

Solving Economic Load Dispatch Problem using Quadratically Constrained Quadratic Programming

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Abstract: Economic load dispatch (ELD), is a key parameter for any workable power system. This is a method which allows us to manage active power generated from any utility in a way that is both cost-effective and complies with all network restrictions. There are various methods like LIM, and Newton-Raphson available some of the conventional approaches of solving ELD. The fuel cost curve shows incline at increasing level of generation, which must increase linearly for all of these conventional approaches to work. However, in actuality, a generator's input-output characteristics are very much non-linear. This creates many difficult non-convex optimisations challenge. There are many conventional and non-conventional techniques are present which can handle nonconvex optimisation problems quickly and nearly optimally. In this study, the Lambda-iterative approach and QCQP (Quadratically Constrained Quadratic Programming) were used to solve the ELD problem, and the outcomes were compared. The GAMS environment has been used for all of the analyses.

Keywords: Economic Load Dispatch, Optimization, Quadratically Constrained Quadratic Programming, GAMS.

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