The world's most powerful 1500V string inverter — SG250HX

Introduction

This document describes the characteristics of the SG250HX inverter.

Overview

Currently, solar power generation faces significant growth due to global awareness and favorable government policies. IHS, BNEF and other leading analysts predict that solar installations will breach the 100GW barrier again in 2019. At the same time the PPA price for solar continues to decrease, which is already lower than traditional power generation in some countries. One example is a 500MW solar plant in Qinghai province, China. Therefore, solar plant investors pay more attention to the Levelized Cost of Energy (LCOE).

The application of new technologies such as tracker system and bifacial module will reduce the LCOE. But a question remains: How to match the new technologies and deep integration with the solar plant? Due to lack of flat land, solar plant are now installed over complex environmental conditions like hilly areas, coastal areas and desert regions.
In this context, Sungrow introduces the world's most powerful 1500V string inverter in 2019 — SG250HX, which is a global product in compliance with both IEC and UL standards.

Fig.1 SG250HX

12 MPPTs Compatible with Bifacial Module and Tracker System, High Yield

International Solar Energy Research Center Konstanz indicates that the lowest LCOE of 1₵/kWh is expected in 2021/2022 and the leading technologies to achieve this goal will be bifacial module plus tracker system. The single axis or multi axis tracker system plus bifacial module will require higher full-load operation capacity and pose more challenges for the inverters. Sungrow's SG250HX can run at full load for a long time due to components selection and advanced design. Additionally, SG250HX is embedded with 12 MPPTs to adapt complex terrain and enables 26A input current per string, perfectly matching the bifacial modules. SG250HX also provides reserved power. supply and communication interface to tracker system. SG250HX has 0.3~0.5% higher yield compared with its competitor through PVsyst simulation, which will bring a higher performance.

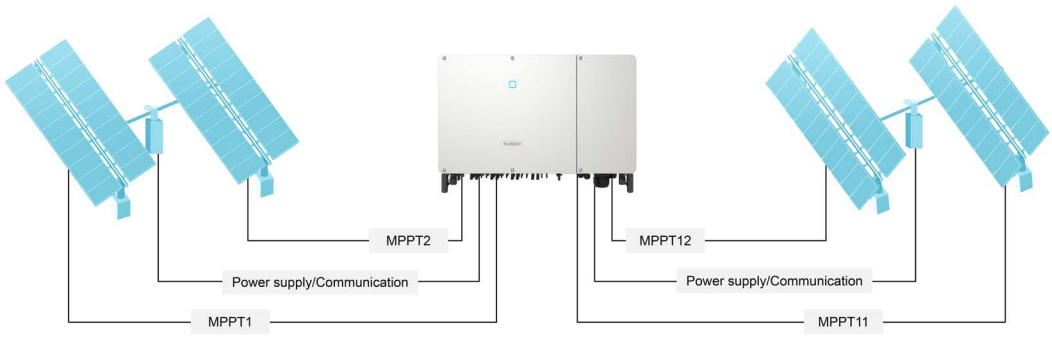

Fig.2 SG250HX Compatible with Bifacial Module & Tracker System

Up to 6.3MVA Block, Cost Saving

As a recent study shows that the global market for large-scale PV installations is shifting to bigger block design to reduce LCOE. Based on the cost comparison of different capacity block, 6~7MW block enables lowest cost. Sungrow's SG250HX is suitable for any block size between 3MW to 6.3MW. The SG250HX typical system diagram is shown as figure 2.

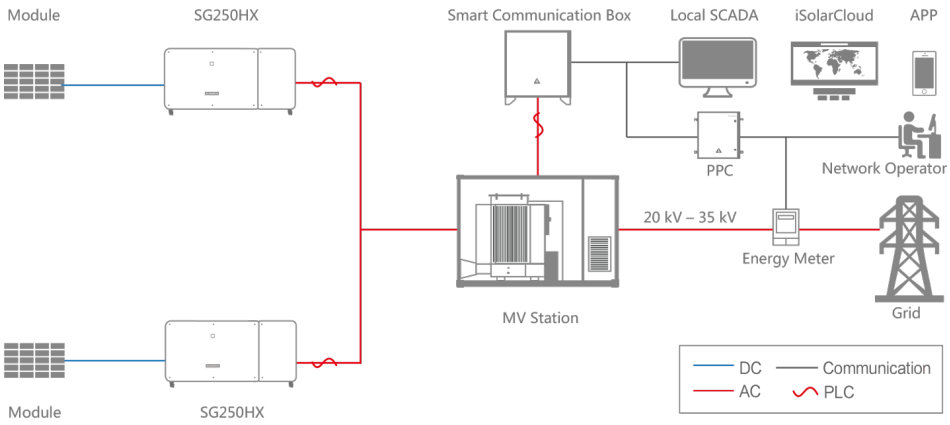

Fig.3 System Diagram

Therefore, SG250HX+6.3MW MV Station is recommended in utility scale solar plants. Sungrow can supply 6.3MW MV Station which integrates LV switchboard, transformer, RMU, communication device and auxiliary power supply in a 20-ft container. Also, SG250HX and communication device supports PLC (Power Line Communication), which decrease communication cable cost. Detailed CAPEX study indicates that SG250HX will save 0.2~0.3 USD cent/Wp compared with competitor.

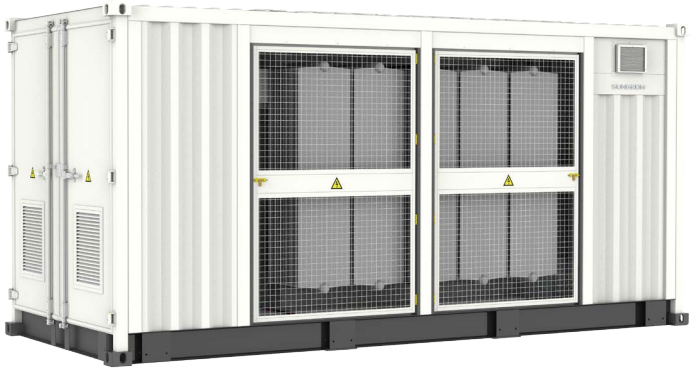

Fig.4 Sungrow 6.3MW MV Station

Adapt to Harsh Environments

In recent years, more solar plants are installed in coastal areas and desert areas which pose challenges to inverters. With smart forced air-cooling technology, the SG250HX can work stably in scorching heat. On account of lower internal temperature than the temperature in natural c ooling method, the lifetime of the SG250HX will be longer. Due to separated electrical/cooling chamber design, SG250HX provides an ingress protection rating of IP66 for all chambers and anti-corrosion design with C5 protection degree, making it ideal for applications in coastal areas, chemical industrial region and other typical harsh conditions.

Fig.5 High Protection Rating and Low Internal Temperature

Smart Monitoring Makes Fault Diagnostics Easy

Sungrow can provide a complete monitoring solution for SG250HX which includes COM100 (Smart Communication Box), Insight (Local SCADA), iSolarCloud (Remote SCADA), PPC (Power Plant Controller). Sungrow's monitoring solution supports I-V curve scanning and diagnosis which can finish a full-scale plant diagnosis in 15 minutes with an accuracy less than 0.5%. It makes easy to locate faults caused by dust shielding, glass panel cracking, dirt shielding, diode short circuit, gate line disconnect and PID attenuation in order to reduce power generation loss.

Summary

The SG250HX is the most powerful 1500V inverter in the market to date and is equipped with the latest solar technology to withstand new challenges and suitable for utility-scale solar plants. It will undoubtedly bring higher yield and lower CAPEX. IP66 protection and C5 anti-corrosion capability make it easy to adapt to harsh environments. The smart monitoring solution can accurately locate faults to ensure power generation benefits of solar plants.