IMPROVEMENT OF POWER QUALITY IN THE DISTRIBUTION LINE DUE TO THE DISTRIBUTED GENERATION OF RENEWABLE ENERGY

This paper discusses the improvement of power quality in distribution line due to distributed generations of renewable energy sources such as solar and wind energy. Power quality problems such as Voltage sag and swell, harmonics, voltage fluctuations etc. are the primary focuses. This work also includes other power quality concerns such as voltage stability and power factor effects. There are some techniques to monitor the power quality issues to ensure stable generation, transmission and distribution. Such techniques we analyse the methods of mitigation of these problems using custom power devices such as D-STATCOM, UPQC, UPS, TVSS, DVR etc. for micro grid systems. For renewable energy systems, STATCOM can be a potential choice due to its several advantages, whereas spinning reserve can enhance the power quality in traditional systems.

The STATCOM is the shunt connected FACTS devices that are useful for reactive power compensation and mitigation of power quality problems in transmission and distribution system perticulaly in smart grid environment. It has dealed with performance analysis of D-STATCOM that is used for voltage flicker control. The D-STATCOM has been used to regulate voltage on a 33-kV distribution network for the plant absorbing continuously changing currents, like an arc furnace, that produces voltage flicker. The variable load current magnitude has been modulated at a frequency of 5 Hz so that its apparent power varies significantly and fast. It will be observed the ability of the D-STATCOM to mitigate voltage flicker.