World Academy of Science, Engineering and Technology
International Journal of Energy and Power Engineering
Vol:12, No:06, 2018

Expanding the Evaluation Criteria for a Wind Turbine Performance

Authors : Ivan Balachin, Geanette Polanco, Jiang Xingliang, Hu Qin

Abstract : The problem of global warming raised up interest towards renewable energy sources. To reduce cost of wind energy is a challenge. Before building of wind park conditions such as: average wind speed, direction, time for each wind, probability of icing, must be considered in the design phase. Operation values used on the setting of control systems also will depend on mentioned variables. Here it is proposed a procedure to be include in the evaluation of the performance of a wind turbine, based on the amplitude of wind changes, the number of changes and their duration. A generic study case based on actual data is presented. Data analysing techniques were applied to model the power required for yaw system based on amplitude and data amount of wind changes. A theoretical model between time, amplitude of wind changes and angular speed of nacelle rotation was identified.

Keywords : field data processing, regression determination, wind turbine performance, wind turbine placing, yaw system losses
Conference Title : ICPESE 2018 : International Conference on Power and Energy Systems Engineering
Conference Location : London, United Kingdom
Conference Dates : June 28-29, 2018