

Impact Study on a Load Rich Island and Development of Frequency Based Auto-Load Shedding Scheme to Improve Service Reliability of the Island

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Abstract : Electrical quantities such as frequency, voltage, current are being fluctuated due to abnormalities in power system. Most of the abnormalities cause fluctuation in system frequency and sometimes extreme abnormalities lead to system blackout. To protect the system from complete blackout planned and proper islanding plays a very important role even in case of extreme abnormalities. Islanding operation not only helps stabilizing a faulted system but also supports power supplies to critical and important loads, in extreme emergency. But the islanding systems are weaker than integrated system so the stability of islands is the prime concern when an integrated system is disintegrated. In this paper, different impacts on a load rich island have been studied and a frequency based auto-load shedding scheme has been developed for sudden load addition, generation outage and combined effect of both to the island. The developed scheme has been applied to Khulna-Barisal Island to validate the effectiveness of the developed technique. Various types of abnormalities to the test system have been simulated and for the simulation purpose CYME PSAF (Power System Analysis Framework) has been used.

Keywords : auto load shedding, FS&FD relay, impact study, island, PSAF, ROCOF

Conference Title : ICPESE 2014 : International Conference on Power and Energy Systems Engineering

Conference Location : London, United Kingdom

Conference Dates : June 29-30, 2014