

Application of GA-based TOPSIS optimization schemes for dynamic control of reservoir water levels

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Abstract The issue of dynamically controlling reservoir water levels between safe limits, and according to preferred benefit and loss risks, is of great significance. This paper presents a method based on the TOPSIS reservoir water level dynamic optimization method for different water level optimization schemes, to establish an index system. Two basic TOPSIS functions are used and two types of the set of four models were established for multi-objective optimization on the basis of the “difference-driven” principles. Then we used the Genetic Algorithm (GA) approach to solve the optimization in a solution of the objective weights and obtained the sequence of the schemes at the same time. The method has been applied to the optimization scheme for scheduling of Biliuhe Reservoir in Dalian city in China. The results show that the method is reasonable and feasible.

Key words limited water level; dynamic control; TOPSIS; GA