International Journal of Electrical and Electronics Engineering (IJEEE)
ISSN(P): 2278–9944; ISSN(E): 2278–9952
Vol. 9, Issue 2, Feb–Mar 2020, 1–8

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

SIMULATING THE IMPACT OF MICROGRID GENERATOR SET FAILURES ON MICROGRID PERFORMANCES-BASED ON MONTE CARLO AND HOMER

***Wang Fandi*[1] *& Zhang Lei*[2]**

[1]*Research Scholar, Department of Management Science and Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

[2]*Research Scholar, School of International Economics & Business, Wuhu Institute of Technology, Wuhu, China*

ABSTRACT

In order to cope with the increasingly serious world energy shortage and environmental pollution, renewable energy is attracting worldwide attention as a promising solution. Microgrids have been fully developed as a small power system that can operate independently to make up for the growing power gap. However, in the actual operation of the microgrid, there are many factors that affect its overall performance and operational stability. In order to consider more uncertain factors, and thus evaluate the overall performance of the microgrid system more accurately, the HOMER microgrid model is used in this paper, and the sequential Monte Carlo simulation method is used to consider the failure of the generator set and simulate the operation-fault- operation state in the process of power generation. Take the results of HOMER and Monte Carlo simulation as initial evaluation data that takes into account fault conditions. This provides a data source for the subsequent evaluation of the overall performance of the microgrid, using the Multi-criteria decision making (MCDM) method.

KEYWORDS: *Microgrid, Monte Carlo Simulation, Renewable Energy, Uncertainties*

Article History

Received: *24 Dec 2019* **|** ***Revised:*** *17 Jan 2020* **|** ***Accepted:*** *20 Feb 2020*