1 Energy Storage Step-up Substation integrated with Converter

Product Introduction:

The Energy Storage Step-up Substation integrated with Converter can cover 6kV to 35kV on the high-voltage side, and AC voltages from 0.315kV to 0.69kV on the low-voltage side. The transformer encompasses various models of American, Chinese and dry-type transformers, with energy efficiency levels executed according to design requirements. The DC side voltage can reach up to 1500VDC, and the standalone maximum capacity of the energy storage boosting inverter is 6.8MW.

The energy storage system can be connected to the power grid as an independent system, playing the role of peak shaving, valley filling, and reactive power compensation, etc. It can also form a solar energy storage system with new energy generation, smoothing the grid power from renewable sources. Moreover, the energy storage system can be combined with wind power, photovoltaic power, and other renewable energy systems to create a microgrid system in the load center, to increase the efficiency of energy utilization, enhance the quality of power, improve the reliability of power supply, and embodied in the green environmental protection, etc.

Through optimized configuration of batteries, inverters, bidirectional inverters, and wind and solar equipment, we can realize projects such as energy storage systems, solar energy storage systems, and energy storage microgrid systems. Additionally, we provide comprehensive customer services, including project consulting, design, system integration, and station-level monitoring.

Energy Storage Step-up Substation Integrated with Converter (Dry Type Transformer)

Energy Storage Step-up Substation Integrated with Converter (Oil-immersed Type Transformer)

Product Features

- **Turnkey Solution**

  Integrate PV inverter, transformer and switchgear in one unit, Integral commissioning from the factory, saving time for on-site installation and intermodulation Containerized shell, no need for special spreader, easy transportation and lifting.

- **Strong Environmental Adaptability**

  Strong anti-corrosion capability: The containerized shell uses highly weather-resistant steel plates with better corrosion resistance than regular carbon steel.

  Thermal insulation: The internal shell is equipped with heat insulation board, which has good fireproof, heat insulation and heat preservation effect.

  Ventilation and heat dissipation: Specially designed air inlets prevent dust and sand effectively.

- **High Reliability and Safety**

  Uses epoxy resin cast dry-type transformers, which are flame-resistant products with no explosion or fire hazards.

  Dry-type transformers have passed C2, E2, and F1 tests conducted by the National Transformer Quality Supervision and Inspection Center.

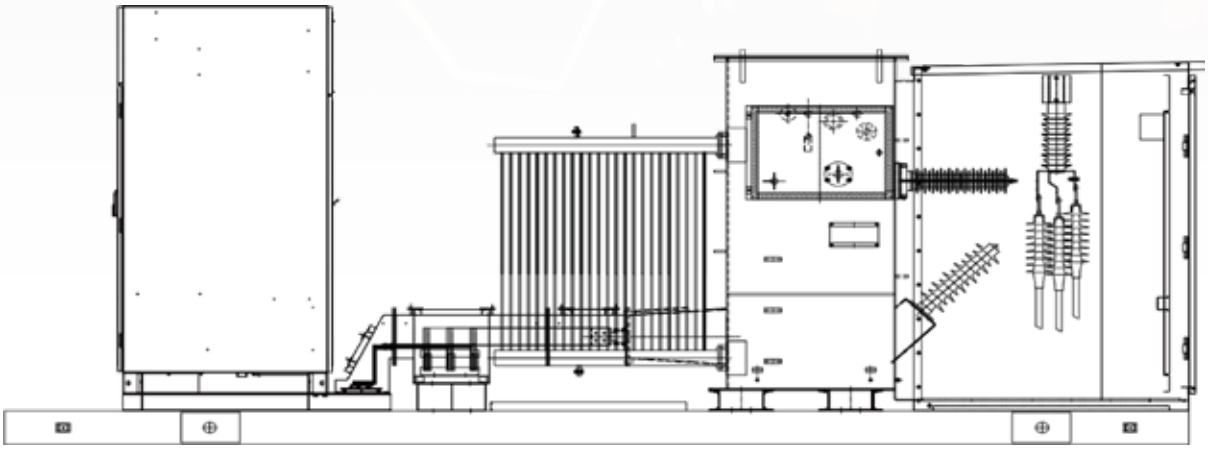
- **Low Investment, High Returns**

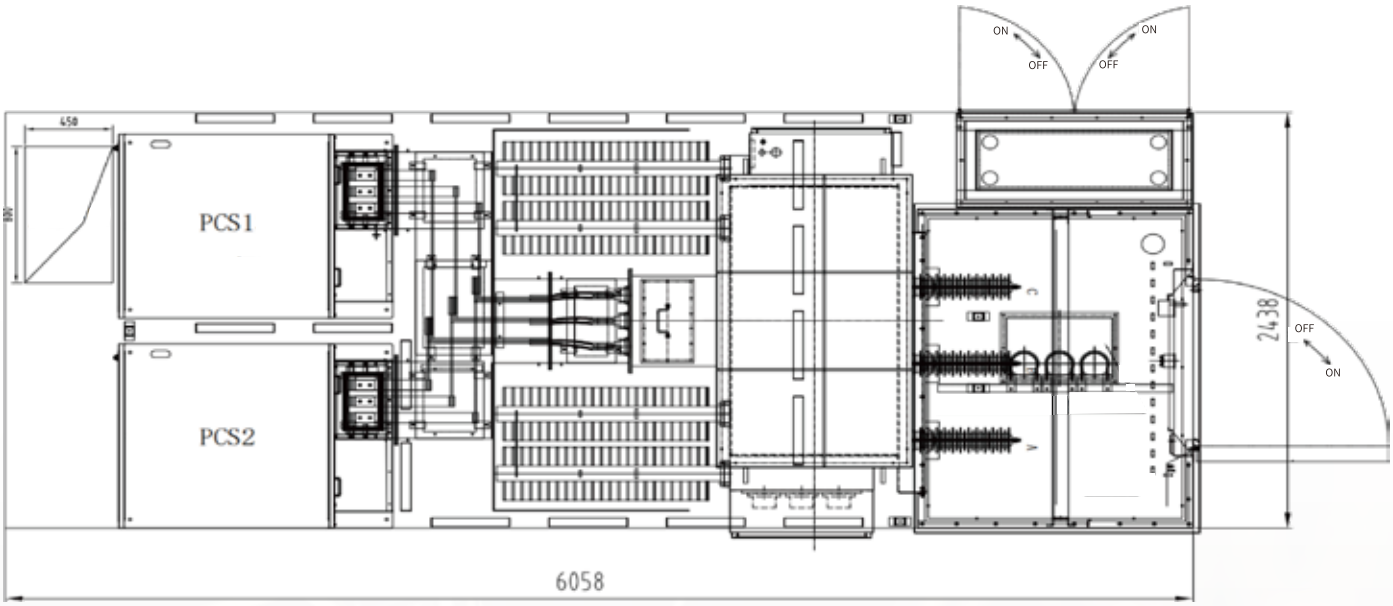
  Reduce investment by 15% to 20% compared to the conventional "inverter room + photovoltaic box transformer". Reduce the number of installation bases from 2 to 1. Save 50% in installation and commissioning time. Save cables for connection between inverter rooms and photovoltaic box transformers by using copper bars between inverters and transformers，Save two low-voltage switchgear units between inverters and transformers by optimizing structure.

- **Flexible and Diverse Product Solutions**

  Designed to fully meet the actual needs of customers and provide them with satisfactory one-stop solutions.

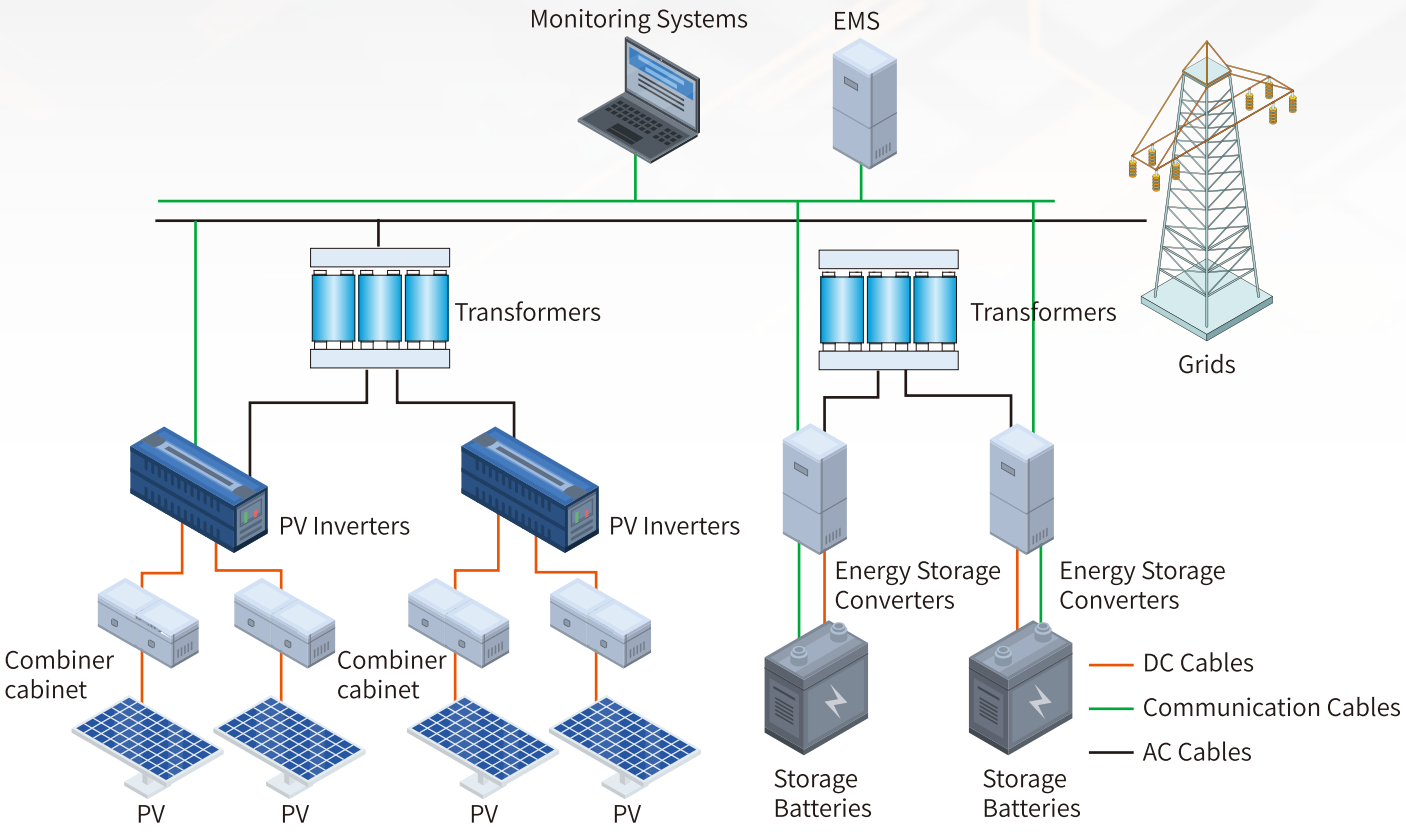
Typical Product Dimensions
(Oil-Immersed Transformer Lifting Plan)





Main Application Scenarios

Scenario One: Energy Storage for Photovoltaic Power Plants



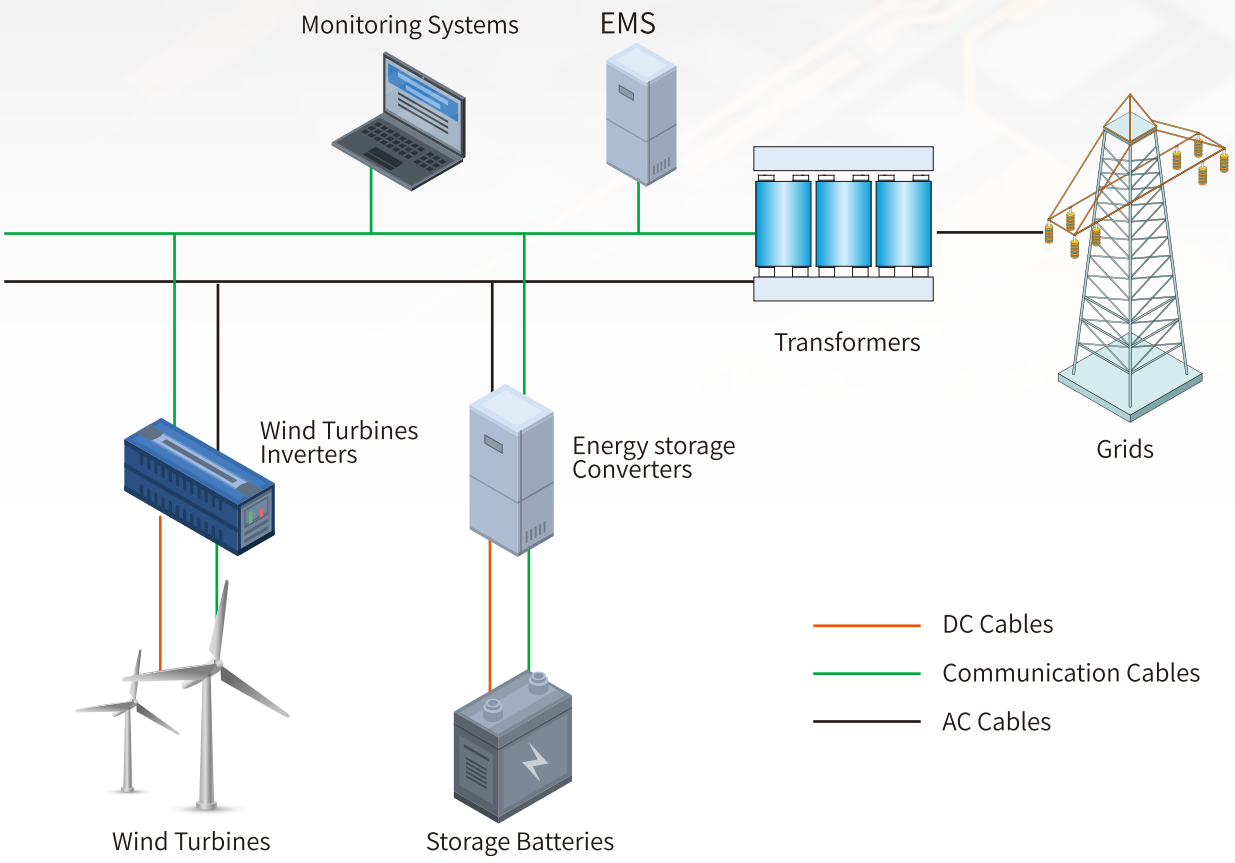
Solution Principle

Photovoltaic power generation exhibits characteristics such as intermittency, variability, and unpredictability. The large-scale integration of photovoltaic inevitably will increase the difficulty of grid regulation and lead to significant curtailment issues. The addition of energy storage to photovoltaic power stations effectively addresses these challenges by storing surplus electricity that cannot be consumed. This stored energy is then utilized in times of power shortage or peaks, aiming to smooth out the irregularities inherent in renewable energy generation.

Advantages of the Solution

- Mitigate curtailment issues, effectively addressing energy absorption challenges
- Enhance the quality of electric power by smoothing out random fluctuations in output
- Elevate the precision of power forecasting
- Involve energy storage in photovoltaic power plants in auxiliary services, enhancing the output characteristics of the solar facility

Scenario Two: Wind Power Plant Energy Storage Application



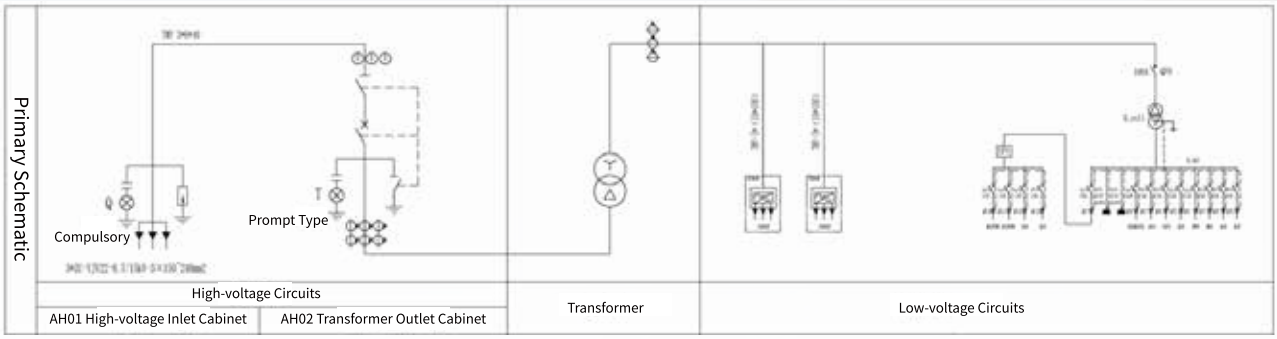
Solution Principle

Due to the intermittent and fluctuating nature of wind power, large-scale grid connection can impact on the stable operation of the power system, making the power system to increase the demand for regulating resources. The introduction of energy storage systems can provide buffering for grid-connected wind power, mitigating output fluctuations and facilitating energy dispatch. It can dynamically absorb and release energy quickly, improving power quality, enhancing the controllability of wind power, and promoting power system stability.

Advantages of the Solution

- Alleviate wind curtailment issues and enhance economic benefits
- Improve power quality by mitigating random output fluctuations
- Augment accuracy in forecasting electrical power
- Improve energy storage in wind farms

Product Reference Schematic



Order Information

Designation	Norm	Lead Time
Energy Storage Step-up Substation integrated with Converter (Dry Type Transformer)	Customized according to parameters and functional requirements	Reference 90 days
Energy Storage step-up substation integrated with Converter (Oil-immersed Type Transformer)	Customized according to parameters and functional requirements	Reference 90 days