

**Title:** Hydro energy systems management in Portugal: Profit-based evaluation of a mixed-integer nonlinear approach

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**Abstract:** In this paper, a novel mixed-integer nonlinear approach is proposed to solve the short-term hydro scheduling problem in the day-ahead electricity market, considering not only head-dependency, but also start/stop of units, discontinuous operating regions and discharge ramping constraints. Results from a case study based on one of the main Portuguese cascaded hydro energy systems are presented, showing that the proposed mixed-integer nonlinear approach is proficient. Conclusions are duly drawn. (C) 2010 Elsevier Ltd. All rights reserved.

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