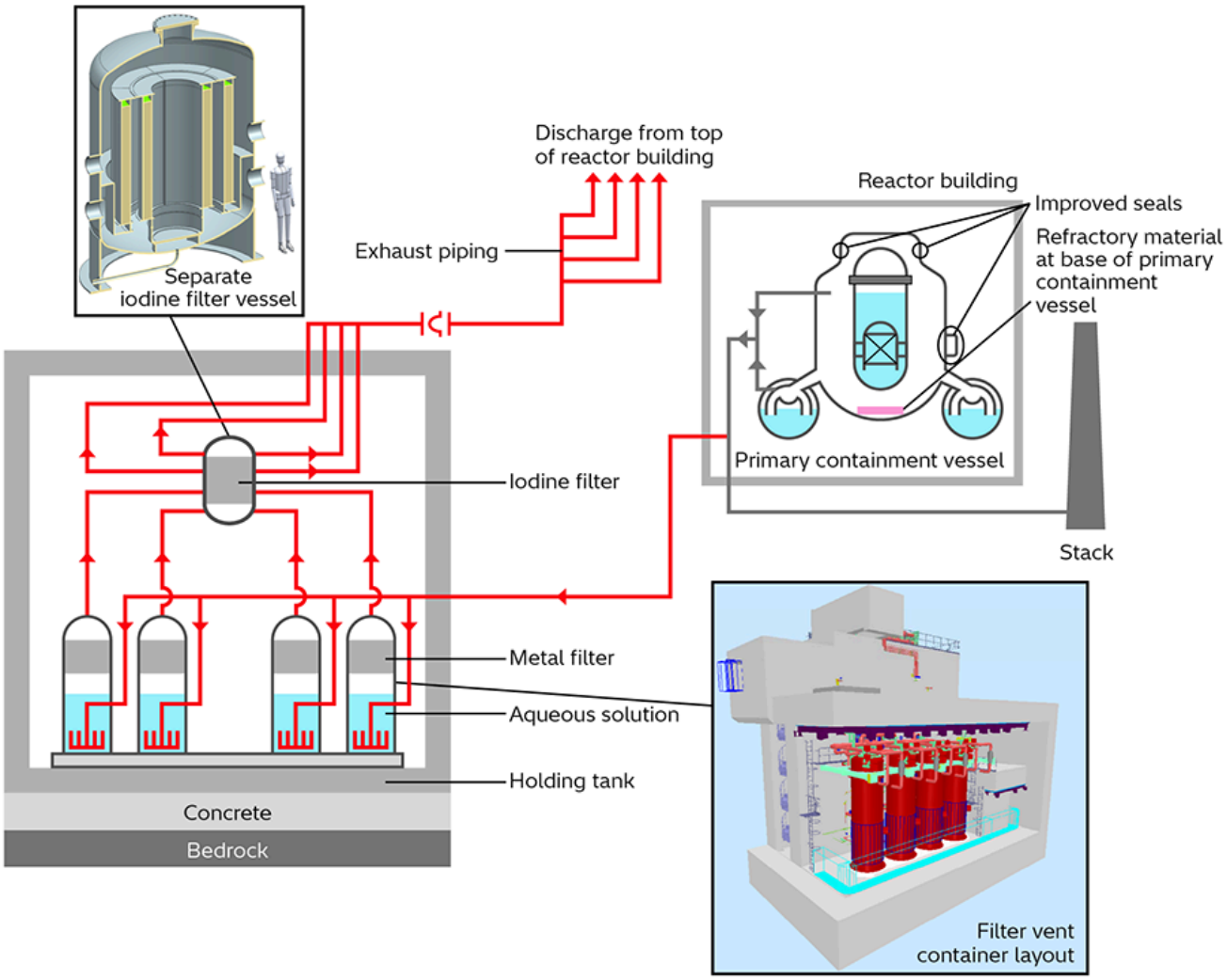
The Unit 2 boiling water reactor at the Shimane Nuclear Power Plant of Chugoku Electric Power Company, Inc. in the Chugoku region of Japan recommenced commercial operation in January 2025 after being out of action for approximately 13 years.

Drawing on lessons from the accident at the Fukushima Daiichi Nuclear Power Plant of Tokyo Electric Power Company, the design, construction, and installation of advanced safety equipment that satisfies new regulatory standards was completed under the supervision of Hitachi GE Vernova Nuclear Energy. This included a venting system with

built-in filtering that features a world-first separate iodine filter vessel to reduce the release of radioactive material into the environment, improved seals for the primary containment vessel that feature use of an enhanced ethylene propylene diene monomer (EPDM) rubber with superior heat and radiation tolerance, and refractory material at the base of primary containment vessel that minimizes erosion due to melted debris.

Although restarting of the plant went ahead with measures in place to prepare for unforeseen events, including technical support arrangements and a simulator for assessing the behavior of the plant at startup, no major problems arose and the restart proceeded on schedule.

With plans in place for further restarting of nuclear power plants that use boiling water reactors, Hitachi GE Vernova Nuclear Energy will contribute to the reliable supply of electric power and $CO_2$ emission reductions by managing the design, construction, and installation of advanced safety equipment.

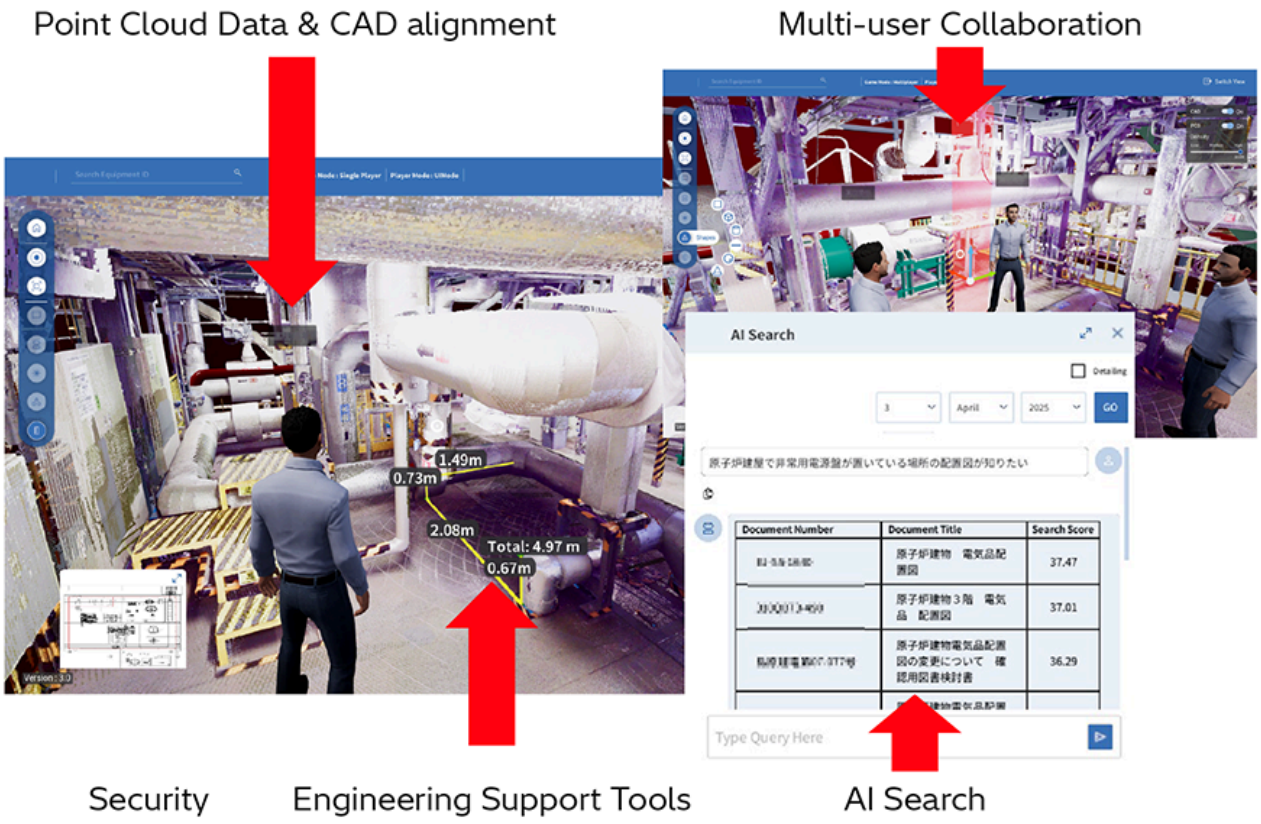



**[2] Diagram of Safety Systems at Shimane Nuclear Power Plant Unit 2, Including Venting System with Built-in Filtering**

# 3. Metaverse Platform for Nuclear Power Plants for more Efficient Construction and Maintenance

Hitachi has developed a metaverse platform for nuclear power plants to make the construction and maintenance of nuclear power plants more efficient. The platform provides comprehensive support that extends from design to construction and asset management by virtual spaces that digitally recreated on-site environments. This is done using digital twins in which high-precision point cloud data are overlaid on three-dimensional computer aided design (3D CAD) models that incorporate data on equipment attributes. This facilitates the sharing of information between electricity utilities and other stakeholders, enabling the identification of obstacles and routes for bringing in equipment even when site access is constrained. It helps to speed up decision making by providing comprehensive artificial intelligence (AI) search for the rapid extraction of information from large quantities of design documentation as well as functions for simultaneous access by multiple users.

In-house trials are currently underway to assess the utility of the platform for maintenance work and the installation of safety measures. The goal for the future is to integrate the many different forms of data for use in investment planning and to create data-driven power plant that optimize maintenance. Doing so will reduce costs over the entire plant life cycle while also improving reliability. Combining AI with the platform will accelerate digital innovation in the nuclear power industry and contribute to safe and efficient operation.




**[3] How the Metaverse Platform for Nuclear Power Plants is Used**

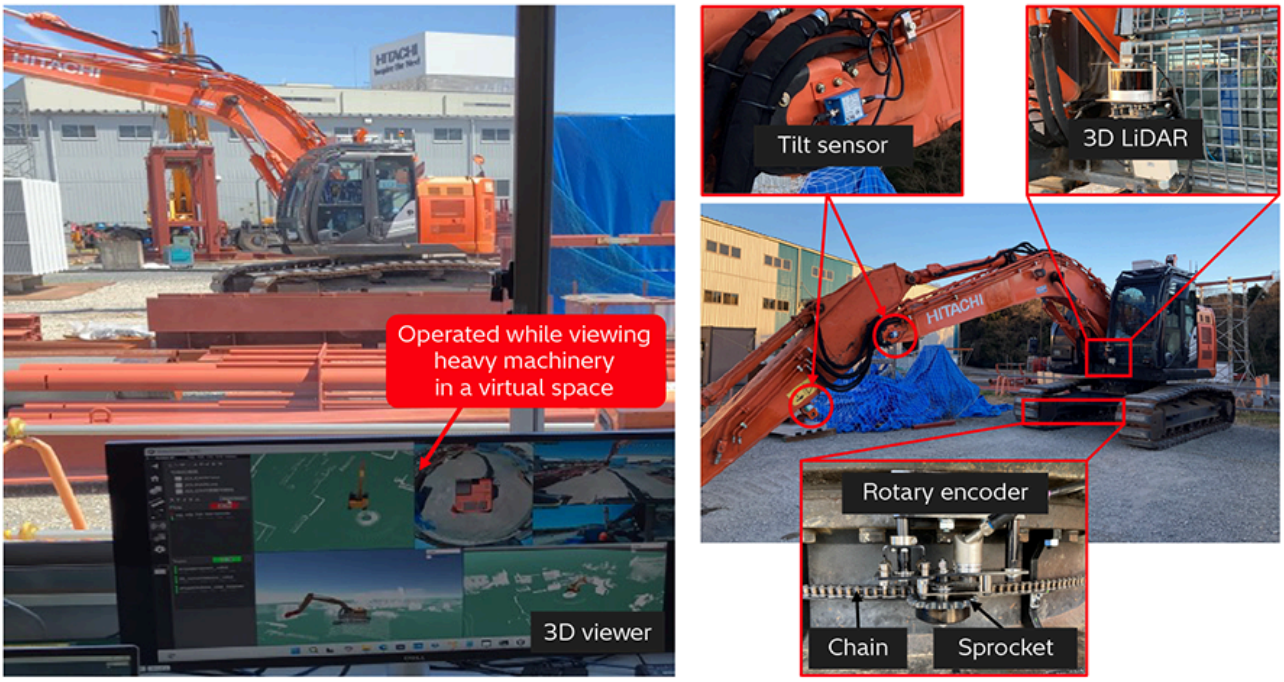
## 4. Support for Remote Demolition and Construction in Harsh Environments

In harsh environments with high levels of radiation, such as at the decommissioning of Fukushima Daiichi Nuclear Power Plant, the use of heavy machinery or robots to perform work remotely is crucial to reducing radiation exposure. Accordingly, Hitachi Plant Construction, Ltd. has developed technology to support remote demolition and construction work to enable the safe and efficient execution of such tasks in hazardous locations.

To facilitate remote operation of the heavy machinery used at such sites, the system replicates the operation of these machines in real time in a virtual space. This provides the operator with a view of the machine from a variety of different angles when performing tasks such as remotely positioning the machine or controlling the boom angle. A cutter was fitted to the boom end of one such heavy machine that had been specially modified for remote operation (the cutter was supplied by Okada Aiyon Corporation and the machine was a ZX225 from Hitachi Construction Machinery Co., Ltd.). The machine was also equipped with a tilt sensor to determine the movement of the machine's arm and boom, a rotary encoder to measure the angle of rotation of the

upper structure, and a 3D light detection and ranging (LiDAR) sensor to identify the position of the machine relative to the rest of the site. When the machine is used to cut material during demolition, the movement of these parts is replicated in real time in a 3D viewer via the local network. It was demonstrated that use of this technology enabled the remotely operated machine to be controlled more safely and efficiently, including being able to monitor aspects of its spatial movements that could not be seen in camera images alone and to determine the gap between the cutter and demolition material from a variety of different angles.

The aim is to contribute to resolving societal challenges by utilizing this technology in upcoming debris removal and decommissioning plants.




(a) Remote operation (b) Mounting of sensor on heavy machinery

**[4] Mockup Trial of Remote Demolition**