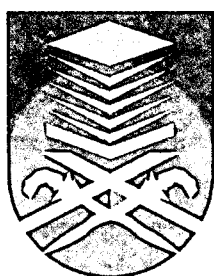


**LOSS MINIMIZATION IN POWER SYSTEM UTILIZING  
MULTIAGENT IMMUNE EVOLUTIONARY PROGRAMMING  
(MAIEP) TECHNIQUE**

Thesis is presented in partial fulfillment for the award of the  
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## ABSTRACT

Electrical power system are designed and operated to meet the continuous variation of power demand. The optimal Reactive Power Planning (RPP) is one of a vital approach to reduce total system loss and hence minimize the loss in operation of the system. Thus, this paper presents the enhancement of loss minimization in power system through optimal RPP using an optimization technique, termed as Multiagent Immune Evolutionary Programming (MAIEP) technique. The concept of MAIEP is developed base on combination of Multiagent System (MAS), Artificial Immune System (AIS) and Evolutionary Programming (EP). In realizing the effectiveness of the purposed technique, validation is conducted on the IEEE 30-Bus Reliability Test System (RTS). The program also was developed by using MATLAB software. Initially for this research in evaluating the performance of MAIEP technique to reduce the total power loss is, by monitoring the pre-optimization condition, which didn't use any optimization technique. Then, the result from pre-optimization will be compare with the result that obtained from post-optimization where use the RPP and MAIEP technique. From the result that be obtained during post optimization, it show that the performance of implementation of RPP as optimal power flow (OPF) approach utilizing MAIEP optimization technique with minimize the total power losses as the objective function has given a significant in reduction total power loss in power system.

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# CHAPTER 1

## INTRODUCTION

### 1.1 INTRODUCTION

Basic elements of a modern power system consist of 4 major parts: generation, transmission, distribution and load [1]. The electrical energy is produced at generating station and distributed to the load via transmission lines. A good and the properly design power system is crucial to ensure that power can be delivered to the consumer in secure manner and without interruption.

In this chapter will be present about the introduction in a study to loss minimization in power system. MAIEP technique has been identified as a one technique that can optimize the RPP for loss minimization in power system. Various literatures have reported work on RPP, this dealt with optimization techniques [2]. There are numerous optimization techniques that can be used to optimize the total loss minimization. But, this research is about to see the performance of MAIEP technique to minimize the total power loss through the RPP [3].