

Solar power supply can be retrofitted into mechatronic systems

How does a mechatronic system work?

The behavior of the mechatronic system is as follows. The principal input is the sunlight, and the system must convert the solar energy into electrical energy (through PV-technology), regulating the voltage value of the PV modules, and finally store it.

How smart solar tracking system is based on mechatronics design approach?

This paper proposes the conception and development of smart solar tracking system, based on mechatronics design approach, such that the solar panel through both day and seasonal changes is accurately perpendicular to sunlight beam (accurately point towards sun), where illumination is strongest.

Is Mechatronics a sub-discipline of mechatronics?

Mechatronics is a modern, interdisciplinary field comprising mechanical systems, electronics, and computers, and has attracted much attention over the past decade [3-4]. Mechatronic systems are mechanical systems controlled by computer software with electronics hardware. In a sense, robotics may be considered a sub-discipline of mechatronics.

What are Intelligent Mechatronic Systems?

The next stage in the evolution of computer controlled systems are the intelligent mechatronic systems, which combine the power of computer control with software for incorporating intelligence through artificial/computational intelligence techniques [5-6].

Why is mechatronics education important?

In addition to advancement of education and training in the frontier area of green energy, the focus on mechatronics education can also lead to new technologies and business ventures, training in unstructured problem solving and engineering design, and involvement of engineering and technology students in community service and outreach.

What are some examples of mechatronic systems?

Some of the most outstanding technological achievements of recent years, e.g., Mars Rover, Space Shuttles, hybrid/fuel-cell cars, micro- and nano-electromechanical systems, unmanned aerial vehicles, artificial heart, and Segway personal transporter, to name just a few, are all good examples of mechatronic systems.

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Though one of the older technologies utilizing a renewable resource, mechatronics engineers have made solar power more efficient and accessible. One of the biggest issues with utilizing solar energy is maintaining an efficient conversion rate of incoming sun to energy output without prohibitive costs.

The solar energy could be transformed into electricity in two ways: directly, by using photovoltaic panels, or indirectly by using the solar energy locus of concentration. The ...

The solar PV power can either be delivered directly by injecting the power into the utility grid by solar-to-grid integration or by operating them in islanded mode to supply power to local loads in case of remote locations.

Relevant issues of seven different kinds of solar hybrid power systems are introduced and discussed, including the research and development progresses, typical configurations, advantages, disadvantages, challenges and research directions. List of abbreviations including units and nomenclature. 1. Introduction.

Mechatronics engineers develop control systems for solar panels that optimize their performance and ensure they are operating at maximum efficiency. Hydroelectric power plants use water to generate electricity, and mechatronics plays a key role in their operation.

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Many solar energy systems directly generate electricity from light (e.g., photovoltaic), but incorporate extensive use of electronics and computer control for efficient power conversion, ...

ABSTRACT: This paper explores current demands for environmentally friendly, renewable energy sources; sun radiation is changing into progressively enticing. However, while sun radiation is free, non-polluting and, in sensible terms, inexhaustible, there ...

The solar energy could be transformed into electricity in two ways: directly, by using photovoltaic panels, or indirectly by using the solar energy locus of concentration. The last type of systems are using lens or mirrors and tracking systems for making the focalization of a great area of solar light into a narrow ray.

Grid-tied solar systems. Grid-tied systems are solar panel installations that are connected to the utility power grid. With a grid-connected system, a home can use the solar energy produced by its solar panels and electricity that comes from the utility grid. If the solar panels generate more electricity than a home needs, the

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excess is sent to the grid.

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When excess solar power is sent to the utility grid, you'll receive credit on your property's energy bills at a rate dependent on local policies and the time of day or week the electricity is shared. Mandatory for utilities in over 30 ...

The behavior of the mechatronic system is as follows. The principal input is the sunlight, and the system must convert the solar energy into electrical energy (through PV-technology), regulating the voltage value of the PV modules, and finally store it. In parallel, the system must measure and calculate the solar orientation and by using a ...

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