Abstract

Economic dispatch is a highly constrained optimization problem in power system encompassing interaction among decision variables. Environmental concerns that arise due to the operation of fossil fired electric generators, transforms classical problem into multiobjective Emission Constrained Economic Dispatch (ECED) problem. The idea behind this problem formulation is to estimate the optimal generation schedule of generating units in such a manner that fuel cost and emission levels are simultaneously minimized. This multi-objective optimization problem is converted into a single objective function using price penalty factor. This paper presents a Sequential Approach with a Matrix Framework (SAMF) for solving ECED of thermal units. This is a maiden attempt has been developed to obtain the optimal dispatches for all achievable load demands of a system in single execution. The feasibility of the proposed method is demonstrated for two standard test systems. Numerical simulation results indicate
that the proposed method has close agreement with the recent reports.

Reference


**Index Terms**

Computer Science

Control Systems

**Key words**

Economic load dispatch  
Emission dispatch  
Transmission loss  
Sequential approach  
Matrix framework