FACULTY OF ELECTRICAL ENGINEERING

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MULTISTAGE ARTIFICIAL IMMUNE SYSTEM (MAIS) FOR VOLTAGE STABILITY NETWORK RECONFIGURATION IN DISTRIBUTION SYSTEM

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This project is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons.)

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ABSTRACT

Abstract — This paper presents the optimization technique for optimal network reconfiguration approach. Optimal Network Reconfiguration in power system is obtained by configuring the ON/OFF status of sectionalizing and tie-line switches. Multistage AIS optimization technique will be used to find the network reconfiguration with voltage stability improvement and loss minimization as the objective function. This approach is believed to provide an efficient way to control the tie-line and sectionalizing switches. Since network reconfiguration is a process dealing with a randomly on/off switch of two types of switches, voltage instability can be the one of the problem occurred during Network reconfiguration. Voltage instability recently has become a challenging problem for many power system operators. This phenomenon has been reported to be responsible for severe low voltage condition leading to major blackouts. Therefore, voltage stability can be improved and at the same time, the total loss minimization will be the objective to find the optimal network reconfiguration. The technique going to test the 69-bus system is Multistage Artificial Immune System (MAIS). Hence, looking forward through this study, the result shows that the proposed technique is able to determine the optimal network configuration of 69-bus system in order to meet the objectives.

Keywords- Power Distribution,Voltage Stability, Network Reconfiguration, Artificial Immune System (AIS), Multistage Artificial Immune System (MAIS).

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