

An Overview on Photovoltaic Energy Generation

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Global warming and the high oil prices are speeding up the investments in alternative energy sources. Photovoltaic (PV) energy generation is one of these alternative sources. In the last years many countries are offering incentives for the setup of new PV power plants, leading to an annual increase of around 40% increase in PV energy generation. In this tutorial a general overview about photovoltaics will be presented. The principle of solar cells will be introduced and some key historical events will be highlighted. An overview of the development of the market for photovoltaic energy and its future predictions will also be presented. The technologies and structures of different solar cell, including bulk silicon, thin-film, organic semiconductors materials, will be described and their efficiencies compared. The main factors affecting cell efficiency and the next generation technologies will be described. A roadmap for the main technologies will be presented.