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**PARTICLE SWARM OPTIMIZATION TECHNIQUE
FOR
OPTIMAL ECONOMIC LOAD DISPATCH**

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ABSTRACT

In the operation and planning of a power system, Economic Load Dispatch is a crucial task to be performed which decided the generation schedule of generating units with the objective of minimizing the total fuel cost while maintaining the operational constraints. In this proposal paper, an optimization technique called the Particle Swarm Optimization (PSO) technique that is a meta-heuristic optimization technique, are proposed to solve the economic load dispatch problem. PSO is an algorithm that is modeled on swarm intelligence that finds a solution to an optimization problem in a search space, or model, and predicts social behavior in the presence of objectives. The application of PSO in economic load dispatch problem can be considered as one of the most complex optimization problem.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

Nowadays advance globalization throughout the world, many aspects of resources, specifically the fuel, has been the primary concern due to its limitation and depletion of supply. The arising year-to-year fuel price had given us the only choice, which is to reduce the operating cost by operating the generator unit in efficient and economic manner. Since most of the power plants are operated through the burning of fossil fuels such as the coal, diesel, natural gas and etc, the consumption of the concerned fuels is indeed, very much a concern factor by the system operator. The fuel consumption of a power plant, which depends on the generator capability, is known to consume a large amount throughout its operating period. Hence the large amount of operating cost.

Economic load dispatch (ELD) is one of an important process in the power system operation and planning that serves the purpose of allocate the power generation to match with load demand at minimal possible cost while satisfying all the power units and system constraints[1]. With its objective of determining the best optimal combinational of power outputs for all generating units, economic load dispatch is considered as the relevant way in order to help reducing operating cost. Power generation, which serves the purpose of meeting the load demand, either it is from the residential or industrial or other power consuming load, creates a large margin of operating cost throughout its operation. In practical situation involving the power system, not all power generation plant is conveniently located near to its load, and also, their operating cost is different depends on what type of fuel used by the power plant.