

Thanadech Priroon 2013: Analysis of Frequency Regulation in Microgrid System

Considering Power Ramp Rate of Renewable Energy. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering.

Thesis Advisor: Mr. Yossawee Weerakamaeng, Ph.D. 91 pages.

At present, the renewable energy resources have been increasingly brought into the generation of the electrical power system. Generally, the power generated from these resources mostly changes rapidly. The fluctuation of the electrical power from them may affect the quality and reliability of the electrical power system. In order to guarantee the quality and reliability of the power system, the proportion of electrical power generated by renewable energy resources into the power grid must be controlled appropriately. The suitable ratio of the renewable power generation can be evaluated from the Power Ramp Rate (PRR). The value of PRR that initiates the power system to become unstable is called the critical CPRR. In this paper, PRR is brought into consideration to design the minimal required energy for the battery system to stabilize the frequency deviation in microgrid system. The simulation results demonstrate that PPR is very useful index in determining the suitable size of power and energy of batter system so as to control the frequency of the system within the standard limit.

---

Student's signature

---

Thesis Advisor's signature

/ /