

Need, State of the Art and Future of Solar Power Applications

Malvika Sharma¹ and Krishan K. Sharma²

¹Computer Science and Engineering University Institute of Engineering and Technology Kurukshetra 136119 INDIA

²Electrical Engineering Department National Institute of Technology Kurukshetra 136119 INDIA

E-mail: ¹malvika1596@gmail.com, ²kksharma@nitkkr.ac.in

Abstract—Passive solar energy that concerns building design to maintain its environment at a comfortable temperature through the sun's daily and annual cycles, daylighting as the practice of placing windows or other openings and reflective surfaces so that during the day natural light provides effective internal lighting, concentrating solar power (CSP) plants that produce electricity using mirrors or lenses, solar heating systems including solar thermal power plants and photovoltaic (PV) or solar cells that consist solar photovoltaic arrays to convert energy from the sun into electricity, are the major areas of solar power applications. Solar cells produce direct current electricity from the sun's rays, which is used to power equipment or to recharge batteries. The solar power is increasingly being used for lighting and for other domestic appliances through solar power charged batteries at remote villages where the grid supply is not available. Due to wide scale use the cost of solar energy has also come down significantly. The day is not far off when solar power will be linked to the grid and the consumer will be able to sell the energy to the grid during summer. The increase in energy efficiency and cost reduction of PV materials will remain the topics of research in nearby future. The strength and reliability of the cells and panels will also decide the life and cost of the PV modules. Each application needs efficient and application specific demands to be met. Many pocket calculators incorporate a single solar cell, but for larger applications, cells are generally grouped together to form PV modules that are in turn arranged in solar arrays. Solar arrays can be used to power orbiting satellites and other spacecraft, and in remote areas as a source of power for roadside emergency telephones, remote sensing, and cathodic protection of pipelines.