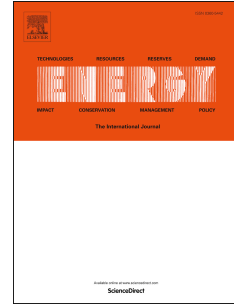


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Risk Constrained Economic Dispatch with Integration of Wind Power by Multi-objective Optimization Approach

Y.Z. Li^{a,b,c}, K.C. Li^a, P. Wang^b, Y. Liu^b, H.B. Gooi^b,
G.F. Li^c, D.L. Cai^a, Y. Luo^a

^aState Key Laboratory of Advanced Electromagnetic Engineering and Technology,
Huazhong University of Science and Technology, Wuhan 430074, China

^bNanyang Technological University, Singapore 639798, Singapore

^cState Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong
University, Xi'an 710049, China

Abstract

With increasing wind energy integrated into power systems, the topic of economic dispatch (ED) becomes more important. In this paper, a risk constrained ED (RCED) model is proposed, which aims to obtain the optimal dispatch solution to balance the economic gain and the economic risk brought by uncertain wind power. Then Pareto-based multi-objective optimization approach is applied to optimize the gain and risk under the uncertain environment, simultaneously. Afterwards, an improved optimization algorithm, chaotic group search optimizer with multiple producers (CGSOMP) is used for solving this complex problem. Simulation studies are conducted on a modified IEEE 30-bus power system, and results verify outperformance of the RCED model, compared with the traditional ED approach.

Keywords: RCED model, wind power, economic gain, economic risk, CGSOMP.

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