Windhoek island microgrids

Windhoek island microgrids

Amupolo, A.; Nambundunga, S.; Chowdhury, D.S.P.; Gr?n, G. Techno-Economic Feasibility of Off-Grid Renewable Energy Electrification Schemes: A Case Study of an Informal Settlement in Namibia. Energies 2022, 15, 4235. https://doi /10.3390/en15124235

Amupolo A, Nambundunga S, Chowdhury DSP, Gr?n G. Techno-Economic Feasibility of Off-Grid Renewable Energy Electrification Schemes: A Case Study of an Informal Settlement in Namibia. Energies. 2022; 15(12):4235. https://doi /10.3390/en15124235

Amupolo, Aili, Sofia Nambundunga, Daniel S. P. Chowdhury, and Gunnar Gr?n. 2022. "Techno-Economic Feasibility of Off-Grid Renewable Energy Electrification Schemes: A Case Study of an Informal Settlement in Namibia" Energies 15, no. 12: 4235. https://doi /10.3390/en15124235

Amupolo, A., Nambundunga, S., Chowdhury, D. S. P., & Gr?n, G. (2022). Techno-Economic Feasibility of Off-Grid Renewable Energy Electrification Schemes: A Case Study of an Informal Settlement in Namibia. Energies, 15(12), 4235. https://doi /10.3390/en15124235

The following is the sections of the article. In "General microgrid structure and conventional control strategy"

section, the microgrid structure with the conventional PI-controller is presented. "A proposed control strategy based on ANN-GA" section announces the proposed control strategy based on the combination of ANN and GA algorithms. In "Simulation results" section, the simulation results of the proposed method are exposed and discussed and finally, a conclusion will be presented in "Conclusions" section.

The basis of stability in the microgrid was based on controllable resources. In these sources, the more accurate, robust, and practical the control process used, the more it improves the stability of the microgrid. For this purpose, different control levels are used sequentially in a microgrid. Each of these control levels is responsible for part of the microgrid stability tasks. In a microgrid, these levels are divided into three parts:

Primary control level: In this control, the initial stability of frequency/frequency angle is considered. This type of control is responsible for preventing voltage/frequency collapse. One of the most common methods for this purpose is frequency drop control.

Microgrid secondary control level: In this frequency/voltage drop control, the goal is stability. In the sense that events such as islanding or load change and even the occurrence of an error can cause a steady-state error in the underlying microgrid variables. This type of control is used for this purpose.