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A NEW ENERGY CONVERSION SYSTEM DESIGN WITH VERTICAL HYDROKINETIC TURBINE WITH FIXED ROUTER WING

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Abstract:

River applications have an important place in electricity energy production. In this study, a new hydrokinetic energy conversion system with vertical axis turbine was designed to meet the electricity needs of the rural residents by utilizing water flow energy for river applications. The system was built on the idea that it could be extended to the river beds by making channels such as special mill waterways. At the designed channel inlet, the flow rate is adjusted by means of the pump with the number of revolutions set and the special flow channel. This brings some simplifications to the generator and automation systems. With the construction of hydrokinetic flow channels, friction and impact losses caused by the construction of river beds have been somewhat avoided. The hydrokinetic turbine with vertical axis fixed vertical wings is composed of hydrokinetic channels similar to the river beds which includes groups of DC generators, rectifiers, battery banks and inverters, mechanism of increasing the number of revolutions. This system utilizes the kinetic energy of the flowing water and produces electricity in a controlled manner. The obtained data are transferred to the computer environment and the system dynamics and data are examined in detail in the MATLAB / Simulink environment.

Keywords: Hydrokinetic Turbine, DC Generator, Inverter, Battery Bank

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