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(57) Abstract :

5. ABSTRACT A Dye-Sensitized Solar Cell (DSSC) system for clean energy production is disclosed. The DSSC system comprises interconnected DSSCs with meticulously engineered photoanodes coated with nanostructured Titanium dioxide nanoparticles (TiO₂ NPs) for optimized light absorption and electron transport, resulting in high power conversion efficiency. Clean energy generated by the DSSCs is stored in a sophisticated energy storage unit, ensuring uninterrupted power supply even in variable environmental conditions. An advanced energy conversion and distribution system monitors and adapts energy delivery to meet diverse application requirements, from portable electronic devices to residential and commercial buildings, addressing energy accessibility challenges in remote locations. The system's broad spectrum light capture capability allows for efficient energy production under varying lighting conditions, while an integrated monitoring and optimization system maintains peak performance. The method for DSSC production ensures precision and reliability. This invention offers a sustainable, reliable, and clean energy solution for various applications.

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