

## Article Abstract

Title:	Laboratory development of wind turbine simulator using variable speed induction motor
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Journal:	<i>International Journal of Engineering, Science and Technology</i> , Vol. 3, No. 5, 2011, pp. 73-82.
Abstract:	The conventional synchronous generators in wind energy conversion system are now getting replaced by variable speed induction generator to extract maximum power with wide range of wind speed limit. The design and performance of such systems requires a simplified digital simulator, especially for the development of a optimal control solution .The proposed work is to make a prototype of variable speed wind conversion system simulator for a required operational condition under variable wind speed. In this paper variable speed induction motor drive using scalar control is interfaced in wind energy conversion system as an alternative to make the real time wind simulator for wind energy researchers. The basic power curve from wind generator is carried out through d-SPACE and interface of induction motor through an inverter control system. The induction motor is operated in wide speed range using Volt /Hertz speed control scheme. The laboratory prototype consists of 3 kW, 415 Volt, 50Hz induction motor controlled by voltage source inverter for various wind speed. The paper demonstrates the steady state characteristics of wind turbine without dependence on natural wind speed using Volt/Hertz. The basic control strategy is implemented through hardware system. The result verifies that the wind turbine simulator can reproduce the steady state characteristics of a given wind turbine at various wind conditions.
Keywords:	Inverter technology, Volt-per-Hertz control, Wind turbine simulator , Wind conversion system.