Sathit Khahan 2013: Determination of the Maximum Capacity of Distributed Generation Installed in 22-kV Distribution System without Effects to Protection Coordination. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Mr. Komsan Hongesombut, Ph.D. 103 pages.

This thesis is presents a method to determine the maximum installed capacity of distributed generators installed in 22-kV distribution system of Provincial Electricity Authority (PEA) that does not affect the existing protection coordination. In this study, the DIgSILENT program is used for constructing the simulated power system. The setting values of all the protection devices in the study system are referred to the standard specification manual of protection devices of the PEA. The installed capacity of the distributed generator is gradually increased with step size of 1 MVA until reaching the maximum value that is specified by the PEA. Then, the results of the increasing installed capacity of distributed generators can be observed on how this factor affects the protection coordination. The four study cases are performed and compared for different installations of distributed generators. The obtaining results are analyzed and concluded for each study case. Finally, the suggestions and solutions to solve the problem are proposed so as to support the connection planning of distributed generators to 22-kV distribution system of the PEA in near future.

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