

Redução De Cenários Via Distância Aninhada Aplicada Ao Problema Do Planejamento Da Operação Energética.

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Resumo/Abstract:

In systems with hydraulic predominance, the medium-term hydrothermal scheduling problem (MTHS) is usually modeled as a stochastic programming model where the objective is to obtain an optimal operation policy over a planning horizon. Inflows follow a stochastic process that is approximated by a multistage scenario tree and a multistage stochastic programming model is employed to compute the generation policy. The difficulty in solving the MTHS depends on the size of the scenario tree. To obtain a small but representative scenario tree, we employ the scenario reduction algorithm of Kovacevic and Pichler with quadratic process distances defined by appropriate metrics exploiting relevant features of the problem. Numerical assessments of the MTHS problem, using a reduced hydrothermal configuration extracted from the Brazilian system, show that reduced trees obtained by eliminating 80% scenarios provide approximate solutions to the problem with less than 1% accuracy errors and CPU time reduction of around 90%.