

# STABILITY ENHANCEMENT OF A DFIG-BASED WIND TURBINE GENERATOR CONNECTED TO AN INFINITE BUS USING A PI CONTROLLER

## THE STABILITY ENHANCEMENT OF A DFIG-BASED WIND TURBINE GENERATOR CONNECTED TO AN INFINITE BUS USING A PI CONTROLLER

Tác giả: Nguyen Thi Ha

### Tóm tắt bằng tiếng Việt:

This paper presents the design steps and design results of a proportional-integral (PI) controller that can be used to enhance the damping of the electromechanical oscillations of a doubly-fed induction generator (DFIG)-based wind turbine generator (WTG) connected to an infinite bus. The proposed PI controller is designed based on pole-assignment method that can render adequate damping characteristics to the studied system. A time-domain approach based on nonlinear-system simulations subject to a three-phase short-circuit fault at the infinite bus is performed. The simulation results show that the proposed PI controller is effective on mitigating generator oscillations and offers better damping characteristics to the studied WTG under different operating conditions. A time-domain approach based on nonlinear-system simulations subject to a three-phase short-circuit fault at the infinite bus is performed. The simulation results show that the proposed PI controller is effective on mitigating generator oscillations and offers better damping characteristics to the studied WTG under different operating conditions.

*Từ khóa: Doubly-fed induction generator; proportional-integral controller; wind; turbine generator; damping controller.*

### Tóm tắt bằng tiếng Anh:

This paper presents the design steps and design results of a proportional-integral (PI) controller that can be used to enhance the damping of the electromechanical oscillations of a doubly-fed induction generator (DFIG)-based wind turbine generator (WTG) connected to an infinite bus. The proposed PI controller is designed based on a pole-assignment method that can render adequate damping characteristics to the system under study. A time-domain approach based on nonlinear-system simulations subject to a three-phase short-circuit fault at the infinite bus is performed. The simulation results show that the proposed PI controller is effective on mitigating generator oscillations and offers better damping characteristics to the studied WTG under different operating conditions.

*Key words: doubly-fed induction generator; proportional-integral controller; wind turbine generator; damping controller.*