

Article Abstract

Title:	Cardinal priority ranking based decision making for economic-emission dispatch problem
Author(s):	Lakhwinder Singh ^{1*} and J.S. Dhillon ²
Address(es):	¹ Department of Electrical Engineering, Baba Banda Singh Bahadur Engineering College, Fatehgarh Sahib -140 407, Punjab, India. ² Department of Electrical & Instrumentation Engineering, Sant Longowal Institute of Engineering & Technology, Longowal -148 106, Distt. Sangrur, Punjab, India. E-mails:(lakhwinder1968@yahoo.com (Lakhwinder Singh),Corresponding author); jsdhillonp@yahoo.com (J.S. Dhillon)
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Abstract:	This paper deals with the economic emission dispatch (EED) problem relating to real and reactive power scheduling of thermal power generating units. The formulated EED problem is solved using weighting method to generate non-inferior solutions which allows explicit trade-offs between objective levels for each non-inferior solutions. Fuzzy decision making methodology is exploited to decide the generation schedule. To access the indifference band, interaction with the decision maker is obtained via cardinal priority ranking (CPR) of the objectives. The cardinal priority ranking is constructed in the functional space and then transformed into the decision space, so the cardinal priority ranking of objectives relate the decision maker's preferences to non-inferior solutions through normalized weights. Regression analysis is performed between the cardinal priority ranking and simulated weights to decide the 'best' compromised solution. Decoupled load flow analysis is performed to find the loss coefficients and transmission losses. The validity of the proposed method is demonstrated on IEEE 11-bus system which comprises 3-generators.
Keywords:	Economic emission dispatch; fuzzy decision making; weighting method, cardinal priority ranking