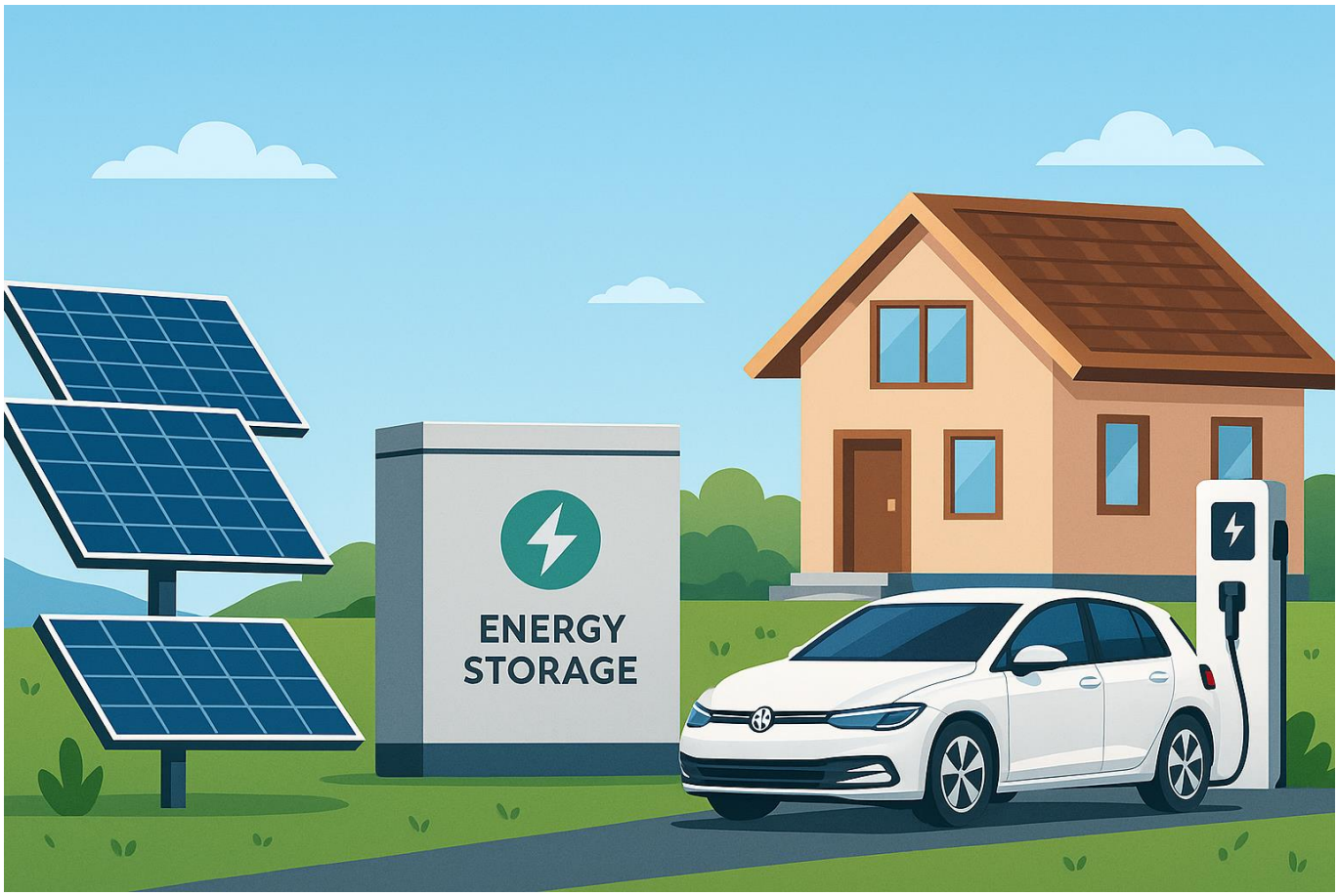
Smart Testing for PV + Storage + EV Charging with IT6600C

What Is "PV + Storage + Charging" (PSC)?

As carbon neutrality and peak carbon emission goals are gradually being implemented, the energy storage market is witnessing explosive trillion-level growth. Amid the imbalance between the rapid development of electric vehicles and charging infrastructure, the integration of solar power generation, battery energy storage and EV charging—referred to as “PV + Storage + Charging” (PSC)—is emerging as an innovative solution for building greener, safer, and more efficient EV charging stations.

In public sector, PSC systems use rooftop solar installations to generate electricity, store it in batteries, and supply it for daily EV charging needs.

In the residential sector, PSC takes the form of a home-based microgrid, where rooftop solar panels, household energy storage batteries, and EV battery packs work together to meet the electricity demands of the household.



Testing to be done in 'PV + Storage + Charging' (PSC) integrated systems

1. Testing of photovoltaic inverters

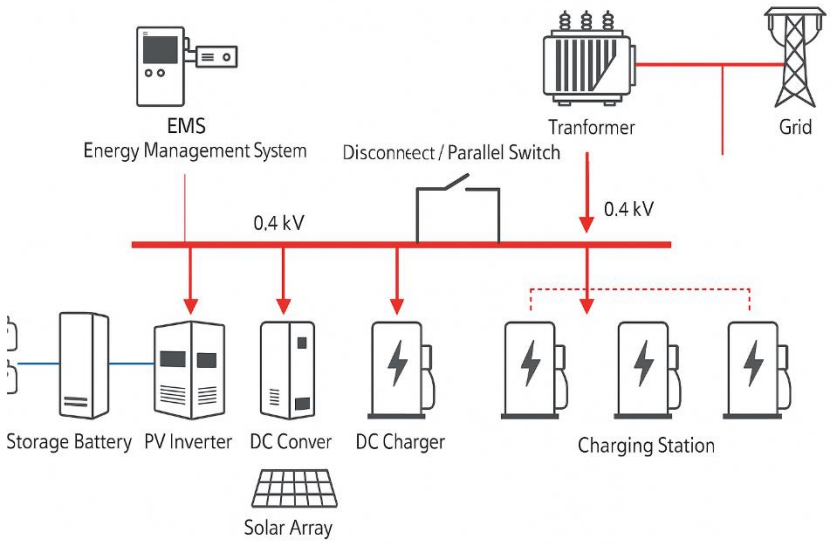
– Performance, efficiency, MPPT accuracy, grid connection and fault response.

2. Testing of energy storage systems (ESS)

– Battery charge/discharge cycles, bidirectional power flow, BMS functionality and system response under varying load and solar input conditions.

3. Testing of batteries and EV charging infrastructure

– Simulation of different battery states, fast/slow charging modes, communication protocols (e.g., CCS, CHAdeMO) and interaction between chargers and energy management systems.



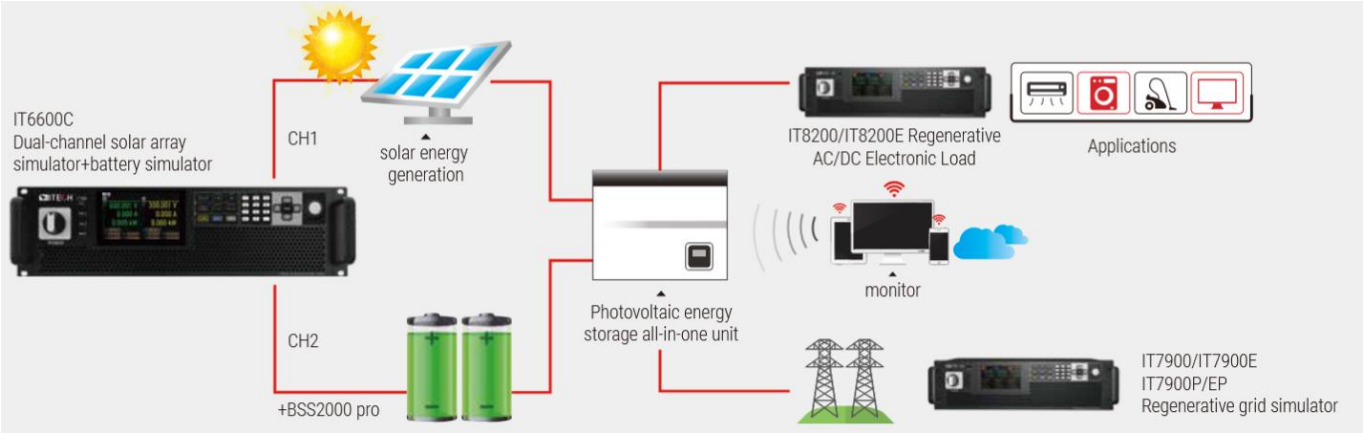
Testing with ITECH IT6600C bidirectional DC power supply

ITECH IT6600C bidirectional DC power supply features a touch screen and an intuitive GUI, allowing for fast and easy parameter configuration and waveform programming, greatly enhancing user convenience.

In the compact size of 3U, it achieves a high power density with dual 21 kW channels. These two independent channels can be connected in series or parallel, enabling output power up to 42 kW. It is well-suited for a wide range of high-voltage and high-current test applications.

1) Ideal choice for dual-Channel Synchronous Testing

Channels are fully isolated and independently controllable, enabling simultaneous testing of both PV and battery energy storage system.



As shown above, testing an integrated “PV + Storage + Charging” system typically requires both PV simulation and battery testing capabilities. In traditional testing setups, two separate power supplies are needed to fulfill these functions. However, with the IT6600C, a single unit is sufficient to handle both tasks.

2) Combining with professional test software, testing efficiency is significantly enhanced.

ITECH SAS1000 Solar Array Simulation Software, when used with IT6600C bidirectional DC power supply, can accurately simulate the I-V curves of solar cells. It features high precision, excellent stability, and fast response time.

Built-in SAS models such as EN50530, Sandia, NB/T32004, CGC/GF004, and CGC/GF035 allow users to easily configure parameters such as test standard, material type, Vmp, and Pmp. With just a few settings, the software can simulate I-V curve outputs and generate reports that comply with regulatory standards, enabling both static and dynamic MPPT testing of PV inverters.

SAS1000 also supports 24-hour real-environment solar panel output simulation, making it ideal for solar array emulation in microgrid and distributed PV power systems. It serves as a powerful tool for system simulation and core equipment verification.

3) BSS2000 Battery Simulator Software

To better emulate real batteries, the IT6600C can be equipped with ITECH BSS2000 Battery Simulator Software. The software includes a comprehensive library of battery characteristic curves and supports user-defined curve creation.

It effectively addresses challenges commonly faced when using real batteries for testing, such as low efficiency, high cost, and complex wiring setups.

BSS2000 can help to simulate several battery types. You simply select the one you need and configure basic parameters. Then the correspondent battery characteristic curves are generated

quickly. Supported battery types include lithium-ion, lead-acid, lithium iron phosphate, ternary lithium and lithium manganese oxide, etc.

IT6600C is not only a power supply but also has the functions of an electronic load. It functions as a DC power source capable of delivering power, while also operating as an electronic DC load that absorbs power and feeds clean energy back to the grid—enabling energy recycling.

As a powerful, user-friendly and energy-efficient bidirectional DC power supply, IT6600C offers a comprehensive testing solution for high-power and complex applications in automotive, energy storage, and green energy sectors. It provides strong support throughout all stages of product development, validation and production.

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YOUR POWER TESTING SOLUTION

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