

## Simulated annealing to handle energy and ancillary services joint management considering electric vehicles - DTU Orbit (09/11/2017)

### Simulated annealing to handle energy and ancillary services joint management considering electric vehicles

The massive use of distributed generation and electric vehicles will lead to a more complex management of the power system, requiring new approaches to be used in the optimal resource scheduling field. Electric vehicles with vehicle-to-grid capability can be useful for the aggregator players in the mitigation of renewable sources intermittency and in the ancillary services procurement. In this paper, an energy and ancillary services joint management model is proposed. A simulated annealing approach is used to solve the joint management for the following day, considering the minimization of the aggregator total operation costs. The case study considers a distribution network with 33-bus, 66 distributed generation and 2000 electric vehicles. The proposed simulated annealing is matched with a deterministic approach allowing an effective and efficient comparison. The simulated annealing presents a solution closer to the one obtained in the deterministic approach (1.03% error), yet representing 0.06% of the deterministic approach CPU time performance.

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