

# **Study of Northern Province Medium Voltage Network Interconnection with the Sri Lankan Power Grid**

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## **Abstract**

Interconnection of power systems will strengthen the power grid because of the large inertia addition. However, interconnection of long distanced large loads and generating plants causes problems like voltage drops, line overloading, power fluctuation and difficulties in black start up. Strong literature survey resulted that the Flexible AC Transmission System is a proven technology to solve these problems.

In Sri Lanka, the Jaffna Peninsula MV network is planned to be connected to the main grid network in near future. This paper discusses about reliable and efficient operation of the Sri Lankan power grid as whole after this interconnection. In this study the present, 2016 predicted Sri Lankan transmission network and Northern MV network were modelled using Integrated Power System Analysis (IPSA) software tool. Growth rate of the Jaffna Peninsula was calculated using the 2007 to 2011 recorded historical data. Simulated results on load flow and fault analysis were similar to the operational data, thus validated the modelled network.

In the Sri Lankan power system network, the longest transmission line will interconnect the loads and generations at Northern Province to the main grid. Solutions to the problems related to the long interconnected line have been studied with an optimally placed Static VAR Compensator (SVC). This study has proven better performance in reducing overloading, improving voltage profile, damping power fluctuations and easy black start up for the predicted 2016 network.