Abstract

Power plant machine operating costs is the biggest cost of all power system operating costs. Therefore, the proper and efficient scheduling which does not violate the existing constraints would result a minimal cost. Scheduling engine operating from inactive machines will produce the engine start-up cost. Besides to scheduled the operation of the machine, it also calculated the amount of the power produced form each machine which is scheduled to operate. The amount of power produced from each machine it also affects the operational costs. Amount of power is usually calculated using the lambda iteration method. This problem is known as the unit commitment problem (UCP). UCP has constraints such as the characteristics of the power plant machines itself as well as the amount of electrical current demand from customers.

The purpose of this final project is to implement evolution strategies (ES) which is an optimization algorithm. ES generally using real representation so that it requires modifications to the process of evolution because it using binary representation to adjusting for UCP. ES solution search process more emphasis on the process of mutation. By using the strategy parameters each gene in population mutated until particular generation to find the best solution. The initial solution randomly generated and then evolved by recombination and mutation or mutation alone.

From the results of this final project showed that ES is also able to solve combinatorial problems using binary representation. In addition, the ES has a better performance compared with the genetic algorithm.

Keywords: *unit commitment problem, optimization, evolution strategies, scheduling*.