



# AIUB DSpace Publication Details

**Title:** Stabilization of Wind Turbine Generator System by STATCOM

**Author(s) Name:** S. M. Muyeen, Mohammad Abdul Mannan, Mohd. Hasan Ali, Rion Takahashi, Toshiaki Murata, and Junji Tamura

**Contact Email(s):** [mdmannan@aiub.edu](mailto:mdmannan@aiub.edu)

**Published Journal Name:** IEEJ Transactions on Electrical and Electronic Engineering

**Type of Publication:** Journal

**Volume:** 126 Issue 10

**Publisher:** Institute of Electrical Engineers of Japan

**Publication Date:** Dec., 2007

**ISSN:** 0385-4213

**DOI:** <https://doi.org/10.1541/ieejpes.126.1073>

**URL:** [https://www.jstage.jst.go.jp/article/ieejpes/126/10/126\\_10\\_1073/\\_article](https://www.jstage.jst.go.jp/article/ieejpes/126/10/126_10_1073/_article)

**Other Related Info.:** Page 1073-1082

**Citation:** S. M. Muyeen, Mohammad Abdul Mannan, Mohd. Hasan Ali, Rion Takahashi, Toshiaki Murata, and Junji Tamura, “Stabilization of Wind Turbine Generator System by STATCOM”, IEEJ Transactions on Electrical and Electronic Engineering, Vol. 126, No. 10, pp. 1073-1082, Dec., 2006.



# AIUB DSpace Publication Details

## **Abstract:**

Recently voltage-source or current-source inverter based various FACTS devices have been used for flexible power flow control, secure loading, damping of power system oscillation and even for the stabilization of wind energy generation. In this paper, we propose the static synchronous compensator (STATCOM) based on voltage source converter (VSC) PWM technique to stabilize grid connected wind generator system. A simple control strategy of STATCOM is adopted where only measurement of rms voltage at the wind generator terminal is needed. Fuzzy logic controller rather than conventional PI controller is proposed as the control methodology of STATCOM. Multi-mass shaft model of wind turbine generator system (WTGS) is also considered as shaft modeling has a big influence on the transient performance of WTGS. Transient performance of STATCOM connected WTGS is compared also with that of pitch controlled WTGS. Both symmetrical and unsymmetrical faults are analyzed. Moreover, the steady state performance of STATCOM connected WTGS is analyzed. It is reported that STATCOM can reduce the voltage fluctuation significantly. Finally STATCOM is applied to a wind park model with multiple wind generators. Comprehensive results are presented to assess the performance of STATCOM connected WTGS, where the simulations have been done by PSCAD/EMTDC.