عنوان مقاله:

Optimizing Coastal Hydro Turbines: Integrating Artificial Intelligence for Sustainable Energy Conversion

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خلاصه مقاله:

As the global quest for sustainable energy intensifies, coastal areas emerge as pivotal zones for harnessing renewable resources. This article explores the transformative role of artificial intelligence (AI) in optimizing energy extraction from hydro turbines near the coast. Leveraging machine learning algorithms, the study addresses key facets, including site selection, predictive modeling, adaptive control, and environmental monitoring. The complexity and variability of coastal environments necessitate innovative solutions for maximizing energy output while minimizing ecological impact. AI proves instrumental in navigating these challenges by providing real-time adaptability and predictive capabilities. This research delves into the application of AI in enhancing the efficiency, reliability, and sustainability of coastal hydro energy extraction. From predicting tidal and wave patterns to dynamically adjusting turbine operations, AI algorithms contribute to the optimization of near-shore hydro energy. The article unfolds insights into how these advancements not only meet the demands of a dynamic coastal ecosystem but also align with global sustainability goals. In conclusion, the integration of AI with coastal hydro turbines marks a paradigm shift, ushering in an era of smart and adaptive energy solutions. This amalgamation not only optimizes energy production but also underscores a commitment to environmentally conscious practices, steering the course toward a cleaner and greener energy landscape.

کلمات کلیدی:

Coastal Hydro Turbines, Artificial Intelligence, Renewable Energy, Sustainability, Near-Shore Energy.

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