Dynamic Economic Dispatch (DED) plays a vital role in power generation, operation and control. It is a complicated, non-linear constrained problem. In this paper, Maclaurin series based Lagrangian method (MSL) is used to solve the DED problem for generating units with valve-point effect, considering the ramp rate limits. Using Maclaurin series, the sine term used to model the valve-point effect is expanded and solved with Lagrangian method. The feasibility of the proposed method is validated for static economic dispatch problem for forty unit system and DED problem for five unit test system for 24 hour time interval. Results obtained with the proposed approach are compared with other techniques in the literature. The results obtained substantiate the applicability of the proposed method for solving static and dynamic economic dispatch problems with non-smooth cost functions.

Reference

Dynamic Economic Dispatch with Valve-Point Effect Using Maclaurin Series Based Lagrangian Method


Index Terms

Computer Science

Programming Languages

Key words

Dynamic economic dispatch

Lagrangian method

Maclaurin series

ramp rate limits

valve-point loading