OPTIMIZING REACTIVE POWER RESERVES BY USING ARTIFICIAL IMMUNE SYSTEM TECHNIQUE

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LILY SURYANI BINTI SUAIDI
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR,
MALAYSIA

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Lily Suryani Binti Suaidi
Faculty of Electrical Engineering
Universiti Teknologi Mara (UiTM)
Shah Alam, Selangor Darul Ehsan.

ABSTRACT

Voltage collapse phenomenon in a power system has been attributed to a lack of sufficient reactive power reserves when the power system experiences a heavy load or severe contingencies. The voltage instability is characterized in such a way that voltage magnitudes of the power system buses decrease gradually and rapidly in the voltage magnitude at collapse point. Maximizing reactive power reserve in a power system could be one of the possible schemes to improve voltage profile in the system. This paper presents the application of artificial immune system (AIS) for maximizing reactive power reserve in an attempt of improving voltage profile in a system. In this study, AIS engine was developed to implement the optimization of reactive power reserve through optimal reactive power dispatch. Results of tests conducted on standard IEEE 30-bus reliability test system are presented and discussed.

TABLE OF CONTENTS