

Announcement Regarding Capital and Business Alliance with NEXT-e Solutions
— Aiming to commercialize the use of grid-scale batteries by reusing storage batteries —

September 14, 2022

Osaka Gas Co., Ltd.

Osaka Gas Co., Ltd. (President: Masataka Fujiwara, hereinafter “Osaka Gas”) has formed a capital and business alliance with NEXT-e Solutions Inc. (hereinafter, “NEXT-eS”), which has advanced storage battery management technology, with the aim of commercializing the use of grid-scale batteries*¹ by reusing vehicle batteries. As the first step, a demonstration using a storage battery system built by reusing EV storage batteries (hereinafter, “the demonstration”) will start.

With the introduction of renewable energy accelerating, storage batteries, which can make up for the instability of renewable energy, are expected to play more important roles. Storage batteries connected to the grid can charge electricity when electricity is in surplus on the grid and can discharge when electricity is in short supply, making it possible to stabilize the grid. Notably, grid-scale batteries have attracted much public attention because new electricity markets and relevant systems have been established recently.

To spread the use of storage batteries, recovery of used EV storage batteries and the reuse of batteries are expected to achieve further cost reduction of batteries. There are technical issues when reusing storage batteries, including a decrease in available capacity due to different deterioration conditions. With its storage battery management technology to solve such issues, NEXT-eS makes it possible to reuse storage batteries to their fullest potential.

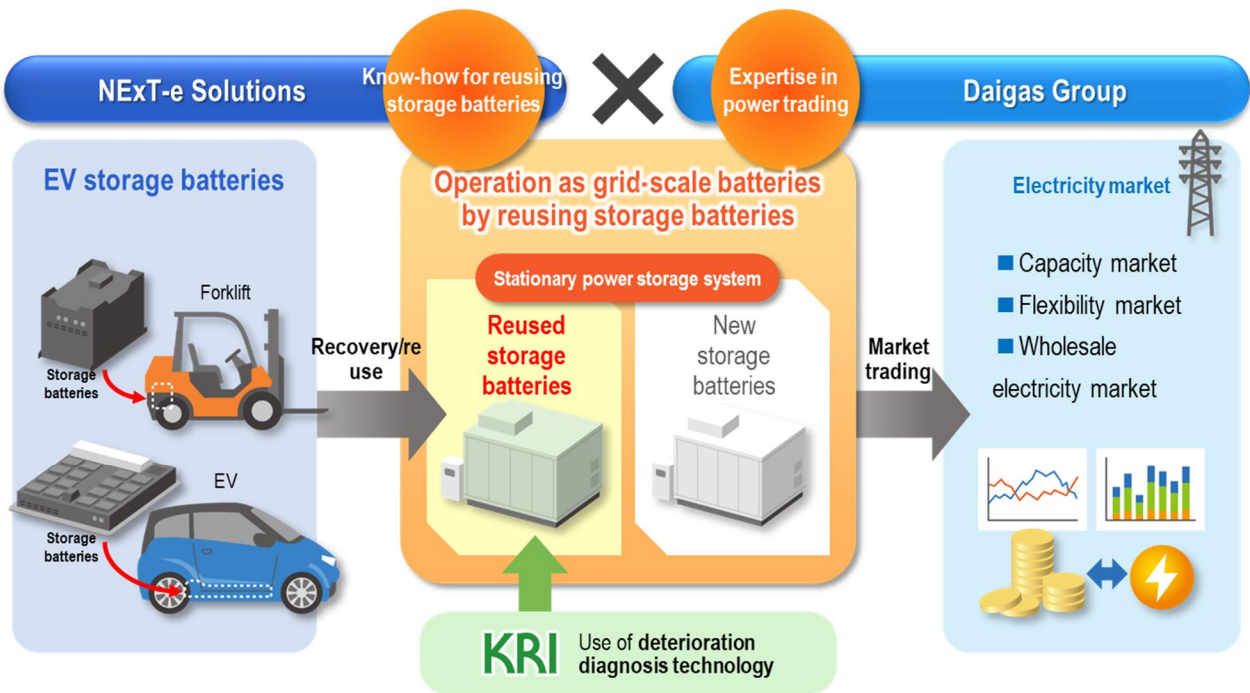
In the demonstration, a storage battery system will be built on the premises of Osaka Gas (Konohana-ku, Osaka City) by reusing storage batteries recovered from EVs and forklifts and using new storage batteries. The effectiveness of reusing storage batteries will be verified during operation using storage batteries with different deterioration conditions by taking full advantage of NEXT-eS’s management technology and deterioration diagnosis technology*² of KRI, a wholly owned subsidiary of Osaka Gas. Operation to maximize economy will also be verified in anticipation of trading in three electricity markets (wholesale electricity market,*³ flexibility market,*⁴ and capacity market*⁵) by taking full advantage of Osaka Gas’s knowledge in electricity trading. In the future, Osaka Gas will aim to commercialize the use of grid-scale batteries on a larger scale based on the findings derived from the demonstration.

In addition to conducting the demonstration, Osaka Gas and NEXT-eS will contribute to spreading the use of renewable energy and stabilizing the grid by building a sustainable supply chain through the reuse of vehicle storage batteries as stationary storage batteries.

The Daigas Group will continue to provide solutions to customer issues and strive to realize a decarbonized society as a social issue.

- *1: Storage batteries that are directly connected to a transmission network to charge electricity when electricity is in surplus on the grid and discharge when electricity is in short supply, thereby stabilizing the grid
- *2: Technology for predicting the state of health (SoH), etc., which indicates the life of lithium-ion batteries
- *3: A market operated by the Japan Electric Power Exchange to trade electricity (kWh)
- *4: A market where electricity transmission and distribution operator efficiently procure and operate the flexibility (ΔkW) for frequency regulation and ancillary services through the market
- *5: A market for efficiently securing the overall supply capacity (kW) in Japan into the future

1. Future business scheme for grid-scale batteries



2. Outline of the demonstration

Installation site	Konohana-ku, Osaka City
Start of demonstration	March 2023 (planned)
Output/capacity	200 kW/About 650 kWh
Power storage equipment to be introduced	Reused forklift (FL) batteries Reused EV batteries New batteries * All of them are lithium-ion batteries.

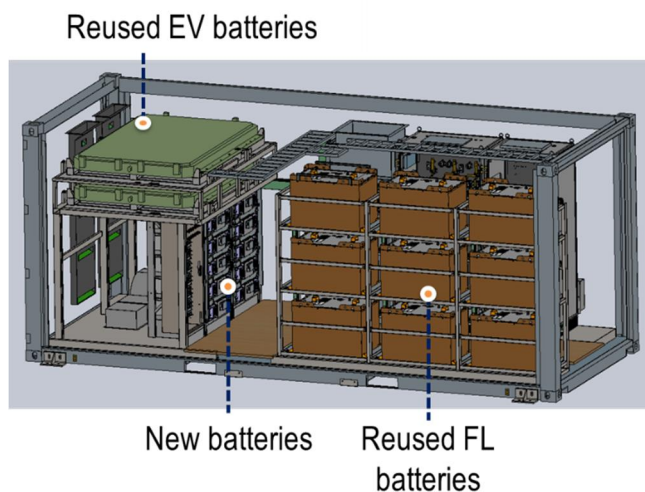


Image of the demonstration equipment (20 ft container (6,058 × 2,438 × 2,591 mm))

Osaka Gas

Company name	Osaka Gas Co., Ltd.
Head Office	4-1-2 Hiranomachi, Chuo-ku, Osaka, Japan
Representative	Masataka Fujiwara, President and Representative Director
Capital	132.16666 billion yen
Establishment	April 10, 1897
Main business	Production and sale of gas; generation and sale of electricity, etc.

NExT-eS

Company name	NExT-e Solutions Inc.
Head Office	6F Keihan Setagaya Bldg., 1-18-10, Wakabayashi, Setagaya-ku, Tokyo
Representative	Makoto Inoue, Representative Director
Capital	100 million yen
Establishment	May 8, 2008
Main business	Manufacture and sale of battery-related products (e.g., next-generation control devices and modules for storage batteries), provision of battery-related services, etc.