



# **Power Electronics and Control Techniques for Maximum Energy Harvesting in Photovoltaic Systems (Industrial Electronics)**

*Nicola Femia, Giovanni Petrone, Giovanni Spagnuolo, Massimo Vitelli*

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Incentives provided by European governments have resulted in the rapid growth of the photovoltaic (PV) market. Many PV modules are now commercially available, and there are a number of power electronic systems for processing the electrical power produced by PV systems, especially for grid-connected applications. Filling a gap in the literature, **Power Electronics and Control Techniques for Maximum Energy Harvesting in Photovoltaic Systems** brings together research on control circuits, systems, and techniques dedicated to the maximization of the electrical power produced by a photovoltaic (PV) source.

### *Tools to Help You Improve the Efficiency of Photovoltaic Systems*

The book supplies an overview of recent improvements in connecting PV systems to the grid and highlights various solutions that can be used as a starting point for further research and development. It begins with a review of methods for modeling a PV array working in uniform and mismatched conditions. The book then discusses several ways to achieve the best maximum power point tracking (MPPT) performance. A chapter focuses on MPPT efficiency, examining the design of the parameters that affect algorithm performance. The authors also address the maximization of the energy harvested in mismatched conditions, in terms of both power architecture and control algorithms, and discuss the distributed MPPT approach. The final chapter details the design of DC/DC converters, which usually perform the MPPT function, with special emphasis on their energy efficiency.

### *Get Insights from the Experts on How to Effectively Implement MPPT*

Written by well-known researchers in the field of photovoltaic systems, this book tackles state-of-the-art issues related to how to extract the maximum electrical power from photovoltaic arrays under any weather condition. Featuring a wealth of examples and illustrations, it offers practical guidance for researchers and industry professionals who want to implement MPPT in photovoltaic systems.

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**Emma O'Neill:**

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