International Journal of Photoenergy

Special Issue on

Power Converters for Photovoltaic Systems and Their Control

CALL FOR PAPERS

The Solar energy, used as Photovoltaic (PV) Systems to produce power electrical energy, is one of the most growing renewable sources around the world today. There are, basically, two kinds of PV systems, referred to as grid-connected and off-grid (standalone) systems, having both their own research challenges. The PV panel-base systems have the advantage of producing electrical energy virtually everywhere with reliability, feasibility, flexibility, and low cost. The power electronic-based converters are the key in electrical power conversion for PV systems. Therefore, this special issue is addressing recent contributions on power converters for PV applications mainly related with the control, design, and integration of this kind of systems.

Recently, several important issues in grid-connected converters for PV applications have arisen, like eliminating the bulky isolation transformer in order to increase the efficiency. This brings new challenges such as reducing the parasitic currents due to the common mode voltages. Multifunctional PV power converters, with the ability of not only injecting current to the grid but also acting as active filters, reducing harmonics content at the point of common coupling, or as reactive power compensators, are another challenge for both design and control. The use of batteries as a backup for PV systems presents another field of research in multiport topologies, and its control. They have to optimize battery operation and life together with the maximum use of available energy and grid requirements. So, new power converters should be proposed, having in mind the best efficiency possible by considering novel schemes of operating.

On the other hand, recently, interesting issues on off-grid converters on PV applications are focused to providing energy from different PV panels at the same time, so multi-input power converters have arisen to increase the efficiency or to assure the better operation of the PV system. As in grid-connected applications, power converters for battery set management should be proposed in order to assure its availability, by taking into account its useful life.

The purpose of this special issue is to publish high-quality research contributions as well as review articles, aimed at recent advances on grid-connected and standalone power converters. Original, high-quality contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences are suitable.

Potential topics include but are not limited to the following:

- Transformer-less grid-connected converters
- Efficient grid-connected converter
- Efficient power converters suitable for MPPT
- Multi-input power converters
- Battery enabled power converters
- Control of grid-connected power converters
- Controllers for off-grid power converters

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/ijp/pcps/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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