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Cost-Effective Micro-Inverter For Solar Power Generation

Tech ID: 22022 / UC Case 2011-662-0

BRIEF DESCRIPTION

A family of new topologies for dc to ac inverter circuitry with auxiliary self-boosting of the dc input voltage.

FULL DESCRIPTION

Utilization of solar cell technologies is dictated by their economical feasibility. The major contributors to the cost of a solar cell system are the solar panels, and the power electronic processor. The power electronic processor is a key component of a solar cell system, which converts the low dc voltage generated by the solar array into the high ac voltage.

University researchers have developed inverters that can generate ac output voltage of desired amplitude and frequency and at the same time self-boost the low dc voltage of the solar panel to a required operational dc level. The novelty of the invention is achieved through the concept of merging the functions of individual components, so that the inverter structure is simplified. As a result, the new micro-inverter can be realized in a single stage, as compared to the two stage traditional approach. As such, the proposed circuits have a significantly reduced component count, power loss, and raw material usage compared to conventional approaches so that the inverter structure is simplified. Additional prospective benefits of the proposed product are higher efficiency, good power quality, reduced raw material usage, lower cost, and improved reliability.

SUGGESTED USES

The proposed invention can be used in a wide range of applications, which require generation of high ac voltage from a low voltage dc source. Specifically, but not limited to, power processors for fuel cells or solar arrays or for electrical motor drives. These power processors can be either stand alone or grid connected.

ADVANTAGES

The proposed inverter can generate ac output voltage of desired amplitude and frequency and at the same time self-boost the low dc voltage of the solar panel to a required operational level. The proposed inverters can attain very high dc gain.

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OTHER INFORMATION

KEYWORDS

Solar power, Micro-inverter, dc to ac inverter

CATEGORIZED AS

- » **Communications**
 - » Wireless
- » **Energy**
 - » Solar

RELATED CASES

2011-662-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Floating-Non Contact Wireless Voltage Sensor For High-Voltage Transmission Lines
- ▶ A Family Of Two-Switch Boosting Switched-Capacitor Converters (TBSC)
- ▶ New Bootstrap Gate Drivers For Multilevel Converters
- ▶ A Family Of Hybrid Boosting Voltage Converters

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