

电力市场

计及发电权转让的梯级水电站短期优化调度

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摘要:

传统电力市场环境, 梯级水电站的短期优化调度方式简明直观、便于理解, 但考虑因素不够全面, 为此构建了电力市场环境下的梯级水电站短期优化调度模型, 该模型考虑了发电权转让对梯级水电站短期优化调度决策的影响, 且当存在发电权交易时兼顾了发电权出让方、受让方以及电网公司三方的经济利益, 模型还考虑了梯级水电站的库容、水库水头、机组出力和电网公司购电费用等约束条件。梯级水电站短期优化调度为高维、有时滞且带有大量约束条件的非线性优化问题, 因此采用微分进化算法对该优化模型进行求解。算例结果验证了该模型及算法的有效性。

关键词:

Short-Term Optimal Scheduling of Cascade Hydro-Power Plants Considering Generation Rights Transfer

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Abstract:

In traditional electricity market, the short-term optimal scheduling of cascaded power stations is simple and intuitive and convenient to comprehend, however the impacting factors considered in the scheduling are not enough. In this paper, a new short-term optimal scheduling model of cascaded power stations in electricity market is built, in which the impact of generation right transfer on the decision of short-term optimal scheduling model of cascaded power stations is considered, and the economic benefit of the three parties, i.e., the transferors and transferees of generation right and the grid company, is taken into account while generation right transfer exists. In the proposed model the capacity and water head of reservoir, unit output and power purchase cost of grid company are taken as constraint conditions. The short-term optimal scheduling of cascaded power stations is a high dimensional nonlinear optimization problem with a lot of constraint conditions and time-delay, so the proposed model should be solved by differential evolution algorithm. Results of calculation example show that both the proposed model and utilized algorithm are effective.

Keywords:

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