

Optimizing profile blocks for hydropower offers to the day-ahead market

mardi 29 juillet 2025 11:15 (30 minutes)

We report on a two-phase optimization framework for combining short-term hydropower scheduling with offering into the European day-ahead electricity market. We use profiled block bids grouped in exclusive sets. The first phase solves a nonlinear deterministic model that generates a diverse and operationally feasible set of production blocks by accounting for startup costs, opportunity costs, and hydrological constraints. In the second phase, a two-stage stochastic program is used to select a subset of blocks for market submission under price uncertainty. The proposed approach captures a wide range of production scenarios while ensuring compliance with market design rules. By decomposing the problem and relaxing binary variables, the framework significantly reduces computational complexity and achieves fast solution times. Numerical experiments based on a real hydropower system demonstrate the model's ability to produce effective bidding strategies, comparable to the hourly bidding methods.

Authors: Dr AMINABADI, Mohammad (UQAC); Prof. SEGUIN, Sara (UQAC); FLETEN, Stein-Erik (Norwegian University of Science and Technology); Dr AASGÅRD, Ellen (ANEO)

Orateur: FLETEN, Stein-Erik (Norwegian University of Science and Technology)

Classification de Session: Application in energy, finance or logistics

Classification de thématique: Applications in energy, finance or logistics