COMBINED ECONOMIC EMISSION DISPATCH

USING OPTIM-TOOL

A dissertation submitted in partial fulfilment of the requirement for the award of the degree of

MASTER OF TECHNOLOGY

in

Power System

By

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Roll No-06/P.Sy/09

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CERTIFICATE

It is certified that the project entitled "**combined economic emission dispatch using optim tool;** " being submitted by, **Mohit Sharma** M.Tech in Power System, **Delhi Technological University,** is a record of original bonafide work carried out by his under my guidance and supervision. The results in this project have not been submitted in part or full to any other university or institute for award of any degree or diploma.

I wish his success in all his endeavours**.**

Dr. Narendra Kumar
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LIST OF SYMBOLS

F_T	Total generation cost of the system.
FC	Total fuel cost of generators.
NC	Total emission of generators.
n	Number of generators connected in the network.
h_i	Price penalty factor of unit i.
P_i	Power generation of unit i.
P_{imin}	Minimum generation of unit i.
P_{imax}	Maximum generation of unit i.
P_{load}	Total load of the system.
g(x)	inequality constraints
h(x)	equality constraints

ABSTRACT

Combined economic emission dispatch (CEED) problem is to schedule the committed generating units' outputs to meet the required load demand at minimum operating cost with minimum emission simultaneously. This multi-objective CEED problem is converted into a single objective function using a price penalty factor. In this paper, combined economic emission dispatch problem (CEED) problem has been formulated using price penalty factor and solving the problem using GA toolbox of MATLAB R2008b. The multi-objective optimization problem is solved using optimization tool by means of assigning a price penalty factor to the emission function. This method makes it possible to combine the two objective functions into a single objective one. In the proposed method, price penalty factor is calculated and by calculating the value of h_i with the described method and MATLAB OPTIMTOOL program is run for each value h_i. The m-files for constraint function and objective function are written to execute the program in OPTIMTOOL in MATLAB. The feasibility of the proposed approach is demonstrated for two different power systems, six generators unit and eleven generators units for 500-2500 MW loads and compared with other methods as particle swarm optimization(PSO), differential evolution(DE), γ-iteration, recursive(RM) and simplified recursive method(SRM) for given systems .Data for six generators unit and eleven generators unit are taken from Scientific Research and Essays, Ugur Guvenc and Electric Power Components and Systems, R. Balamurugan , S. Subramanian. The study results show that the proposed approach is more efficient in finding higher quality solutions in CEED problems.

Software used: MATLAB 7.6.0

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