Yasumasa Matsui Explores

the Frontlines of Nuclear Energy

Interpreting the Future of Energy Through Dialogues in the Field

Yasumasa Matsui
Freelance Announcer and Journalist

Extra Edition | The Day to Realize the Importance of Energy in Future Society

Report on HSIF2025 JAPAN, OSAKA and Expo 2025 Osaka, Kansai

On Thursday, July 17, 2025, Hitachi, Ltd. held “Hitachi Social Innovation Forum 2025 JAPAN, OSAKA,” the largest event of the Hitachi Group. This forum is designed to share Hitachi’s vision for the future and create opportunities for collaborative innovation with customers and partners. This is the 27th time the event has been held. It was held in Osaka for the first time, in conjunction with the 2025 World Exposition (hereinafter, “Expo 2025 Osaka, Kansai”), in which Hitachi has participated. “Future City” Pavilion, and this forum included exhibitions and sessions based on four themes: Future Cities, Quality of Life, Digital-Centric, Future Energy.

Freelance announcer and journalist Yasumasa Matsui visited HSIF2025 JAPAN, OSAKA and Expo 2025 Osaka, Kansai to cover the energy sector-related exhibitions and sessions at the forum and the experience-based exhibitions at the expo pavilion. This report is presented as an extra edition of the Energy Highlights special feature, “Yasumasa Matsui Explores the Frontlines of Nuclear Energy: Interpreting the Future of Energy Through Dialogues in the Field.” What did Matsui think of Hitachi’s initiatives?

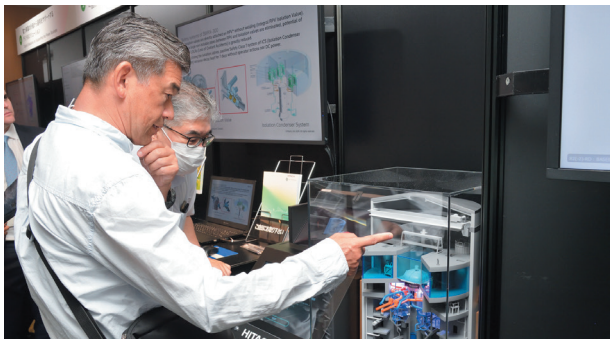
■ Combining nuclear and digital technologies to expand the possibilities ——Future Energy exhibition/Nuclear Energy

In Osaka, it began raining on the morning of Hitachi Social Innovation Forum 2025 JAPAN, OSAKA, even though it has been sunny and extremely hot the previous day. Despite the weather, a large number of visitors packed the Hilton Osaka venue. The strong turnout reflected the high level of interest in the forum, which was being held in Osaka for the first time.

Matsui arrived at the venue and went to the Future Energy exhibition section first. In this section, battery solutions for the optimization of the lifecycle of batteries, from their manufacturing to their use and reuse, environmentally efficient

transformers, digital solutions that support electricity businesses, High Voltage Direct Current (HVDC) technologies, and nuclear energy technologies were on display.

The theme of the nuclear energy sector exhibition was “Creating the Future of Nuclear Energy through One Hitachi.” The exhibition introduced Hitachi's nuclear energy sector as a whole while focusing on the BWRX-300 small light-water reactor. Of the many exhibits, the 3D model of BWRX-300 caught Matsui’s eye first. Matsui became excited looking at the 1:120 scale model of the reactor, cut to reveal its internal structure. Matsui said, “I’m a fan of models, and seeing a physical 3D object like this makes it much easier to understand than CG images. It’s also a more engaging way to present the technology.” He asked Kazuaki Kito, who was in charge of explanations at the exhibition, a series of incisive questions while looking closely at the model.



“When I reported on the accident at Fukushima Daiichi Nuclear Power Station, I made a model of the Unit 1 Reactor, so, I know what its structure is like. Now I clearly understand how BWRs have evolved over the last fifty years.”

Although nuclear reactor manufacturers are developing small modular reactors around the world, none are currently in operation. The BWRX-300 is drawing attention as it is on the leading edge of the popularization of small modular reactors. The target is for it to begin operating in Canada in the 2030s.

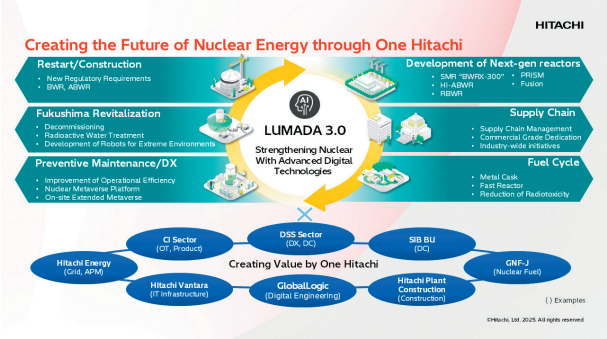
“Yuriko Onishi, who is engaged in the development of innovative next-generation nuclear reactors, explained the BWRX-300 to me. I have great expectations for safe, next-generation small modular reactors that reflect the lessons learned from the Fukushima accident. Moreover, I see great value in their modular design and potential for mass production. I understand that it is important to have both made-to-order large reactors and mass-produced small modular reactors to meet diverse needs.”

There was a display screen next to the BWRX-300 model that showed a demonstration of the digital twin of the internal components of the reactor. You can check the layout of the devices and pipes and the movement lines of workers with a sense of the actual sizes of objects while manipulating an avatar using a video game controller. Illustrative images are provided at the moment, but they plan to create a digital twin of the real power plants in the future to increase management and operational efficiency.

“They said that nuclear power plant digital twins can also be used to educate students, and I really understood that. If something that is hard to see from outside becomes visible, it makes the nuclear energy sector seem accessible. This may make it possible for the sector to attract more job applicants.”

The theme of the nuclear energy exhibition, “One Hitachi”, implies that Hitachi aims to create value that supports a sustainable society by strengthening the cooperation between its nuclear energy divisions and the other business sectors of the Hitachi Group centered on Lumada 3.0, built on the evolution of the Lumada digital innovation

business, using AI and domain knowledge (on-site implicit knowledge and knowhow).



Creating the future of nuclear energy through One Hitachi

"Hitachi has a vision of the future that only they can envision because they are involved in all aspects of the nuclear energy business, from reactor design and construction to operation, maintenance, fuel cycle management, and decommissioning."

■ Hitachi's strengths lie in its comprehensive capabilities in the energy sector ——Future Energy exhibition, HVDC and batteries

Matsui then moved to the neighboring section exhibiting digital solutions for HVDC converter stations. Efficient long-distance high-capacity HVDC power transmission methods have become popular in Europe where a system for supplying electricity across international borders is well developed. In recent years, the adoption of HVDC systems has accelerated in regions such as the United States, China, and the Middle East, driven by the expansion of renewable energy and wide-area electricity trading. While Japan has relied on alternating-current transmission technologies to date, HVDC technologies area expected to help in the transmission of electricity from areas that are suitable for solar and wind power generation systems to large urban areas where demand for electricity is high. They are also expected to contribute to improving the stability of the national power grid.

"First, HVDC stands for high voltage direct current. As someone not very familiar with this field, I found the explanation very interesting and learned a lot of new things."

In the section showing battery solutions, Matsui received an explanation of solutions to ensure used batteries are efficiently recycled to accelerate the battery cycle from their manufacturing to their use and regeneration. Matsui said, "Having an interest in batteries, I believe that the next breakthrough technology to move beyond lithium-ion batteries is coming. However, hearing that you have been working to make the best of the current batteries makes me think that you will bring a new dimension to the field." Matsui seems to have seen the potential of Hitachi in the field of Future Energy, which is an essential part of a sustainable society.

"It is necessary to have large nuclear power plants generating power as a baseload power source and to build a flexible and resilient energy system by combining wide-area power networks for the efficient transmission of the generated power to other areas and small-scale power networks for generating and consuming power locally based on small nuclear power plants, renewable energy, and battery systems to increase sustainability, including our ability to respond to disasters. Hitachi's strengths lie in its ability to provide technologies for the generation, transmission, and even storage of electricity, as well as its ability to digitalize and increase the efficiency of these technologies."

■ Work style reforms needed in nuclear energy workplaces ——Future Cities exhibition

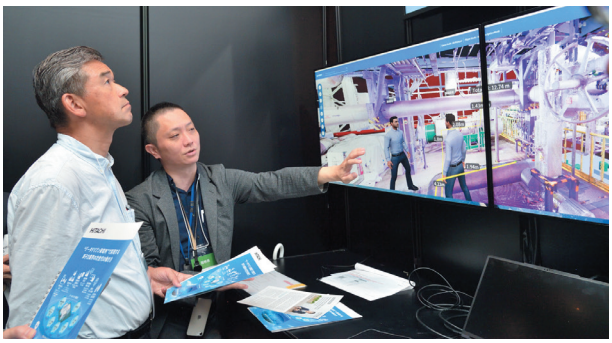
Matsui then viewed a video that contained simulations of future regional cities in the Future Cities section. The video shows harmonious cities where data from different social systems are linked using digital technologies.

“Just hearing the term ‘future cities’ can feel vague, but seeing it as a video makes it much easier to imagine.”

He received an explanation about “Next-Generation Workstyles in the Nuclear Industry Using Metaverse,” one of the technologies that will support workers in the future. Using the technology, the inside of a nuclear power plant is recreated in the metaverse so that Hitachi’s partners, including electric utilities and constructors, can share information about the on-site situation and other data using the platform. It helps increase the efficiency of work processes from design to construction, maintenance and asset management.

Next-generation workstyles in the nuclear industry using metaverse

“It is revolutionary that you can share the situation without being there. You also have a system that can diagnose the deterioration of equipment when a plant is in operation. If it can assess the condition inside pipes, for example, maintenance would become dramatically easier.”



“My graduation thesis was on predicting pipe wall thinning in thermal power plants using a solid-liquid mixed-phase flow model. It is now possible to use data to forecast and diagnose this deterioration in a digital space. After 40 years, we have finally gotten to this point. It is really moving.”

“The exhibition made me feel that digitalization will radically change the nuclear energy sector. The entire venue was full of the enthusiasm of the visitors, and it was impressive to see how interested everyone was in Hitachi’s technologies ”

■ Hitachi’s vision toward a “Harmonized Society” ——Discussion panel and keynote speech

After viewing the exhibitions, Matsui attended the energy-related business session titled “Integrating Energy and Digital Technology for a Sustainable Future.”

The session included a panel moderated by Kazumi Muraki, the President & CEO of Carbon Recovering Research Agency Co., Ltd. (CRRA). Andreas Schierenbeck, the Head of Energy Business of Hitachi, Ltd., Ayako Suzuki, the General Manager of the Nuclear Engineering and Product Division of Hitachi GE Vernova Nuclear Energy, Ltd. and Midori Kimei, an Energy Consulting Senior Professional in the Grid Automation Business Unit of Hitachi Energy Japan Ltd. were also on the panel. Muraki first talked about his awareness of the situation regarding climate change and the urgency of measures to address this issue. Schierenbeck then pointed out that the most effective way to achieve

decarbonization while fulfilling the increasing demand for electricity would be to introduce renewable energy. He added that nuclear power is necessary as a clean, stable and highly reliable source of electricity that can coexist with renewable energy and that the power grid must be improved to support the stable supply of electricity and Hitachi's technologies are indispensable in achieving this vision.

Next, Muraki discussed a device for directly capturing CO_2 and a business model using the device. This promising technological breakthrough is expected to contribute to the realization of a decarbonized society. Suzuki said that Hitachi's policy is to integrate digital technologies into its nuclear energy business to steadily expand its overseas small modular reactor business, promote domestic businesses and innovate workstyles. Kimei talked about initiatives utilizing digital technologies to contribute to the improvement of energy business operations in an environment that is increasingly complicated, which makes it harder to manage.

"I was able to get a good understanding of the direction of Hitachi's energy business as a whole. Muraki's explanation of the CO_2 capture technology was very interesting, and the panelists clearly explained other aspects of the business. I enjoyed listening to them."

Matsui then listened to Hitachi President & CEO Toshiaki Tokunaga's keynote speech, Hitachi's Vision Toward a "Harmonized Society": Achieving a Balance of Environment, Wellbeing, and Economic Growth. Tokunaga began his speech by emphasizing the importance of harmony because people around the world were more divided today. It is an important value that Hitachi has preserved as a part of the Hitachi Founding Spirit and also a part of Japan's spiritual nature. He said that Hitachi would aim to build a "Harmonized Society" together with its customers to harmoniously solve environmental issues, promote people's wellbeing, and facilitate the growth of the economy.

He then explained three keys to these initiatives: An evolved Lumada which is a result of the fusion of domain knowledge and AI, the genuine implementation of the One Hitachi concept, meaning that the Hitachi Group would create new value by working as one as an organization with Information Technology, Operational Technology, and products, and collaborative creation with society to realize an ideal society that utilizes people's opinions, data and technology, and he shared up-to-date examples of activities for each of these initiatives. Tokunaga closed his speech by saying, "As society and the times continue to change, we want to continue to ask, "What's next?" with a sense of joy together with all of you and share this spirit with the world."

"The speech impressed me because it had a clear structure that included three keys to the realization of a harmonized society. The explanation of each key was accompanied by a video detailing an example of the implementation of the key to keep the audience interested. I heard that the main venue was full and people were spilling over into the satellite venues as well, reflecting the high interest and expectations on what the new president would say."

■ We can change the future ourselves ——Expo 2025 Osaka, Kansai

After the break following the speech, Matsui traveled to Expo 2025 Osaka, Kansai. The rain that started in the morning had stopped by the time he got to the expo. He walked around the venue for a while as the temperature was relatively comfortable. He then went to the pavilion where Hitachi was participating in the expo as an exhibitor.

"This will be my second time at Expo 2025 Osaka, Kansai but my first time entering via the west gate. I am looking forward to visiting the pavilion."

"I wanted to run a lap on the Grand Roof (Ring), but I did not because it seemed slippery because of the rain."

Hitachi is participating in the Future Society Showcase project at that Future Life Expo: Future City Pavilion. It is a joint exhibition project with 12 co-sponsors from various industries, including KDDI and the Japan Association for the 2025 World Exposition. In the pavilion, Hitachi and KDDI are hosting the Mirai Meeting joint exhibition on the theme of Society 5.0 and Future Cities.

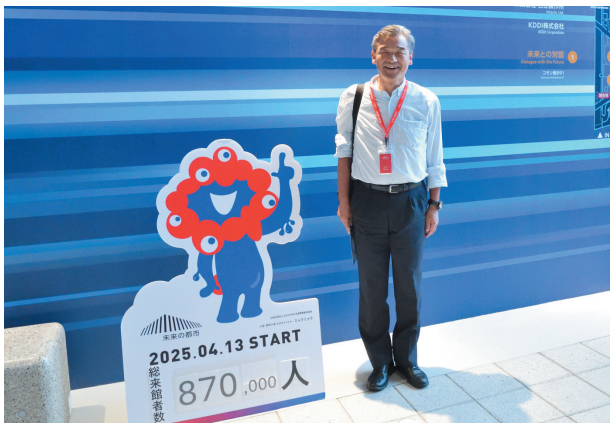
Mirai Meeting is an experience-based joint exhibition based on the concept, "We can change the future ourselves." The exhibition includes Mirai Theater, where 120 visitors at a time can experience how choosing solutions to future issues voluntarily will change cities in the future, and Mirai Arcade, where up to three visitors at a time can work together to play a game and experience solutions to social issues.

Energy Highlights

At Mirai Theater, an SOS from a child living in 2035 is played on a 6 meters high and 15 meters wide screen, and visitors consider familiar themes such as food and health and work and education and choose solutions using smart devices. The design of the exhibition enables visitors to make choices that change the future scenario.

“2035 is just ten years away. That is the near future. However, I believe the world will progress further than we would imagine today because the pace of change is accelerating. Climate change and the development of generative AI will probably result in a future that we never imagined.”

“Kazuhiro Ikegaya from the R&D group explained the concept of the exhibition. Digital technologies transform people's lives and jobs, increasing convenience. However, the growing use of generative AI will increase not only demand for electricity, but also water consumption. The story really stuck with me. What choices should we make now so that children have a better future? We must rethink this.”



After completing his extensive coverage of Hitachi Social Innovation Forum 2025 JAPAN, OSAKA and Expo 2025 Osaka, Kansai, we asked Matsui for his thoughts on the day.

“It was a day full of learning. I saw state-of-the-art technologies and initiatives in a physical way. At the same time, I was reminded energy is an essential to all these amazing technologies. With the rise of generative AI, the International Energy Agency (IEA) estimates that global electricity consumption by data centers will double by 2030, compared to 2024. Additionally, in the cities of the future like the one I saw today, electrification will be promoted to realize a decarbonized society, and the digitalization of industries will accelerate. This will require a huge amount of electricity. Realistically, thermal power alone won’t be enough to meet it. Of course, I hope renewable energy will continue to develop, but I have reaffirmed the importance of realizing a stable supply of energy using safe next-generation nuclear power generation equipment.”

Yasumasa Matsui

Freelance Announcer and Journalist

Born in Inami, Nanto City, Toyama Prefecture. Graduated from Toyama Prefectural Takaoka High School. Graduated from the Department of Chemical Engineering, School of Engineering, Tokyo Institute of Technology (now Institute of Science Tokyo). In 1986, he joined TV Asahi as an announcer. He co-hosted *Music Station* with Tamori, served as a sportscaster on *News Station*, and worked as a news and information anchor on programs such as *Station Eye*, *Wide Scramble*, and *Yajiuma Plus*.
In 2008, he became the principal of TV Asahi's announcer school, Ask. During his two years in this role, he trained over 100 announcers who went on to work nationwide. In March 2011, following the 2011 Great East Japan Earthquake (and subsequent Fukushima Daiichi Nuclear Power Station accident), he transferred from the announcer department to the news department as a reporter covering the nuclear power plant accident. He later served as a reporter covering the Imperial Household Agency and weather-related disasters, and worked as a commentator. In 2023, after leaving TV Asahi, he established his own agency, OFFICE Yuzuki. He also serves as a plastic model history research advisor for Tamiya Inc., ambassador for Nanto City, Toyama Prefecture, and media advisor for sake company, DASSAI Inc.

- **This article is published on Hitachi's energy portal site.**

https://www.hitachi.com/products/energy/portal/highlights/case_035.html

Published in September 2025 (not for sale)
Publisher: Nuclear Energy Business Planning & Management Division, Nuclear Energy Business Unit, Hitachi, Ltd