

Grid interface converters for renewable energy system

Eng. Walaa Abou-Hussein

Mechatronics department

In the current global climate, demand for renewable energy systems has increased due to environmental issues and limited fossil resources. Along with this demand, photovoltaic (PV) and wind turbine (WT) systems have become the most common type of the grid connected renewable energy systems. However, to connect these systems to the grid, output voltage and frequency adjustments are the challenging issues. Various types of converters have been utilized to provide grid connected renewable energy systems. In PV or fuel cell applications DC-DC converters are required to adjust the variable and low quality output voltage of the PV panels or fuel cells. A DC-AC converter is employed to generate desired voltage and frequency for the grid connection. As well an AC-DC-AC converter is necessary for the WT systems as wind energy is variable during the system operation