

## DC Power Supply System to be Implemented in New Building at Tsukuba Technology Research Institute —Full-scale Demonstration and Deployment Launched Toward Social Implementation of Next-Generation Power Utilization Technology—

Toda Corporation (Head Office: Chuo-ku, Tokyo; President and Representative Director: Seisuke Otani) will implement a DC power supply system in a portion of the laboratories in the Structural Materials Building\*<sup>1</sup> (tentative name), currently under construction at the Tsukuba Technology Research Institute (Location: Tsukuba City, Ibaraki Prefecture), as part of its efforts to achieve carbon neutrality by 2050.

This initiative combines the expertise in DC power supply that the Company has accumulated since 2012 with the latest technologies, in anticipation of societal issues such as growing power demand and decarbonization. It advances the demonstration and deployment of a DC power supply system that is more efficient and safer than conventional systems. By utilizing renewable energy and storage batteries and linking power generation, storage, and consumption through DC, the initiative aims to achieve energy savings by reducing power conversion loss. In the future, the Company will contribute to the achievement of a carbon-neutral society by establishing a framework for stable and efficient energy utilization in data centers, refrigerated and frozen warehouses, various factories, and other facilities.

This initiative is being carried out in collaboration with D-REX Corporation (Head Office: Yokohama City, Kanagawa Prefecture; Representative Director: Kenzo Miyazaki) and DC Power Vil. Corporation (Head Office: Minato-ku, Tokyo; President and Representative Director: Fumio Mura).

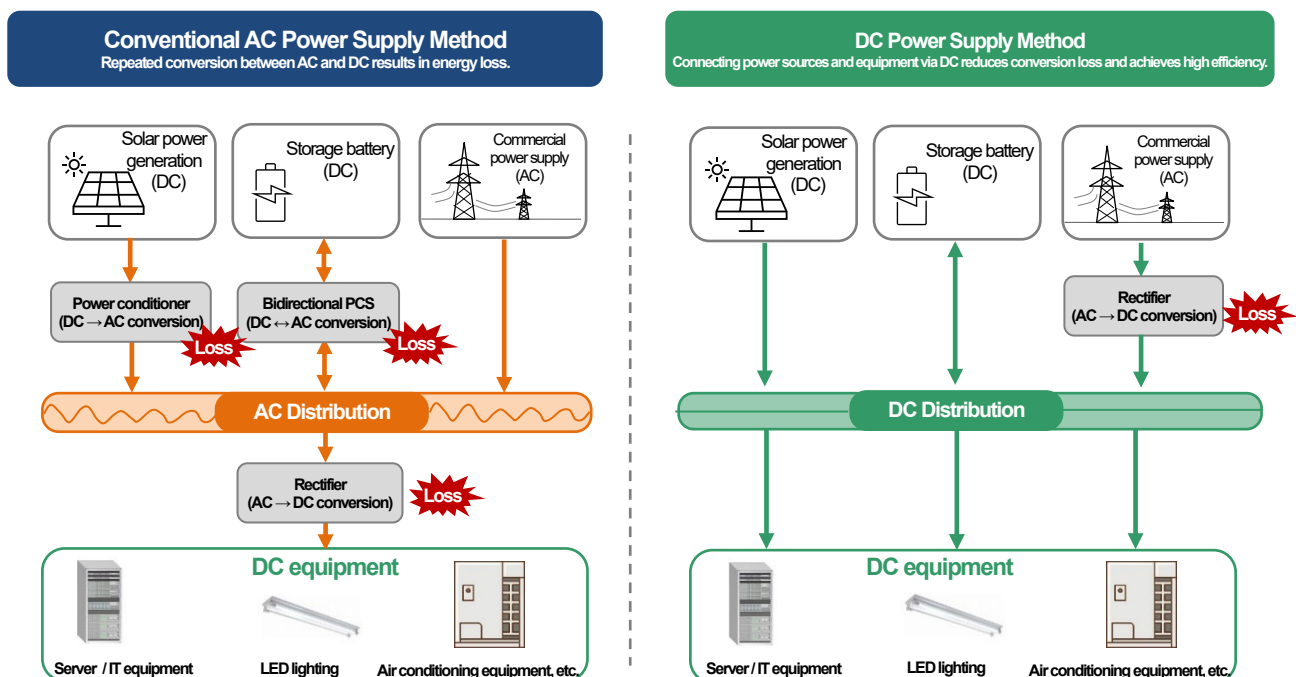


Figure: Conceptual Diagram Comparing Conventional AC Power Supply and DC Power Supply

\*1 New Experimental Facility to be Added to Tsukuba Technology Research Institute—Adopting Next-generation Design and Construction Systems Along with Numerous Advanced Technologies:

[https://www.toda.co.jp/news/2025/20251201\\_006175.html](https://www.toda.co.jp/news/2025/20251201_006175.html) (in Japanese)

## 1. Background

In recent years, power demand in Japan has been on an upward trend. As electrification advances in factories, vehicles, and other sectors toward a decarbonized society, facilities with high power consumption—such as data centers driven by the widespread adoption of generative AI—are expected to increase.

Overseas, global companies are actively exploring the use of DC power supply technology in conjunction with renewable energy and storage batteries, particularly for large-scale data centers serving the growing demand driven by generative AI adoption.

Meanwhile, Japan has a low energy self-sufficiency rate and relies heavily on imports for much of its resources. This structure means that surges in fuel prices and supply uncertainties caused by international conditions and currency fluctuations have a significant impact on power costs and economic activity.

Against this societal backdrop, DC power supply technology—which links power generation, storage, and consumption through DC—is anticipated to be a technology capable of suppressing conversion loss and enabling highly efficient energy utilization.

In recent years, research institutions and academic societies have been advancing surveys, research, and the development of technology roadmaps related to DC utilization, and wider adoption of DC power supply is gaining momentum.

Since 2012, the Company has been working ahead of the curve on research and development of DC power supply technology with an eye toward energy savings and decarbonization in the building equipment sector<sup>\*2</sup>. The Company will now leverage the expertise and knowledge it has cultivated to advance deployment toward societal implementation.

\*2 DC Power Supply System Introduced Toward ZEB:

<https://www.toda.co.jp/assets/pdf/20140821.pdf> (in Japanese)

## 2. Technical Overview

In the current AC-based power supply method, repeated AC/DC conversions occur in storage equipment, air conditioning systems, and other devices, generating power conversion loss at each stage. In recent years, methods that incorporate DC power supply into part of the equipment have been gaining traction; however, they still require conversion devices, and a certain amount of power loss and increased system complexity remain issues.

In response, the Company's DC power supply technology links power generation, storage, and consumption entirely through DC, reducing power conversion equipment to the greatest extent possible. This achieves both improved energy efficiency through reduced conversion loss and high reliability through a simplified system configuration.

Against the backdrop of growing societal power demand, the Company will now leverage the expertise and knowledge it has cultivated to advance the demonstration and deployment of next-generation power utilization technology—linking renewable energy, storage batteries, and equipment through DC—in the Structural Materials Building (tentative name) currently under construction at Tsukuba Technology Research Institute.

## 3. Future Initiatives

The Company will continue to advance the implementation and deployment of energy-saving technologies centered on DC power supply, with an eye toward societal issues, and will contribute to the achievement of carbon neutrality by 2050.

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The Company will optimize its management resources to promote revenue growth and improve capital efficiency, aiming to enhance corporate value while achieving its medium- to long-term target of 10% ROE.

