

Modeling of Micro-Grid System Components Using MATLAB/Simulink

Authors : Mahmoud Fouad, Mervat Badr, Marwa Ibrahim

Abstract : Micro-grid system is presently considered a reliable solution for the expected deficiency in the power required from future power systems. Renewable power sources such as wind, solar and hydro offer high potential of benign power for future micro-grid systems. Micro-Grid (MG) is basically a low voltage (LV) or medium voltage (MV) distribution network which consists of a number of called distributed generators (DG's); micro-sources such as photovoltaic array, fuel cell, wind turbine etc. energy storage systems and loads; operating as a single controllable system, that could be operated in both grid-connected and islanded mode. The capacity of the DG's is sufficient to support all; or most, of the load connected to the micro-grid. This paper presents a micro-grid system based on wind and solar power sources and addresses issues related to operation, control, and stability of the system. Using Matlab/Simulink, the system is modeled and simulated to identify the relevant technical issues involved in the operation of a micro-grid system based on renewable power generation units.

Keywords : micro-grid system, photovoltaic, wind turbine, energy storage, distributed generation, modeling

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020