Special Issue

Advanced Grid-Connected PV Inverters and AC–AC Converters for Dynamic Grid Voltage Compensation and Stability

Message from the Guest Editor

As electricity demands grow and environmental concerns mount, the need for photovoltaic (PV) power is escalating. For grid-connected PV inverters, priorities include reducing DC current, total harmonic distortion (THD), common-mode leakage current, and other critical factors. The fluctuating availability of solar power and changing load conditions can trigger substantial grid voltage disturbances and degrade power quality. To overcome these, it's vital to advance power electronics converter technology for efficient PV power management and reliable grid voltage control. This Special Issue will delve into the latest advancements in grid-connected power electronics, with a spotlight on DC–AC inverters for PV systems and AC–AC converters for grid voltage regulation. We invite contributions on advanced control strategies, innovative circuit designs, power quality improvements in PV-integrated grids, energy management and storage for PV systems, synchronization techniques, fault-tolerant PV inverter operations, AC–AC converter design for voltage regulation, and the role of FACTS devices in enhancing grid power quality.

Guest Editor

Dr. Hafiz Furqan Ahmed
Department of Electrical Engineering, National Sun Yat-sen University, Kaohsiung 804201, Taiwan

Deadline for manuscript submissions

20 August 2025

Energies

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 7.3

mdpi.com/si/216073

Energies
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
energies@mdpi.com

mdpi.com/journal/energies

Energies

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 7.3

mdpi.com/journal/energies

About the Journal

Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

Editor-in-Chief

Prof. Dr. Enrico Sciubba
Department of Mechanical and Industrial Engineering, University Niccolò Cusano, 00166 Roma, Italy

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), Ei Compendex, RePEc, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank:

CiteScore - Q1 (Control and Optimization)

MDPI