BloomTrail Amusement Park

LOCATION : Marou Village, Naviti Island, Fiji

Concept Narrative

This design proposes a new cultural amusement park located adjacent to a village and school facilities, within a scenic tourist area that offers stunning natural views. The core concept integrates solar energy and rainwater harvesting to create a sustainable space that enhances public community, education, tourism, and cultural resources, all experienced through a nature-inspired pathway layout. Flower-shaped PV panels, reconfigured from traditional solar cells, double as sunshades that generate energy and collect rainwater. These sunshades are arranged along a picturesque, nature-evoking trail, allowing visitors to engage in diverse cultural experiences and recreational activities, as well as observe biodiversity in reed beds and farming activities within the surrounding outdoor spaces. The park serves as a shared space for residents, students, and tourists, delivering co-benefits such as energy and water conservation, educational programs, and community event venues. Its pedestrian-friendly, accessible design ensures that people of all ages can enjoy the harmonious blend of nature and technology.

Technical Narrative

This cultural amusement park design integrates monocrystalline silicon PV panels and rainwater harvesting systems to create a sustainable, community-oriented space. The PV cell is the currently widely used 'monocrystalline silicon PV cell,' utilized with its efficiency in mind, maintaining the square shape without deformation but arranged to fit a petal-shaped frame. Each petal contains five 182mm×182mm cells, and each sunshade module has 16 petals. The entire park site has a total of 169 modules. In other words, the total cell area is 447.84 m², and with an efficiency of 21%, calculated using an average insolation of 5.0 kWh/m²/day and an approximately 80.4% performance ratio, the total annual energy production is about 138 MWh. The flower-shaped PV panels include a feature allowing them to fold in two stages via an internal electric motor to prevent damage from typhoons or strong winds or heavy rains. Additionally, LED lighting is embedded on the side surface of each petal module, serving as illumination for the park at night. Each module also includes a rainwater collector, producing a total of 226,181 liters of potable water annually. Specifically, each of the 169 modules is equipped with a 1.5 m diameter,





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