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Altri autori (Persone)	SabonnadiereJean-Claude
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Nota di contenuto	Renewable Energies; Table of Contents; Preface; Chapter 1. Photovoltaic Electricity Production; 1.1. Introduction; 1.2. Photovoltaic conversion; 1.2.1. I-V characteristics of a cell and conversion output; 1.3. Cells with a crystalline silicon base; 1.3.1. Raw silicon; 1.3.2. Monocrystalline silicon; 1.3.2.1. Techniques for growing monocrystals; 1.3.2.2. Record for cells on monocrystals; 1.3.3. Multicrystalline silicon; 1.3.3.1. Techniques for growing multicrystals; 1.3.3.2. Improvement in performance of cells created from multicrystals; 1.3.4. Silicon in self-supported ribbon 1.3.4.1. Growing techniques1.3.4.2. Prospects; 1.4. Cells in thin films; 1.4.1. Polycrystalline silicon; 1.4.2. Nanocrystalline and amorphous silicon; 1.4.2.1. State of the art and new prospects; 1.4.2.2. Industrial applications; 1.4.3. Marriage of crystalline and amorphous technologies; 1.4.4. Other emerging thin-film materials; 1.4.4.1. Materials with a cadmium-tellurium base; 1.4.4.2. Materials with a base of indium-copper-selenium (CIS) (copper selenate); 1.4.5. Prospects for thin films; 1.5. Photovoltaic market; 1.5.1. Stimulation of production by

political intervention

1.5.2. First beneficial effects on production and power of the installations
1.5.3. Adaptation of the product to the market: cost of watt and kilowatt hour PV; 1.6. Prospects for photovoltaic electricity development; 1.7. Bibliography; Chapter 2. Photovoltaic Systems Connected to the Grid; 2.1. Problems of photovoltaic power generation connected to the grid; 2.2. General remarks on connection; 2.2.1. Interfacing with the grid; 2.2.2. General remarks on control; 2.3. Physical architectures; 2.3.1. Central inverter; 2.3.2. Individual inverter; 2.3.3. Row inverters; 2.3.4. Multiple row inverters
2.3.5. Conclusion
2.4. Constraints related to supplying energy to the utility grid; 2.4.1. Quality of the energy supplied; 2.4.2. Security; 2.4.2.1. Security regarding the grid; 2.4.2.2. Security with respect to installation; 2.5. Algorithmic architectures; 2.5.1. The search for MPPT; 2.5.2. Control of the inverter grid and the global chain; 2.6. Conclusion; 2.7. Bibliography; Chapter 3. Solar Heating; 3.1. Introduction; 3.1.1. Some history; 3.1.2. Some basic calculations; 3.1.3. The performance of solar heating devices; 3.2. Available energy from the sun; 3.2.1. The apparent motion of the sun
3.2.2. Evaluation of sunlight received by a collector
3.3. Flat solar panels; 3.3.1. Different technologies of thermal solar collectors; 3.3.2. Evaluation of the performance of solar collectors; 3.3.3. Selective coatings for collectors and glazing; 3.4. Solar heating systems; 3.4.1. Individual and collective solar water heaters; 3.4.2. Combined solar systems for the heating of buildings; 3.5. Bibliography; Chapter 4. Solar Thermodynamic Power Stations; Introduction; 4.1. Concentrating solar power technologies; 4.1.1. Why concentrate solar radiation?; 4.1.2. Concentrating systems
4.1.2.1. The parabolic concentrator (or dish)

Sommario/riassunto

This book deals with the emerging generation of renewable energy technologies, covering solar energy (photovoltaic, thermal and thermodynamic energy conversion), wind energy, marine energy, small hydropower, geothermal energy, biofuels, biogas and the use of wood as a substitute for fossil fuels.
