

**THE EFFECT OF OPTIMIZED REACTIVE POWER DISPATCH &  
TRANSFORMER TAP SETTING CONDITION IN POWER SYSTEM  
USING EVOLUTIONARY PROGRAMMING (EP)**

This thesis is presented in partial fulfillment for the award of the  
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## ABSTRACT

This report presents the effect of optimized reactive power dispatch and transformer tap setting condition in power system Evolutionary Programming (EP). The objective of this study is to determine the maximum amount of reactive power dispatch along with improving the tap setting transformer value in order to ensure the stability of power system by referring to the voltage stability index. The objective function of reactive power dispatch can be solved by using evolutionary programming (EP) method. An EP optimization program is developed using MATLAB programming language. A pre-developed line-based voltage stability index termed as fast voltage stability index (*FVSI*) is utilized as a measure to voltage stability condition. The effectiveness of this technique was tested on the IEEE 30-bus Reliability Test System (RTS) and analyses of the results are presented. The developed technique obtained from the study would be beneficial to the power system engineers for monitoring power system network performance evaluation.

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