



# **Solar Electric Power Generation - Photovoltaic Energy Systems: Modeling of Optical and Thermal Performance, Electrical Yield, Energy Balance, Effect on Reduction of Greenhouse Gas Emissions**

*By Stefan C.W. Krauter*

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This book thoroughly examines the technical parameters of photovoltaic systems, and appraises their net energy balance from production, operation and maintenance, to recycling. Similar performance and yield analysis is applied to optical, thermal, and electrical parameters and interfaces. Professor Krauter demonstrates how accurate yield calculations, optimal system performance, and new prototypes aid in cost reduction. Examples, tables and figures are included.

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## **Editorial Review**

### From the Back Cover

Solar electricity is an economically viable, environmentally sustainable alternative to the world's energy supplies. In support, Dr. Krauter thoroughly examines the various technical parameters of photovoltaic systems. Study of performance and yield (including optical, thermal, and electrical parameters and interfaces) are analyzed. The net energy balance of photovoltaic systems – from production, operation and maintenance, to recycling – is explored. Professor Krauter demonstrates how the importance of accurate yield calculations, optimal system performance, and new prototypes aid in cost reductions. The potential of solar electric power generation as a means to significantly reduce CO<sub>2</sub> emissions is also detailed. In addition, various locations for the production and installation of photovoltaic power plants are considered – with surprising results. Examples, tables and figures are included.

### About the Author

1963: Born in Goeppingen, Germany.

1988: Master in Electrical Engineering and Cybernetics at University of Technology Munich, Germany.

1992: Co-Founder of the International Solar Center Berlin.

1993: Ph.D. (Operation model of PV modules) at Prof. Rolf Hanitsch, University of Technology Berlin, Faculty of Electrical Engineering, Germany

1994: Post-doc studies at Prof. Martin Green the University of New South Wales.

1995: Visiting professor at the Federal University of Rio de Janeiro, Brazil

1996: Winner of Berlin Solar price

1997: Co-founder of the Solon AG, joint-stock company for PV module production, Berlin

2002: Organizer and general chairman of RIO 02 – World Climate & Energy Event (continuation of that event in 2003, 2005 and 2006, since 2003 together with Latin America Renewable Energy Fair - LAREF)

Chairman at the World Council for Renewable Energies (WCREE) - Latin America Section

2003: Visiting Professor at the State University of Ceará, Brazil.

2004: Member of the Board of Directors of the International Solar Energy Society (ISES)

2005 Professor at University of Technology Berlin

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