SOLAR PHOTOVOLTAICS : TECHNOLOGY, SYSTEM DESIGN, RELIABILITY AND VIABILITY

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About the Book:

The book is designed to provide a comprehensive understanding of fundamentals, technologies and applications of solar photovoltaic systems. The fundaments and technologies discussed to practical engineering problems likely to be met by researches and students. Specials emphasis is laid on centre core of basics, recent developments and advances. It covers basic photovoltaic processes, solar cell materials which include discussions on mono-crystalline, multi crystalline silicon based solar cells, thin film micro crystalline, nano crystalline, hybridized silicon based solar cells, multi junction solar cells and thin film cadmium telluride (CdTe) cells. The water-based fabrication technologies, mathematical model of transport processes, electrical characteristics of solar cells, mismatch losses in array network, BOS and electronic regulations, repertoires of applications, solar PV system design and reliability, prospective high performance solar cells and solar PV economics are also presented. The book also points out that high efficiency of solar cell device reached so far is not followed by high system efficiency due to several drawbacks. In this regard it presents work on fault tolerant circuitry to combat mismatch losses in cell network and balance of the system. It also considers cost reduction options like the building integrated photovoltaics and the concentrating systems.

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