JinkoSolar Supplies 1.1MWh BESS for Hybrid Off-grid PV/DG System in Djibouti

JinkoSolar today announced it has delivered a 1.1MWh BESS for Hybrid Off-grid PV/DG System in the Republic of Djibouti, Horn of Africa, Ethiopia to the southwest, for the electrification of rural communities.

Figure 1: Project Photos

This PV/DG/BATT off-grid system is composed of 1200 kW JinkoSolar' s Tiger Neo PV modules, three diesel generators, 1.1 MWh JinkoSolar' s battery storage, and inverters, PCS, converter systems which are all provided by JinkoSolar.

JinkoSolar' s C&I battery storage system has a scalable configuration providing one to four hours of a variety of configuration options. It covers a wide power range from 50KW to 2 MW on-grid and far more off-grid. This C&I solution has a modular design with a battery unit, PCS unit, inverters, switchgear, and transformer for upgrade operation. This solution is an economic alternative and a more reliable counterpart. The lithium-ion batteries with 100 percent Depth of Discharge (DOD) ensure 15 years of performance life under standard conditions. The safety of the system is driven by thermal management design and hierarchical linkage protection. To increase reliability, there is a temperature control system for the battery. The ease of installation due to being prewired in the factory saves the trouble of complicated set-up. Its outdoor cabinet design enables ease of transportation and on-site installation.

After completion, diesel power generation will be shortened from 24 hours a day to 8 hours a day. JinkoSolar' s 1.1MWh highly safe, efficient, and robust energy storage systems (BESS) are added to compensate for the natural intermittency of renewable sources, making the electrical system more continuous and reliable. The project can generate 2 million kilowatt hours of electricity a year, equivalent to the annual demand of 2,500 households.

In recent decades, due to the difficulty and high cost of transporting fuel like diesel to distant and isolated areas, increased efficiency, and the downward trend in prices of photovoltaic (PV) panels, the replacement of simple diesel-based systems by PV/ESS or hybrid solution has raised. Energy storage systems (ESS) are added to compensate for the natural intermittency of renewable sources, making the electrical system more continuous and reliable.

Applications of JinkoSolar's C&I ESS

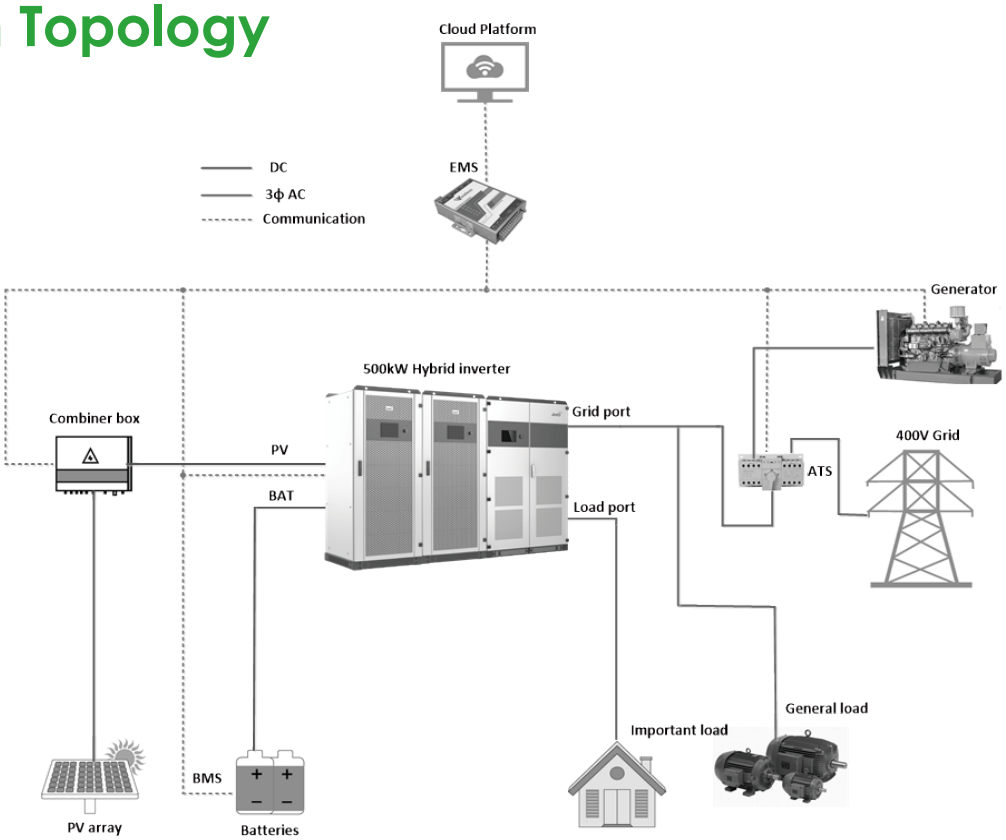
1. Demand Management: Peak shaving to maintain demands in the limit as per indications and to have energy storage at peak times.
2. Peak and Valley Arbitrage: Charge in the valley time and discharge in the peak time to gain the benefits like the cost of electricity is more in the day than in the night.
3. Maximizing Self-consumption: Storing energy in the battery in case of excessive power generation and using it when in need.
4. Backup Power: The buffer created through energy stored can be useful during power outages post-natural disasters like earthquakes or tsunamis.
5. Micro-grid: Support on-grid or off-grid mode, support multiple energy such as DG (diesel generator) and PV (solar plant)

JKS540~1620K-500H

Key Features

- Highly integrated system with various working modes
- LFP battery ensures longer battery life and higher safety
- Pre-installed product enables express shipping and faster on-site installation
- Integrated and optimized fire protection design, higher security

System Topology



SYSTEM TECHNICAL SPECIFICATIONS

DC Data	JKS540K-500H	JKS1080K-500H	JKS1620K-500H
Battery Chemistry	Lithium Iron Phosphate (LFP)		
Cell Life Cycle	5,000 Cycles 1C@25℃ 90%DOD	5,000 Cycles 0.5C@25℃ 90%DOD	
Cell Specification	3.2V/96Ah		
Battery System Configuration	4P11S	8P11S	12P11S
DC Rated Energy Capacity	540kWh	1080kWh	1620kWh
Rated Voltage	704V		
Voltage Range	616V~792V		
BMS Communication Interface	RS485, Ethernet, GPRS		
BMS Communication Protocol	Modbus RTU，Modbus TCP		
Max.PV Input Voltage	1000V		
Standard/Max PV Power	600/720kW		
MPPT voltage range	250-850V		
MPPT voltage range@full load	450-850V		
AC Data			
Rated AC Power	500kW		
Maximum AC Power	550kW		
Rated Voltage	400V		
AC Rate of Current	722A		
THDi	≤3%		
Power Factor	1(leading) ~1(lagging)		
Rated Frequency (Hz)	50/60Hz		
AC Connection	3W+N+PE		
STS Power	500kW		
STS Switching Time	≤20ms		
General Data			
Dimension (W*D*H)	6,058*2,438*2,591mm	12,192*2,438*2,591mm	
Weight	<20T	<30T	<40T
Degree of Protection	IP54		
Operating Temperature Range	-20~40°C		
Relative Humidity	0~95% (non-condensing)		
Max. Working Altitude	3,000m		
Cooling Concept of DC hatch	HVAC		
Communication Interfaces	RS485, Ethernet, GPRS		
Certifications	UL9540A, IEC62619, CE, UN38.3		

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.