5.1 CONCLUSION

The main purpose of this thesis was due to the importance of economic dispatch in the power system. Economic load dispatch in electric power sector is an important task, as it is required to supply the power at the minimum cost which aids in profit-making. As the efficiency of newly added generating units are more than the previous units the economic load dispatch has to be efficiently solved for minimizing the cost of the generated power.

From the analysis of IEEE 39 New England test system it was found that Particle Swarm Optimization method was able to produce a better fuel cost compared to the Newton Raphson method. For the same power demand, Particle Swarm Optimization was able to produce less cost than NR. Besides, the losses produced by PSO for the same power demand according to the B-coefficient was smaller than NR produced. As we know, higher losses will result in the consumption in fuel and increase the fuel cost. Thus, it was very important to get the optimal dispatch in reducing losses. The Real Power Generation and Generation cost of the particle swarm optimization result was close to that of the NR (conventional method) but tends to give a better solution in case of higher order systems.

Per to the MATLAB result, Newton Raphson was using less computational time in the analysis compared to PSO method. The computational time of NR method was not affected by the increasing of number of generators. However, the computational time of the PSO method will be increased due to the increment of generator amount. Although, PSO was using more time in analyzing the result, it produces better result than the NR method. PSO was also possessed steady convergence characteristic which result in accuracy and consistency in the result.

The B-coefficient was obtained through the Matlab by applying the Bloss program to the Bus data and line data of the test system were required by the

Bloss program to generate the B-coefficient. By solving the load flow analysis, it was able to generate the B-coefficient matrix of the system that we used in solving ED problem with PSO Method.

5.2   RECOMMENDATION

- PSO algorithm can be combined with other simple optimization techniques to improve their performance when applied to economic load dispatch problems and obtain better results.

- For the PSO Method; Bus data and line data of the system can be taken as input along with the load demand to obtain the minimization function with constraints on voltage and reactive power at various points of the system.

- Software beside MATLAB may be introduced if it is able to be applied in solving the ED problem.

- This work may be extended for new optimization techniques, this may be used to compare and find out the better optimization technique.

- PSO algorithm can be combined with other simple optimization techniques to improve their performance when applied to ELD problems and obtain better results.

- ED problem was formulated as economic cost dispatch (ELD), but further, Existence of Emission Dispatch (EMD) leads to the formulation of Combined Emission Economic Dispatch (CEED) and emission Controlled Economic Dispatch (ECED) problem formulation. In future this problem could be solved as individual optimization of these two contradictory objectives.