

CENTRAL PV INVERTER MAXIMISES ROI

Market-leading yield, high availability, Emerson pedigree - 145kW to 1.59MW

A ground breaking ‘transformerless’ central inverter system for utility scale photovoltaic power plants is set to maximise investor returns through optimised availability, efficiency and yield. Emerson Control Techniques’ SPV is constructed using 145kWp, 176kWp and multiple 176kWp parallel connected inverter modules to produce any desired power rating up to 1.59kWp.

The inverter modules are based on a mature design that is well-proven in thousands of demanding industrial applications worldwide including the booming PV industry. Emerson’s unique control methodology enables the modular inverters to switch between standby and active states to match the instantaneous power available from the solar array; this significantly enhances both efficiency and plant availability.

The SPV inverter design focuses on reliability. Each inverter is constructed from one or more, easy to handle, compact modules that are mass produced ensuring inherent quality, short delivery times and minimised spares holding. The active / standby sequence of the inverter modules rotates daily ensuring that all modules are exercised equally with the added benefit that individual modules accrue fewer operational hours per year than the alternative “bulk inverter” solution commonly found in the market. As a consequence the Emerson modular solution offers longer

service life. Critically the SPV is extremely fault tolerant; in the event of the loss of an inverter module the system automatically isolates the single module and continues to operate efficiently and with re-optimised capacity. The SPV can also be oversized if required, to provide redundancy for critical installations or additional reactive power capability. Emerson’s SPV inverter achieves Euro and CEC weighted efficiencies of 97.6%. However, the real gains are in the SPV’s very flat load / efficiency curve and its ability to maximise energy yield in low to medium light conditions. The alternative to Emerson’s modular products are large single bulk inverters whose efficiency tumbles below 20% of rated power. The SPV sequentially energises power modules in response to varying solar irradiation eliminating the large fixed switching losses associated with bulk inverters. Regardless of power rating, SPV can turn on / off at an exceptionally low power threshold of only 900W effectively extending the length of the operational day. The benefit of increased yield under low light conditions may not be accurately reflected by the traditional efficiency weighting



KEY BENEFITS

- MAXIMISES RETURN ON INVESTMENT
- MARKET-LEADING YIELD
- HIGH AVAILABILITY
- EMERSON PEDIGREE

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methodology, particularly in less temperate zones such as northern Europe, and can have major impact on investment returns.

The energy yield of the SPV inverter is further enhanced by Emerson's second generation Maximum Power Point Tracking (MPPT) algorithm. The software is designed to track transient changes in irradiation whilst accurately determining the optimum condition across the operating temperature range of the PV plant. The MPPT range of the SPV is 400 to 800VDC. Inverter maximum turn-on voltage is 1000V DC.

Emerson's SPV inverters are suitable for all large scale PV applications, with either thin-film or crystalline photovoltaic modules. The inverters are compliant with all key international grid connection standards offering user selectable Mains Dip Ride Through or Anti Islanding capability. The SPV generates around 3% ITHD consequently, no special design or de-rating of the transformer is necessary. The inverters can be easily integrated with third-party SCADA using Ethernet or Modbus.

Emerson can provide as much or as little of the PV inverter as

required, from an inverter to a complete turnkey solution, including medium voltage equipment, shelter, SCADA and string connection boxes.

Whilst the technology behind PV generation continues to mature, it's crucial for project developers to select a vendor with an appropriate understanding, credibility and a successful track record in PV.

While the goal of all PV developers is to reach or exceed anticipated plant yield; a key factor in achieving this goal is the engagement of competent vendors with quality products which seamlessly integrate into the overall scheme.

Investors must have confidence in the financial stability, long-term outlook, reliability and support of the chosen inverter vendor to ensure ongoing support during the 20+ year operational phase of the project. Sound engineering knowledge and close working relationships with project developers, EPCs and Integrators, both pre and post sales, are essential if the plant is to yield to its full potential.

Emerson is a \$21 billion company with significant power generation experience, unsurpassed R&D and international manufacturing resources which are supported by a comprehensive network of offices around the world providing engineering, project management and after sales support.

Emerson high yield SPV inverters ensure a return on investment that is not only impressive in the short term, but one that goes on to generate income reliably and consistently in the long term. Tailored warranty and support plans to 20 years ensure that performance is maintained over the lifetime of the installation.

To request a brochure on the new SPV Inverter System please visit www.controltechniques.com/pvrequest.



For further information please visit
www.emersonpvsolutions.com



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