Photovoltaic cell ppt slideshare

Basics of Solar Cells A solar cell or a PV cell is a semiconductor device that converts sunlight into direct current (DC) or electricity. Groups of PV cells are configured into modules and arrays, which can then be used to charge batteries, operate motors and to power any number of electrical loads.

Design of PV cell in SIMULINK,Equivalent Circuit For Photovoltaic Cell - Download as a PDF or view online for free ... This presentation by Thibault Schrepel, Associate Professor of Law at Vrije Universiteit Amsterdam University, was made during the discussion "Artificial Intelligence, Data and Competition" held at the 143rd meeting of the ...

12. SOLAR VEHICLE Solar vehicle are electric cars that use photovoltaic cells to convert energy from sunlight into electricity. These cars can store some solar energy in batteries to allow them to run smoothly at night or in the absence of direct sunlight. The first model solar vehicle invented was a tiny 15-inch vehicle created by General Motors employee, William G. ...

This presentation covers the basics of silicon photovoltaic cells, looking at the photovoltaic effect, the chemical properties of silicon, PN junctions, how photovoltaic cells are constructed, the factors affecting their performance ...

Silicon PV cells developed in 1958 Solar cell is the primary device for Solar Photovoltaic Systems. Pure silicon with high crystal quality is needed to make solar cells. To enable silicon material to generate energy, impurities, the ...

Solar cells, also known as photovoltaic cells, convert solar energy from the sun into electrical energy. They operate based on the photovoltaic effect where absorption of light by the solar cell"s semiconductor material generates ...

2. History of Solar Cells o The importance of sola was recognized in late 17th century by Swiss scientist named as Horace o In 1893 first solar cell was introduced by wrapped of selenium wafer. o In 1999 the most efficient soar cell was ...

Classical photovoltaic solar cells based on inorganic semiconductors (Silicon) was developed in 1954 by Chapin, Fuller and Pearson in the Bell Labs. oSome of its demerits : Silicon is expensive. Not flexible Limited availability of inorganic material. ABOUT PHOTOVOLTAIC CELL March 17, 2015 5

4. o Thin-Film Solar Cells Another commonly used photovoltaic technology is known as thin-film solar cells because they are made from very thin layers of semiconductor material, such as cadmium telluride or copper indium ...

15. SOLAR ENERGY o Solar energy is radiant light and heat from the Sun that is harnessed using a range of ever-evolving technologies (electro magnetic radiation). o It is an important source of renewable energy and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or ...

7. C l e a n C o a l Te c h n o l o g y - D i s a d v a n t a g e s o Other forms of pollutions besides carbon dioxide will still be emitted - Selenium and arsenic for example o Governments will be reluctant to spend money on research into renewable technologies like solar, wind or water power o Many scientists are still, a little skeptical that clean coal is truly cleaner ...

2. The Solar Cell o The most common type of solar cells are Photovoltaic Cells (PV cells) o Converts sunlight directly into electricity o Cells are made of a semiconductor material (eg. silicon) o Light strikes the PV cell, and a certain portion is absorbed o The light energy (in the form of photons) knocks electrons loose, allowing them to flow freely, forming a current o Metal ...

Solar Cell Parameters - A Datasheet Thus, Po = Pm = efficiency of cell * Pin = (16.5/100) * (1.46*1000) Po = 240W If G is the irradiance (in kW/m2) and Ac is the area of cell (in m2), then ? = VmIm GAc Thus, efficiency of cell is inversely proportional to its area. Effective area available in a module decreases due to ...

4) PHOTOVOLTAIC SOLAR Photovoltaic (PV) cells, which convert light directly into electricity, first found application in space before becoming commonplace on devices such as calculators and watches and also providing power to locations without a connection to the electricity grid. As costs have fallen and efficiencies of PV materials have risen ...

The document discusses solar energy, including its various forms and applications. It provides information on: 1) The different types of solar energy including thermal, electric, photovoltaic, concentrated solar power, and discusses technologies like solar water heaters, solar cells, and solar cookers.

Solar energy is the energy emitted by the sun. It is the most abundant and renewable form of energy. Photovoltaic cells convert light energy into electrical energy. Assembly of PV cells make solar panels. Solar panels finds its applications in many fields such as domestic lighting, solar vehicles etc. Read less

4. o Thin-Film Solar Cells Another commonly used photovoltaic technology is known as thin-film solar cells because they are made from very thin layers of semiconductor material, such as cadmium telluride or copper indium gallium diselenide. The thickness of these cell layers is only a few micrometers--that is, several millionths of a meter. Some types of thin-film solar ...

14. REFERENCES [1] Askari Mohammad Bagher"Introduction to Organic Solar Cells", Department of Physics, Azad University, North branch, Tehran, Iran, [2] Liming Liu, Guangyong Li"Modeling and Simulation of Organic cell", Nanotechnology Materials and Devices Conference (NMDC) 2010 IEEE. DOI:

10.1109/NMDC.2010.5649633, Publication ...

3. o A Ge based photovoltaic cell is an electronic device that converts sunlight directly into electricity. o Ge is used as a semiconductor which is treated with impurities inorder to create pn junction. o When photons of sunlight strike the surface of the cell, they knock electrons loose from the semiconductor material, hence electricity is produced.

76. JAWAHARLAL NEHRU NATIONAL SOLAR MISSION Make India a global leader in solar energy and the mission envisages an installed solar generation capacity of 20,000 MW by 2022, 1,00,000 MW by 2030 and of 2,00,000 MW by 2050. The total expected investment required for the 30-year period will run is from Rs. 85,000 crore to Rs. 105,000 crore. Between ...

The presentation discusses the history of solar cells from early experiments in 1839 to the first practical cell in 1954. It describes the three main types of solar cells based on the crystal used and their relative efficiencies. The presentation also outlines the structure, working principle, uses, advantages and disadvantages of solar cells.

Presentation on solar cell - Download as a PDF or view online for free ... The very first benefit of using this technology is that solar energy is renewable. This is a 100% environment-friendly. Contrary to fossil fuels, this technology is not going to release any greenhouse gases, harmful agents, volatile material or carbon dioxide into the ...

Workig of PV Cell, used in Solar Panels. Photons in sunlight hit the solar panel and are absorbed by semiconducting materials, such as silicon. An array of solar cells converts solar energy into a usable amount of direct current (DC) electricity. An inverter can convert the power to alternating cur- rent (AC). Read less

4. BACKGROUND most commonly manufactured PV cells are made of crystalline silicon and have energy conversion efficiency of 12%. The cost of these cells is $3 per Watt of power generated under solar AM 1.5G conditions these costs need to be reduced by an order of magnitude to around $0.3 per Watt for PV cells to be competitive with other energy generation ...

It is essentially a semiconductor device fabricated in a manner which generates a voltage when solar radiation falls on it. Efficiency of solar cell is less, it only converts 30-40% of energy incindent on it to electrical energy. Need to use solar energy : pollution free maintenance free silent operation long life time. Efficiency of solar cell ...

2. ABSTRACT >Solar cell is a semiconductor device which is nothing but a P-N junction diode and can converts sun lights into electrical energy. >Solar PV module when in touch of sunlight generates voltage and current at its output terminals. >In recent trends, this technology is highly effective because of less maintenance and continuous availability of solar energy in ...

Photovoltaic effect o Discovered by Edmond Bequerel in 1839 o First Solar cell was built by Charles Fritts in 1883 o Russel Ohl patented the first modern solar cell in 1946 o Bell Laboratories found that doped silicon may have high photovoltaic properties in 1954.

18. Junction Box The junction box has the function of bringing the electrical connections of the PV module outside. It contains the protection diodes for shadows and the cables for the connection of the panels in the field. In choosing the Junction box we pay attention to the quality of plastic, the goodness of sealing, the type of connection of the ribbon and the ...

10. When sun light falls on silicon metal cell, the photon energy allows the electrons from the P- layer to move to the N-layer, creating an electric potential difference on the semiconductor borders. If these borders are ...

Silicon PV cells developed in 1958 Solar cell is the primary device for Solar Photovoltaic Systems. Pure silicon with high crystal quality is needed to make solar cells. To enable silicon material to generate energy, impurities, the doping atoms, are introduced into crystal lattice. When solar cell is exposed to light, photons are absorbed by ...

3. Objective What is a solar cell ? A solar cell converts optical energy directly into electrical energy. It is essentially a semiconductor device fabricated in a manner which generates a voltage when solar radiation falls on it. Efficiency of solar cell is less, it only converts 30-40% of energy incident on it to electrical energy. Need to use solar energy : pollution free ...

An Overview of Photovoltaic Systems or PV Systems. This PPT outlines what a solar systems is and what it is consisted of. From solar panels to charge controller to deep cycle batteries to the inverter. ... o The material responsible for doing this conversion is call a cell. 7. ... and allow residents of a building to use solar energy as well ...

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