



energies



Special Issue Reprint

Methods, Algorithms and Circuits for Photovoltaic Systems Diagnosis and Control

Edited By:

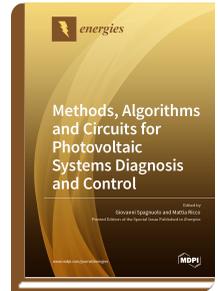
Giovanni Spagnuolo

Mattia Ricco

mdpi.com/books/pdfview/book/3646

ISBN 978-3-0365-0540-4 (Hbk)

ISBN 978-3-0365-0541-1 (PDF)



In modern photovoltaic systems, there is an ever-increasing need to improve the system efficiency, to detect internal faults and to guarantee service continuity. The only way to meet these objectives is to utilize and create synergies between diagnostic techniques and control algorithms. Diagnostic methods can be implemented through module-dedicated electronics, by running on real-time embedded systems or by using a huge database on the cloud, profiting from artificial intelligence, machine learning, and classifiers. Model-based diagnostic approaches and data-driven methods are attracting the interest of the scientific community for the automatic detection of phenomena like the occurrence of hot spots, the increase of the ohmic losses, the degradation due to unexpected potentials (PID), switch failures in power electronic converters, and also the reduction of the power production due to soiling or partial shadowing. The detection of malfunctioning or even faults affecting the whole power conversion chain, from the photovoltaic modules to the power conversion stages, allows to perform proper control actions, also in terms of MPPT. Control algorithms, running on an embedded system, are optimized, e.g., through the online adaptation of their own parameters, by suitably processing data coming from the diagnostic algorithms.

This book presents recent and original results about the diagnostic approaches to photovoltaic modules and related power electronics and control strategies with the aim to maximize the photovoltaic output power, to increase the whole system efficiency and to guarantee service continuity.



Order Your Print Copy

Print copies (170x244mm, Pbk) can be ordered at:

www.mdpi.com/books/pdfview/book/3646

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), the Verzeichnis lieferbarer Bücher (VLB).



Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.