TS fuzzy control of PV assisted single phase three phase induction motor drive for rural pumping applications

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Abstract

The motor drives for aqua farms and large-scale irrigation system needs a reliable electric drive, which requires the continuous power supply and efficient control. However, the rural single phase power supply is frequently interrupted. Renewable assistance would improve the availability of supply and heuristic control approach improves robustness in control. This paper presents a three phase induction motor drive fed from single phase electric grid with assistance from PV and battery energy storage. TS- fuzzy based direct torque control is employed for robust control during load changes, and the topology, component modelling, front-end converter control, PV interface DC–DC converter control, and inverter control are presented. MATLAB/Simulink is used to simulate the proposed drive system. The performance of the proposed system is validated using simulation data for both steady-state and transient states.

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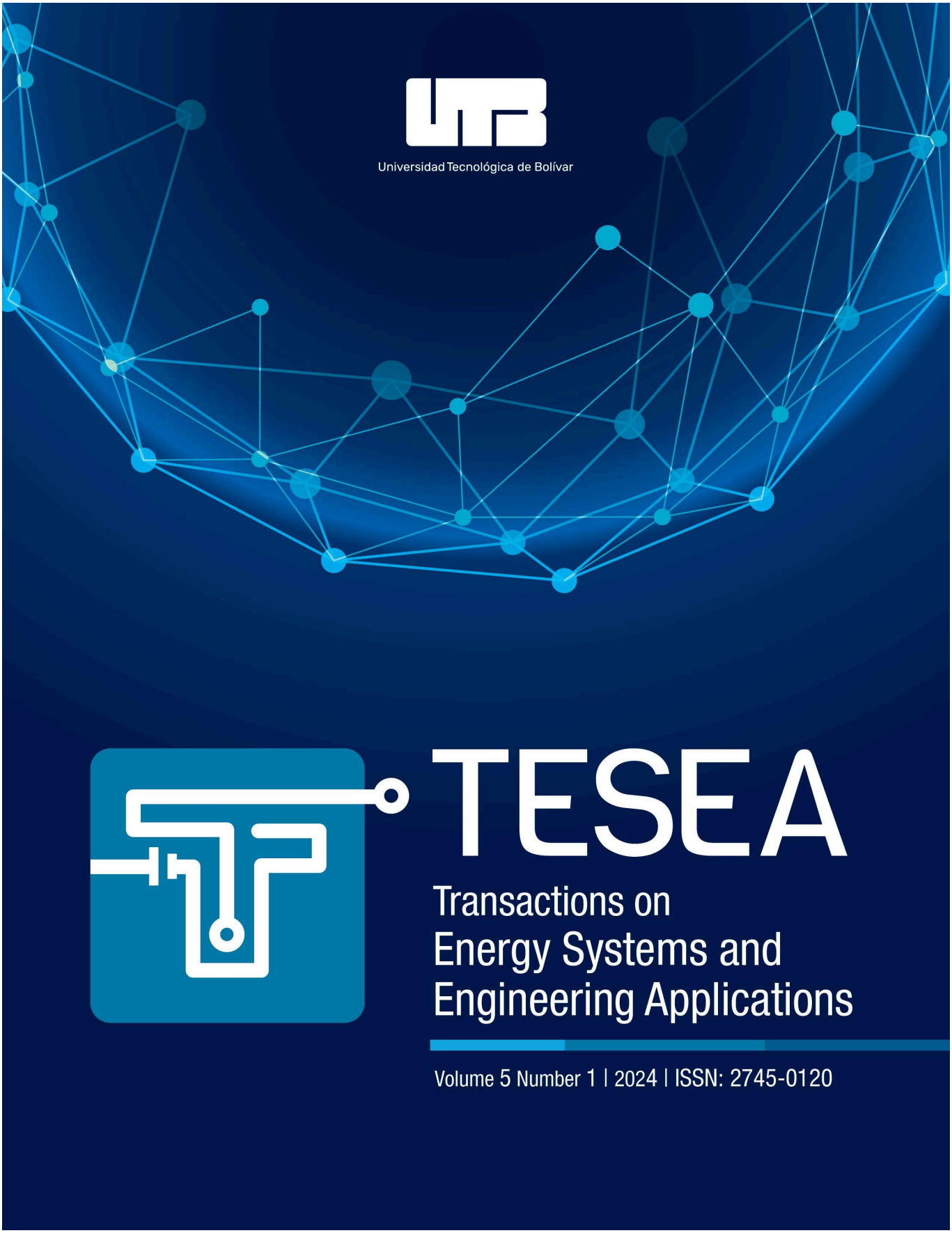
References



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