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(57) Abstract :

ABSTRACT A SELF-POWERED HYBRID BICYCLE INTEGRATING WIND AND SOLAR ENERGY SYSTEMS The present invention relates to the self-powered hybrid bicycle which is a sustainable transportation solution integrating wind and solar energy systems. The bicycle features a wind turbine mounted on the front wheel to the handle bar and thin-film solar panels on the frame, enabling autonomous power generation. The generated energy is stored in a rechargeable battery and utilized to power an electric motor for pedal assistance. A smart energy management controller optimizes the system's efficiency, ensuring uninterrupted operation. This invention offers an eco-friendly, cost-effective alternative to conventional electric bicycles, addressing the growing demand for sustainable mobility solutions. This invention provides a self-sustaining energy solution, reducing dependency on fossil fuels. To be Published with Figure 2

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