A New Tabu Search Algorithm For The Long-Term Hydro Scheduling Problem

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Summary

A new efficient algorithm to solve the long-term hydro scheduling problem (LTHSP) is presented in this paper. The algorithm is based on using the short-term memory of the tabu search (TS) approach to solve the nonlinear optimization problem in continuous variables of the LTHSP. The paper introduces new rules for generating feasible solutions with an adaptive step vector adjustment. Moreover an approximated tabu list for the continuous variables has been designed. The proposed implementation contributes to the enhancement of speed and convergence of the original tabu search algorithm (TSA). A significant reduction in the objective function over previous classical optimization methods and a simulated annealing algorithm has been achieved. Moreover the proposed TS requires less iterations to converge than simulated annealing. The proposed algorithm has been applied successfully to solve a system with four series cascaded reservoirs. Numerical results show an improvement in the solution compared to previously obtained results.