Case Study

Jinko ESS Solution of On-grid DC-coupled System

891kW/15480kWh BESS Project in Japan

Project Overview

This project is located in Miyazaki, Kyushu, Japan. It is Japan FIT project with a total of 18 sites, each site with 49.5kW/860kWh, totally 72 units of 215kWh DC blocks. Jinko proposed PV+ESS solution integrates the Tigeo Neo PV modules and C&I Sungiga 215kWh DC block. This project makes full use of the abundant sunshine in the area to enable the customer to sell electricity to the grid 24 hours a day.

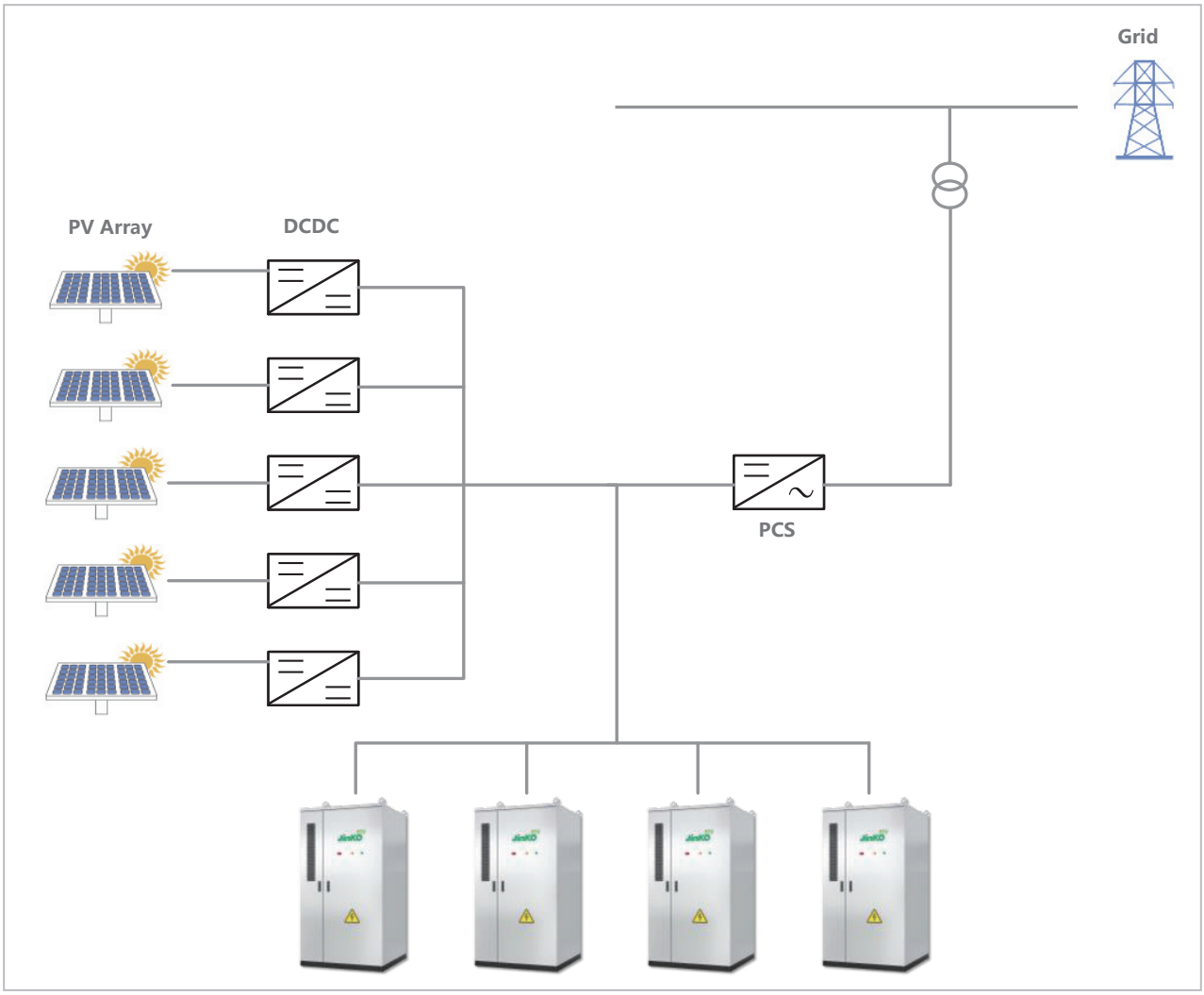

Fig. 1 Single Line Diagram of on-grid DC-Coupled System

The Solution

Each site of this project consists of 289.8kW PV modules, 4 sets of Sungiga215kWh DC block, 1 set of 62.6kWPCS (downsized to 49.5kW) and 1 set of 250kW DCDC cabinet (consists of 5 sets of 50kW DCDC modules).

The DC block use lithium iron phosphate batteries, equipped with a liquid cooling system and aerosol fire protection, designed to meet the requirements of the Japanese Fire Services Law, and equipped with the Jinko ESS cloud platform.

Fig. 2 Jinko ESS 215kWh DC Blocks

Operation Logic

In this project, the objective of the ESS is to maximize the utilization of PV. During daylight hours, the PV modules supply power to the grid and use excess energy to charge the battery. When the PV output is insufficient, the battery discharges to the grid to supplement the insufficient power. When the PV output is 0, the system switches completely to the battery to provide the required power. A day's operation of the battery system is shown below.

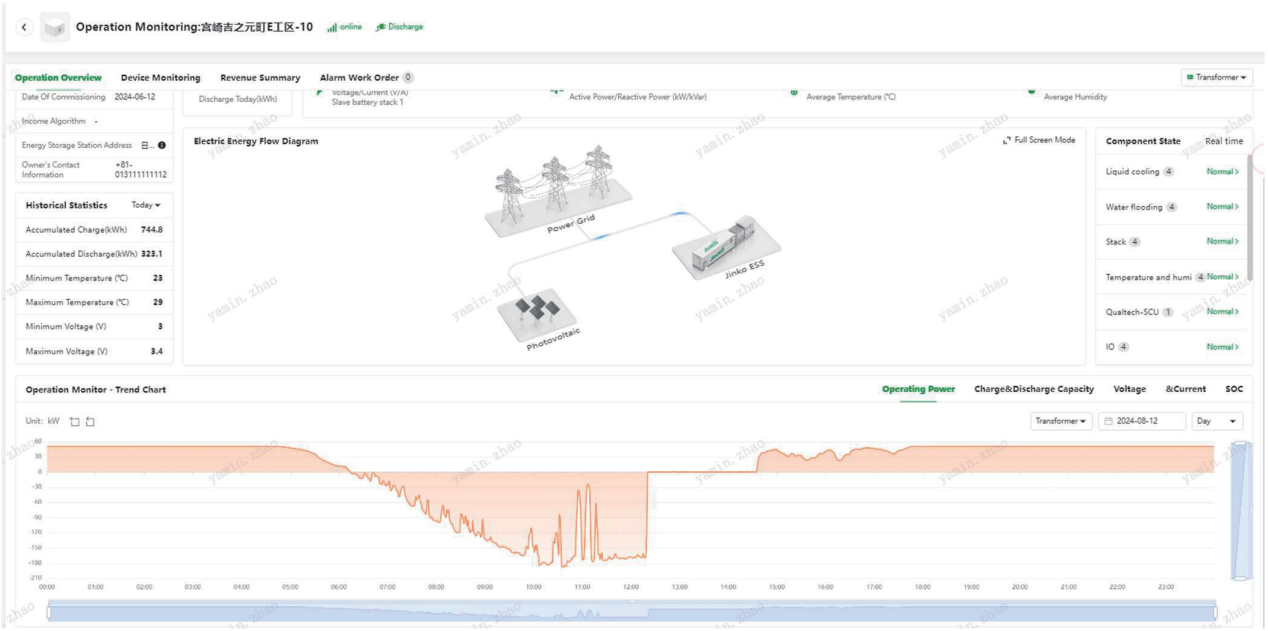

Fig. 3 Operation Power of Battery System

Customer Benefits

High-efficient DC-coupled Solution

The PV is prioritized to supply power to the grid through the DCDC and excess power is charged to the battery. There is no need to set up additional PV inverters, which avoids multiple conversions from DC to AC and back to DC, thus reducing energy loss and improving the overall efficiency of the system.

Cost saving

Due to the reduction of equipment such as PV inverters, the initial investment cost of the system is reduced. At the same time, fewer energy conversion links also mean lower maintenance costs.

More flexible configuration

The DC-coupled system is more flexible in the configuration of battery capacity and PV array size, and can be individually expanded or adjusted according to actual needs without affecting other parts of the system.

Easy to maintenance

The battery system is equipped with Jinko ESS cloud platform, which allows real-time monitoring of the battery's operating status and early warning of equipment abnormalities. In addition, DCDC and PCS are integrated in one container, which is convenient for maintenance.

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