

June 1, 2022
Shizen Energy Inc.

Shizen Energy Selected for METI RE Aggregation Demonstration Projects to Create Balancing Capacity for Retail Electricity Providers in Collaboration with Storage Battery Manufacturers

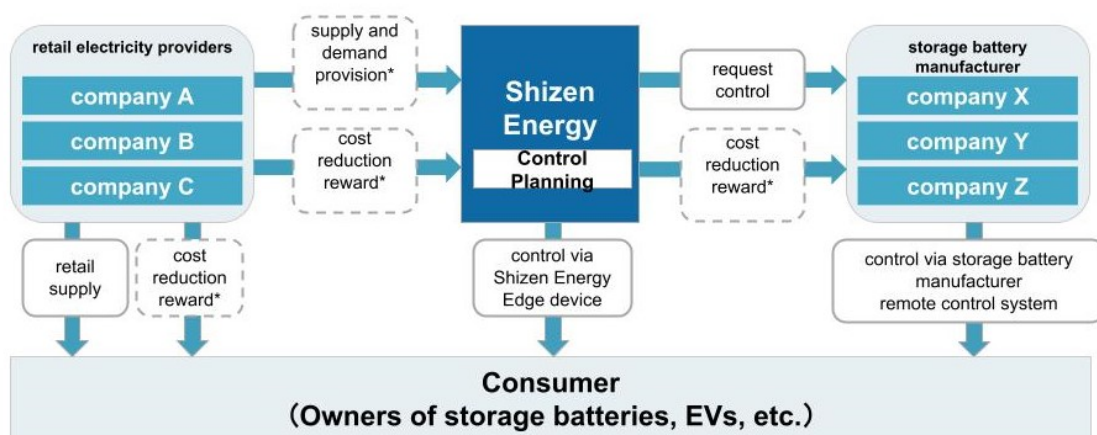
Shizen Energy Inc.(Shizen Energy) has been selected by the Ministry of Economy, Trade and Industry (METI) for its "FY2022 Renewable Energy Aggregation Demonstration Project" and "FY2022 Demonstration Project for Further Utilization of Distributed Energy Resources."

With changes in the business environment for power generators and retail electricity providers and the development of each market, the need for balancing capacity through VPPs is increasing. Shizen Energy will demonstrate the creation of each balancing capacity by enhancing the functionality of "Shizen Connect," an aggregate energy management system developed by the company.

Creating balancing capacity for retail electricity providers in partnership with storage battery manufacturers using thousands of units

The recent sharp rise in market prices is a major challenge for retail electricity providers. Shizen Energy has demonstrated market price-linked control (*1) (*2) to reduce electricity procurement costs from the wholesale market, and in this year's DER Aggregation Demonstration Project, Shizen Energy will demonstrate the cost reduction effects of this control and other measures for retail electricity providers in collaboration with actual retail electricity providing companies.

In addition to more than 1,000 household storage batteries connected to the "Shizen Box," an edge device developed by Shizen Energy, the demonstration will control more than 1,000 more household storage batteries through cloud linkage with the remote control systems of multiple storage battery manufacturers.



*This demonstration will not provide actual supply and demand conditions, nor will it involve the exchange of cost reduction rewards

Chart 1: Overview of the demonstration of controls that lead to cost reductions for retail electricity providers

Accuracy Improvement of Renewable Energy Aggregation Control and Economic Simulation for Power Generation Companies

On the other hand, under the FIP (*3) system, which started in April 2022, renewable energy power producers will be subject to imbalance (*4) obligations and the risk of fluctuations in electricity sales prices.

In last year's Renewable Energy Aggregation Demonstration Project, Shizen Energy developed functions in Shizen Connect such as power generation plan creation, imbalance reduction through storage battery control, and market price-linked control to increase electricity sales revenue. Based on the results of the demonstration project, Shizen Energy launched the "Renewable Energy Aggregation Service" in December 2021 (*5).

This year, in addition to improving the accuracy of power generation forecasting and storage battery control at renewable energy power plants, Shizen Energy will develop a multipurpose system that includes control for the supply-demand balancing market and capacity market, as described below, and a simulation function to efficiently calculate the economic efficiency of grid storage batteries and storage batteries installed at renewable energy power plants through various controls.

Expected to cover all controls for the supply and demand balancing market and capacity market

In addition, Shizen Energy has demonstrated controls for the "Secondary Control Reserve①" and "Primary Control Reserve" for the supply and demand balancing market. In this year's DER Aggregation Demonstration Project, Shizen Connect will be equipped with controls for the "Tertiary Control Reserve②①" "Secondary Control Reserve②," and "Dispatch Instructed Power Source (tentative translation)"(*6) including DR for the capacity market.

As a result, this will cover all controls required by the resource aggregator (*7). In addition, since these market-oriented controls can also be linked to those for retail electricity providers and power generators, Shizen Energy believes that this will enhance the economic efficiency of storage batteries.

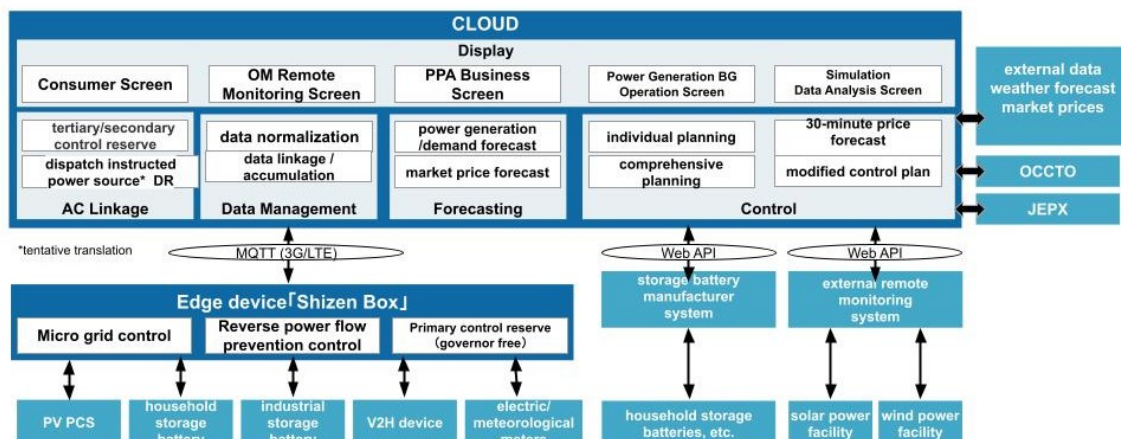


Chart 2: Overview of Shizen Connect Features

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Shizen Energy has launched the Energy Tech business based on the belief that in order to achieve a world with 100% renewable energy, it is essential not only to develop renewable energy sources but also to establish a system that balances the supply and demand of electricity from renewable energy sources. Shizen Energy will continue to accelerate the realization of a "100% renewable energy world" through the spread of distributed power sources in local communities.

※1 **market price-linked control** : charge and discharge control to maximize revenue according to wholesale electric power exchange prices

※2 **press release on the results of the implementation of market price-linked control:**

https://www.shizenenergy.net/en/2022/03/14/shizen_connect_v2h/

※3 **FIP (Feed-in Premium)** : a system in which a premium (surcharge) is added when electricity from renewable energy sources is sold

※4 **imbalance** : the difference between planned generation and actual consumption of electricity. The charge including the penalty element that must be paid for the difference is called the "imbalance charge"

※5 **press release on Renewable Energy Aggregation Service:**

https://www.shizenenergy.net/en/2021/12/15/shizen_connect/

※6 **Dispatch Instructed Power Source** (tentative translation): one of the power sources applicable to the capacity market which includes demand response (DR), power sources with an expected capacity of 1,000 kW or more that cannot provide supply power on a stable basis, and power sources that provide supply power with an expected capacity of 1,000 kW or more by combining power sources with an expected stand-alone capacity of less than 1,000 kW

※7 **resource aggregator** : an aggregator that integrates and controls consumer-side energy resources and distributed energy resources and provides energy services from VPPs and DR, and directly concludes a VPP service contract with a consumer to control resources

Note - the above mentioned balancing capacities are also known as follows:

Primary Control Reserve = Frequency Containment Reserve (FCR)

Secondary Control Reserve① = Synchronized Frequency Restoration Reserve (S-FRR)

Secondary Control Reserve② = Frequency Restoration Reserve (FRR)

Tertiary Control Reserve① = Replacement Reserve (RR)

Tertiary Control Reserve② = Replacement Reserve-for-FIT (RR-FIT)

Outline of the demonstration project for further utilization of DER

Consortium Leader	ENERES Co., Ltd. (Aggregation Coordinator)
Target Resources	Residential storage batteries (via Shizen Energy edge terminals and storage battery manufacturers' cloud), EVs (V2H devices and EV normal chargers with switch control), industrial storage batteries

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Details of the demonstration	<ul style="list-style-type: none">· Control for retail electricity providers: market price-linked control, imbalance avoidance control· Control for the supply and demand balancing market: Secondary Control Reserve②, Tertiary Control Reserve①②· Control for the capacity market: Dispatch Instructed Power Source (tentative translation)· Multipurpose control of the above
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Outline of renewable energy aggregation demonstration project

Consortium Leader	ENERES Co., Ltd.
Target Resources	Solar power plants (mega solar), wind power plants, industrial storage batteries
Details of the demonstration	<ul style="list-style-type: none">· Control for power generators: market price-linked control, imbalance avoidance control· Multipurpose control of the above· Development of logic to calculate the economic efficiency of grid storage batteries and power plant-attached storage batteries

【About Shinze Energy Inc.】

Founded in June, 2011. With the company purpose of “We take action for the blue planet,” the company’s business includes development, financing, and asset management of renewable energy power plants using solar power, wind power, small-scale hydroelectric power, and biomass. Since 2016, the company has also been focusing on its overseas operations, expanding its development and power generation projects in areas such as Southeast Asia and Brazil. In 2019, the company also entered the Energy Tech business, offering micro-grid and VPP construction, smart charging and discharging services for EVs, and other services through its self-developed EMS (energy management system). Shizen Energy Group has been involved in more than 1 GW of renewable energy generation in Japan and overseas.

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- URL: <http://www.shizenenergy.net/en/>

【Shizen Connect】

Shizen Connect is an aggregation energy management system that collectively controls energy resources such as renewable energy power generation, storage batteries, EVs

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and EcoCutes. Shizen Connect can control residential solar power generation with storage batteries and V2H equipment, as well as operation of microgrids connecting multiple buildings with transmission lines, and VVP construction of several thousand units of energy resources. Individual control and VVP control tended to be separate, but Shizen Connect provides a one stop service allowing energy resources to be utilized with multi-purpose which also improves economic efficiency. The system can be adapted with any equipment supplier, allowing energy resources to be chosen freely without relying on a certain manufacturer.

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