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Abstract

Recently it has been focused on the behavior of the of distribution networks especially from power quality side because of disturbances caused by the non-linear loads, Increase in the number of electronic devices and growth of renewable energy sources. Power quality measures the efficiency of electric power transmitted from generation to the industrial, domestic and commercial consumers. At least 50% of power quality problems are of voltage quality type. In a power system voltage sags and voltage distortion introduced by harmonics are considered to be the most severe affecting power quality, because of both utilities and consumers are affected by these disturbances. These problems could be solved by: design equipment's and electrical systems to prevent electrical disturbances from causing equipment's or systems to malfunction, Analyze the symptoms of a power quality problems to determine its causes and solutions, study the medium that is transmitting the electrical disturbance and eliminate or reduce the effect of that medium. Treat the symptoms of the power quality problems by using the power conditioning device and custom power device. The presents work considers the power quality problems such as, sags, swells, harmonics, voltage interruptions and transients. A techniques

which are of two categories power conditioning devices and custom power devices are investigated and the results showed that the second method is the most efficient and effective method to solve the power quality problems and protect the sensitive loads from power disturbances. The modeling and simulation of a power distribution network is achieved using MATLAB/Simulink. Three phase fault and double line to ground fault are created with the proposed system, and the faults are initiated at a duration of 0.8 sec till 0.95 sec. Comparison the power quality problems with and without custom power device are presented with the help of Dynamic Voltage Restorer (DVR).

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Index Terms

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