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(57) Abstract :
Wind energy is one of the renewable energy sources available in nature, which is generated using wind turbine system. This invention focuses on direct power control of wind turbine system operation at variable speed and constant frequency based on Internet of Things by proportional integral sliding mode control. This work results in optimal production of power by tracking the point of maximum power even when there is turbulent wind flow. The proposed controller involves two sub components namely a smart proportional integral module for compensating online disturbances and a module in sliding mode for the estimating errors due to circumventing disturbances. A direct power control of wind turbine system is proposed based on Internet of Things by proportional integral sliding mode control by the extended state observer which is integrated in the system for estimating the uncertain dynamics of the system. This system is tested on the platform of FAST/Simulink for a wind turbine system operating at 5 MW. The proposed system outperforms conventional proportional integral controller.

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