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Toshiba Corporation

Toshiba Energy Systems &amp; Solutions Corporation

**Toshiba is Bringing Innovative Technologies to the COP28 Japan Pavilion  
- Showcasing Energy Technologies Contributing to Carbon Neutrality  
SCiB™, AEROXIA™ and P2C (Power to Chemicals) -**

TOKYO—Toshiba Corporation and Toshiba Energy Systems & Solutions Corporation (hereinafter “Toshiba ESS”) will be exhibiting innovating technologies at the Japan Pavilion, the exhibition accompanying the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (“COP28”) in Dubai, UAE, from November 30 to December 12. Toshiba and Toshiba ESS will exhibit cutting-edge technologies—SCiB™, AEROXIA™ and P2C (power to chemicals)—that are contributing to the global goal of achieving carbon neutrality.

The Japan Pavilion at COP28, organized by Ministry of the Environment, Government of Japan (“MOE”), will serve as an exhibition and event space, a showcase for Japan's outstanding products, services, and initiatives in the global effort to address climate change.



Toshiba Group will exhibit energy solutions that play a crucial role in achieving carbon neutrality across the energy lifecycle – from generation and transmission to storage and smart-use. The Toshiba technologies the MOE has selected to showcase include SCiB™, complemented by AEROXIA™ and P2C.

■ Introduction Videos for the Three Technologies:

<https://www.youtube.com/watch?v=-PfV3GmQrrw>

**Exhibition Highlights:****1. Energy Storage and Smart-use: SCiB™ Optimizes Battery Systems from a Product Lifecycle Perspective**

The SCiB™, the lithium-ion rechargeable battery developed by Toshiba, offers performance characteristics that overcome challenges for conventional batteries. These include a long life of over 20,000\*<sup>1</sup> charge and discharge cycles, rapid charging, high input and output performance, excellent low-temperature performance, and wide state-of-charge\*<sup>2</sup> range, all while maintaining a high level of safety.

The excellent performance of the SCiB™ supports an extended lifetime, which contributes to lower consumption of limited resources such as lithium and reduces the total cost throughout the lifecycle of battery systems. The effects lead to co-benefits\*<sup>3</sup>, supporting a circular economy and fostering nature positive\*<sup>4</sup>. Models of SCiB™ cells and SCiB™ modules will be on display at the Japan Pavilion.

**2. Energy Transmission: AEROXIA™ Replaces SF<sub>6</sub> in Power Facilities with Eco-friendly Gas**

The excellent high-voltage insulation and current interrupting capabilities of sulfur hexafluoride (SF<sub>6</sub>) has won its wide use in gas-insulated switchgear, where it significantly contributes to compact design and easy maintenance. However, released into the atmosphere, it is over 20,000 more effective at trapping heat than the equivalent volume of CO<sub>2</sub>. These environmental concerns are behind legislative initiatives to prohibit its use in the EU and at the federal and state level in the United States.

Toshiba ESS prioritizes a product philosophy that integrates high safety, environmental sustainability, and user-friendliness. In 2022, with a dedication to environmental harmony and seek to heighten maintenance efficiency, Toshiba ESS introduced AEROXIA™\*<sup>5</sup>, which serves as an SF<sub>6</sub> alternative solution for electrical power facilities, entirely eliminating the use of SF<sub>6</sub> and utilizing natural-origin gas as an alternative. The product lineup continues to expand, showcasing a range of environmentally friendly and easily maintainable solutions. At the Japan Pavilion, AEROXIA™ will be introduced through video presentations.



### **3. Smart-use of Energy: P2C (Power to Chemicals) that Transforms CO<sub>2</sub> into Green Resources with Renewable Energy**

Achieving carbon neutrality requires the effective utilization of CO<sub>2</sub> as an asset. P2C, powered by renewable energy, transforms CO<sub>2</sub> into valuable resources, such as synthetic fuels and chemicals. Toshiba Group has developed a CO<sub>2</sub> electrolysis system based on artificial photosynthesis technology that converts CO<sub>2</sub> into CO, a raw material for chemical products, with the world's highest conversion rate\*<sup>6</sup>.

On the basis of that success, Toshiba Group along with other partner companies, was commissioned by the MOE to conduct "Project to Promote the Creation of Circular Carbon Society Model through CO<sub>2</sub> Recycling (Regional CO<sub>2</sub> Resource Utilization Study Business Through Electrolysis Utilizing Artificial Photosynthesis Technology)" (2021-2024). The Group has produced a prototype, "C2One™", that stacks over 100 cells, and that can process 250 tons of CO<sub>2</sub> a year and will conduct an operational demonstration of its capabilities. At the Japan Pavilion, the concept of P2C and its contribution to society will be introduced in a video.



Guided by its corporate philosophy, "Committed to People, Committed to the Future.," Toshiba Group contributes to society with products and services that support us in our daily lives and address societal challenges. The adoption of the Paris Agreement in 2015 has accelerated global initiatives toward carbon neutrality, and inspired companies to proactively address the long-term impacts of climate change. Toshiba Group is responding to this challenge by actively applying its advanced technologies to the realization of global objectives, such as carbon neutrality and a circular economy.

■ Japan Pavilion Website

<http://copjapan.env.go.jp/cop/cop28/en/>



\*1 Characteristics may vary depending on the type of cell and usage conditions.

\*2 SOC: State Of Charge, an indicator representing the charge level of a battery.

\*3 The phenomenon where one activity leads to multiple benefits. For example, the conservation of forests or wetlands not only contributes to biodiversity conservation but also protects carbon dioxide absorption sources, a synergy that helps combat global warming.

\*4 Halting the loss of biodiversity and putting it on a recovery trajectory.

\*5 "AERO" (naturally occurring gases) + "AXIA" (Greek for value) - A term coined by Toshiba ESS.

\*6 Partially developed by Toshiba under "Project to Promote the Creation of Circular Carbon Society Model through CO<sub>2</sub> Recycling (Verification of a Community-compatible CO<sub>2</sub> Recycling Model Based on Artificial Photosynthesis Technologies at Large CO<sub>2</sub>-emitting Facilities)" (2018-2022), commissioned by the MOE.