Power production optimization of model-free wind farm using smoothed functional algorithm

Mok, RenHao & Ahmad, Mohd Ashraf
[a] Faculty of Electrical and Electronics Engineering Technology, Universiti Malaysia Pahang, 26600, Pekan Pahang, Malaysia

ABSTRACT
The current study investigates the performance of Smoothed Functional Algorithm (SFA) based method towards the maximization of total power output by wind farms. The SFA based method was specifically analyzed using the Horns Rev Offshore Wind Farm consisting of 80 wind turbines as the designing groundwork. Whereby, the SFA based method is used to optimize the control parameter of each wind turbine such that the total power production of wind farm is maximized. Eventually, the obtained results have further revealed SFA based method as an efficacious optimization approach towards enhancing wind farm performance, in terms of a shorter convergence interval, greater precision and increased power maximization.

KEYWORDS
Model-free; Power production; Renewable energy; Smoothed Functional Algorithm; Stochastic search; Wind farm optimization

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