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## Particle swarm optimization based sliding mode control of variable speed wind energy conversion system

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**Abstract:** This paper proposes a particle swarm optimization based sliding mode control of squirrel cage induction generator of a variable speed wind energy conversion system. The key feature of sliding mode control is a wisely chosen sliding surface which allows the turbine to operate more or less close to the optimal regimes characteristic. Optimal control parameters which are the convergence speed to the sliding-mode, the slope of the surface and the switching component amplitude of SMC are determined using particle swarm optimization approach. The simulation results prove the viability of the proposed control structure.

**Keywords:** Squirrel Cage Induction Generator (SCIG), Wind Energy Conversion System (WECS), Sliding Mode Control (SMC), Particle Swarm Optimization (PSO)