

THE IMPACT OF THE IMPSA WIND POWER PLANT ON THE NINH THUAN - BINH THUAN GRID WITH SMALL SIGNAL STABILITY ASSESSMENT

Author: *Le Kim Hung, Tran Vinh Tinh, Duong Minh Quan,
Marco Mussetta, Duong Manh Hung*

*University of Science and Technology, The University of Danang; lekimhung@dut.udn.vn
Politecnico di Milano, dipartimento di Energia, Milano, Italy
II Power Transmission Company, Vietnam*

Abstract:

Voltage stability issue is a key problem attracting worldwide attention because it may lead to voltage collapse. This research presents an implementation of a Ninh Thuan – Binh Thuan grid model in Power System Analysis Toolbox (PSAT) – a free and open source software. A newly developed IMPSA wind turbine model is modeled and connected to the Ninh Thuan – Binh Thuan power system. The impact of IMPSA Wind Power Plant on the Ninh Thuan - Binh Thuan grid is carried out and analyzed with small signal stability. In this paper, the IMPSA wind turbine based on variable speed wind generators is considered. The article ends with a validation of the stable Ninh Thuan – Binh Thuan grid model generated by PSAT including a new variable speed wind turbine model. This validation is done through an eigenvalue analysis by applying small disturbances from wind speed variation.

Key words: Stability; Wind turbine; Wind speed; Modeling; Power system analysis.