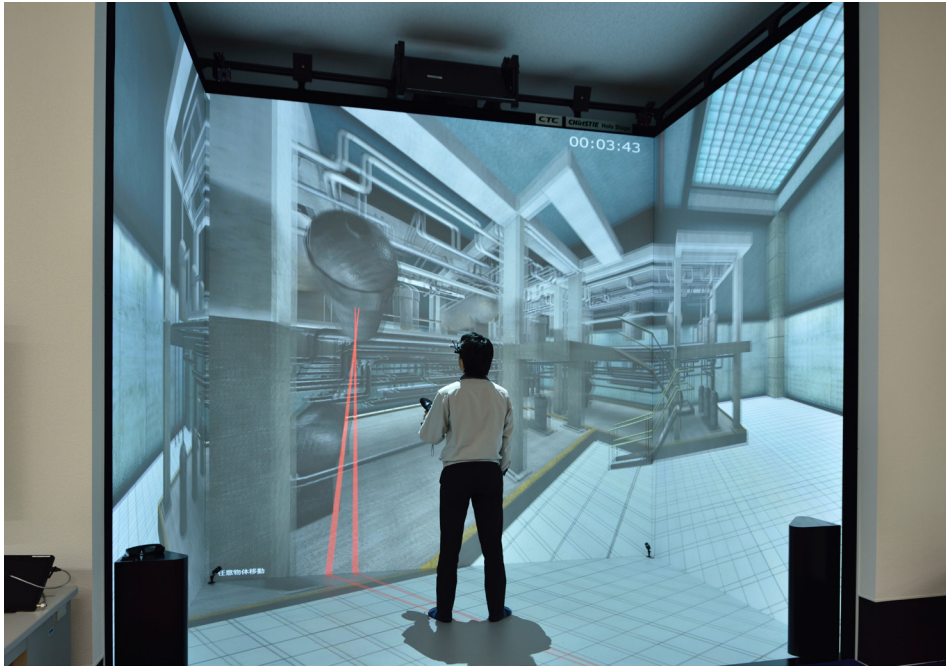


Naraha Remote Technology Development Center

Case Study



Christie helps to create 3D visualization of Fukushima nuclear plant interior

One of the world's worst nuclear disasters happened on March 11, 2011, when a massive earthquake resulted in a 15-meter high tsunami that caused the Fukushima No 1 Nuclear Power Plant to fail. The failure led to three nuclear meltdowns, hydrogen-air explosions, and the release of radioactive material.

As part of the decommissioning of the plant and clean up the radioactive material that escaped, the Fukushima Research and Development Department of Japan's Atomic Energy Research and Development Agency (JAEA) established the Naraha Remote Technology Development Centre. This is a facility where demonstrations can be conducted and components tested,

to establish the technical base for remote control devices and robots required for the decommissioning of the plant.

Hisayuki Kojima, Deputy Manager of JAEA's Naraha Remote Technology Development Center, explained that its purpose is to bring together domestic and foreign expertise in order to complete the decommissioning of the plant as quickly as possible. "Measures to reduce radiation exposure are very important issues in carrying-out the decommissioning of nuclear facilities. Although there are various technologies designed to counter radiation, a virtual reality (VR) system is considered to be particularly effective," he said.

Customer:

Naraha Remote Technology Development Center



Location:

Naraha-machi, Fukushima Prefecture, Japan

Industry/Market:

- Nuclear energy
- Visualization

Requirements:

- 3D visualization

Summary:

The Naraha Remote Technology Development Center, a division of the Fukushima Research and Development Department of Japan Atomic Energy Agency, turned to Christie to create 3D visualizations of one of the most dangerous environments on earth, protecting workers and speeding up decommissioning of the damaged Fukushima Nuclear Power Plant.

Product:

- Christie HoloStage
- Christie Mirage WU12K-M (5)

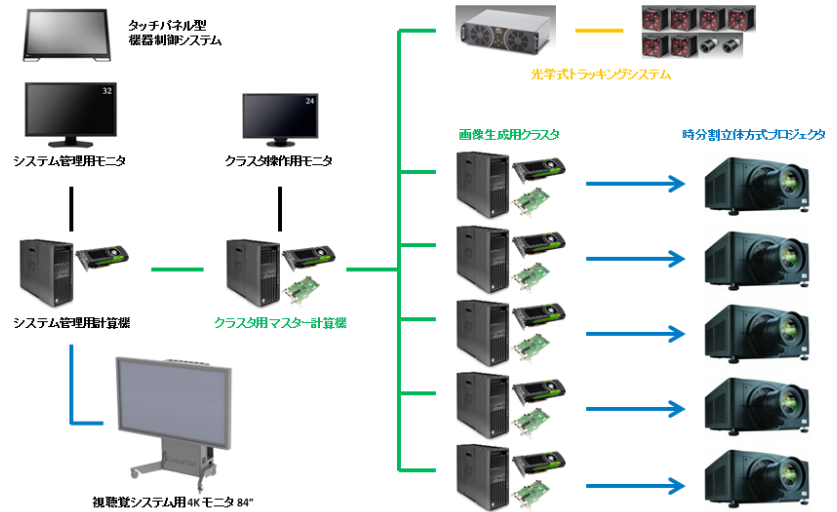
Results:

The Naraha Remote Technology Development Centre has extended its research capabilities by incorporating the Christie HoloStage and visualization system, allowing workers to efficiently conduct the decommissioning of Fukushima Nuclear Power Plant while reducing their exposure to harmful radiation.



▲ Hisayuki Kojima, Deputy Manager, JAEA's Naraha Remote Technology Development Center

System Configuration



"In order to carry out the decommissioning work, it is necessary to work inside the reactor building, but we also need to limit the time spent in the building for the health of the workers. Using the VR system to fully understand the environment inside, the workers are able to receive a clearer vision of their tasks and a more thorough training, ultimately reducing their radiation exposure."

Following extensive testing, JAEA adopted the Christie HoloStage, a three-sided, visualization solution that creates a completely contained, realistic, life-size, virtual environment. Christie HoloStage has been used in various industries such as automobile manufacturing, as well as university research institutions, but with the Naraha Remote Technology Development Centre it was the first time the Christie HoloStage was used in the field of nuclear energy practice.

The Christie HoloStage promotes learning and teamwork in a collaborative, immersive environment while creating a powerful, full 1:1 scale visualization display. With this customized, spatially-integrated immersive display, users can transform understanding through immersion, stereoscopy and interactivity to enable

faster, and more intuitive interaction with data for researchers – enabling a giant leap in understanding and communication value.

To complement the HoloStage, the Christie Mirage WU12K-M projectors were chosen to deliver a realistically stunning 3D experience in recreating the inside of the building as precisely as possible. Built on the award-winning Christie M Series platform, the Christie Mirage WU12K-M features 10,500 ANSI lumens, WUXGA resolution and up to 10,000:1 contrast. Combined with embedded Christie Twist™, additional standard features and ruggedized options, Christie Mirage M Series provides high-performance and ease of use for high-performance 3D users.

"In decommissioning work, the time that can actually be spent inside the worksite is extremely limited, so it is important that we can visually check the site without entering it. We needed a system that visually re-create the reactor building to effectively train workers and plan the work," said Kiyoshi Yoshizawa, Executive Sales, Science & Engineering Systems Division, ITOCHU Techno-Solutions Corporation, a valued partner of Christie

Japan that was responsible for the installation of the system.

"Having the best understanding of the environment helps eliminate any misunderstandings and ensure the workers are thoroughly equipped and prepared, which could make a critical difference inside the plant," Yoshizawa continues.

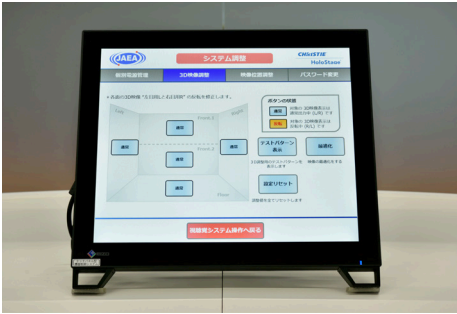
"The team working in the power station need to use the Christie HoloStage to hold meetings before they start work. We want to create a workflow that will reduce their radiation exposure, by working with the VR system," said Kojima.

In addition, Kojima said: "The Christie HoloStage also provides great cost and productivity benefits, as it is able to provide a fuller sense of the environment within the building. As such, the installation of the Christie HoloStage made perfect sense for us."

Deputy Director Kojima fully realizes the practicality of the VR system, and plans for some ingenious ideas for the future use of HoloStage. "There is an important role to be played in recording and archiving this decommissioning work at Fukushima Number 1 Nuclear Power Station. I think that



▲ Christie HoloStage in action



▲ Intuitive and easy to use touch panel



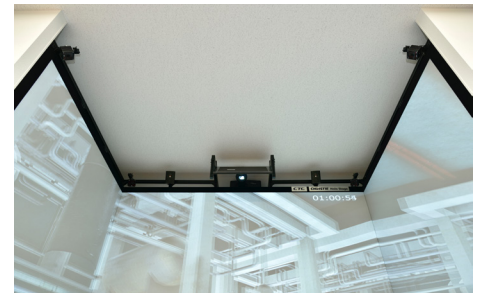
▲ Christie Mirage WU12K-M projectors display visuals of the Christie HoloStage system from the rear



▲ Christie 4K display reproduces the image of the site with extreme precision



▲ PC cluster system supporting advanced data processing and video processing



▲ ART Track 5 tracking system using six cameras

the VR system and Christie technology can be one of the tools for making that a reality."

Mamoru Hanzawa, General Manager, Christie Japan, hopes to build on the success his team has seen in Japan. "This particular installation is notable as the first 3D visualization system deployed by Christie in the nuclear energy sector. We are excited to bring our solutions to new

industries and proud to help provide a realistic and visually spectacular virtual reality experience for the staff at Naraha Remote Technology Development Center," he said.

Contact Christie

Contact us today to find out how your organization can benefit from Christie solutions.



Christie® Mirage WU12K-M

- It handles 3D (stereoscopic view), simulation, and VR use
- Lightweight and compact body that demonstrates excellent mobility

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