

Witsarut Tanapak 2013: Maximum Allowable Distributed Generation in Distribution System Considering Loss Limit and Voltage Profile Improvement Index. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Parnjit Damrongkulkamjorn, Ph.D. 168 pages.

The main objective of this thesis is to presents the study of the maximum size of distributed generation allowed to connect to distribution system without negative effects on the system and other customers. The additional constraints determined in this study are maximum allowable losses and acceptable system voltage profile improvement index. The study is to done by calculate the optimization problem with the objective of maximize real power generation from distributed generator subject to operation constraints of the system. The maximum allowable losses come from grid code of PEA. The acceptable voltage profiles are obtained from voltage limits for transformer taps of the system before the connection. The last constraint is added in order for the system to maintain the proper voltage levels at all times without having to change the transformer taps when the distributed generator is connected to or disconnected from the system. The proposed method is tested on a 12-bus radial distribution system assuming that the load is distributed uniformly with 24 hour load curve.

The results show that the proposed method successfully finds the maximum allowable distributed generation where system losses and voltage profile are within the acceptable limits.

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Thesis Advisor's signature