Bi-objective Generator Maintenance Scheduling for a National Power Utility

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The generator maintenance scheduling (GMS) problem involves finding a schedule according to which planned maintenance can be performed on the generating units of a power system. A novel bi-objective optimisation model is proposed in this study for the GMS problem in which trade-offs are pursued between the maximisation of demand satisfaction reliability and the minimisation of electricity production cost. The model is solved by dominance-based bi-objective simulated annealing. A sensitivity analysis is performed in respect of various model constraint relaxations and the degree of constraint violations. The model and solution methodology is finally implemented in a user-friendly computerised decision support system so as to render the GMS solution approach easily accessible to non-mathematically inclined decision makers.