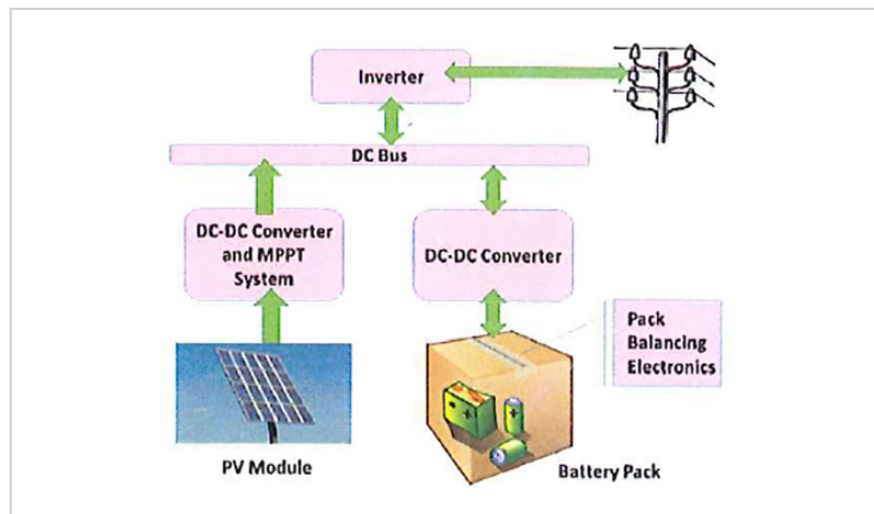


Self-Balancing Photovoltaic Energy Storage System

ID# 2016-4446



Benchmark PV Farm Topology

Technology Summary

Current power electronics used in today's PV/solar farms, particularly if they employ storage solutions, are quite complex and expensive. Energy storage in systems is desirable as it permits accommodation for generation intermittencies and ancillary services to the grid, such as frequency regulation and demand response. As the intermittent renewable resources such as solar and wind power increase market penetration, balancing instantaneous electricity supply and demand will become more critical for the traditional power grid. However, such power electronics for energy storage solutions can cost up to 10-15% of the total cost of the solar farm.

Application & Market Utility

This new hardware/software package provides a self-balancing solution for integrating battery storage into photovoltaic arrays through the use of a hybrid PV/storage cell design and system. Regulation by software control will maximize the solar power generation. Advantages include up to 30% lowered costs for the power electronic components, maximization of energy conversion efficiency of the overall PV generation system, self-balancing capability, and reduced transmission losses in grid systems.

Next Steps

Seeking licensing opportunities.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- Energy sustainability
- solar power
- photovoltaic arrays
- battery storage

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