

## LOW-COST DIRECT TORQUE CONTROL ALGORITHM FOR INDUCTION MOTOR WITHOUT AC PHASE CURRENT SENSORS FOR WIND POWER PLANT

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### ABSTRACT

The conventional DTC scheme uses a stator flux vector for the sector identification and then the switching vector to control stator flux and torque. The fundamental stator voltage estimation is based on the steady-state model of IM and the synchronous frequency of operation is derived from the computed stator flux using a low-pass filter technique. The novel method is superior to the existing methods in terms of simplicity and robustness. By appropriately arranging the sequence of the vectors, the commutation frequency is reduced effectively without performance degradation. So the proposed model presents a low cost and simple phase current reconstruction algorithm for three-phase IM under direct torque control DTC using the information obtained from only one shunt resistor. The main aim is to develop low-cost high performance IM drive. The proposed system does not require additional computation burden or other motor parameters knowledge. The applications of this proposed system are industrial loads, Drives, Traction, boats, etc. The overall system with the proposed control strategy is developed and simulated in MATLAB/SIMULINK environment.

**KEYWORDS:** Direct Torque Control (DTC), Switching Frequency Reduction (SFR), Single Current Sensor (SCS), Wind Power Plant (WPP)