

Abstract

In this paper, a fast voltage sag compensator for distributed generation system is presented. The proposed voltage sag compensator consists of the inverter, the energy storage device or super capacitor, the main static transfer switch and the alternate static transfer switch.

In the normal incident, the main static transfer switch (STS1) is closed to connect the critical load and the grid voltages and the alternate static transfer switch (STS2) must be opened. Whenever the controller detects the voltage sag, STS1 is opened and STS2 is then immediately closed to connect the critical load and the alternate voltages (inverter output) instead of the faulty grid voltages. This proposed voltage sag compensator is designed for using in distorted grid voltages such as distributed generation system.

From the experimental results, the proposed voltage sag compensator can compensates voltage sag (POW = 315 degree) within 3 ms, when the voltage sag occurs at POW of 345 degree, the load voltage can be compensated within 2.4ms and finally, the load voltage can be compensated within 0.8ms when the voltage sag occurs at POW of 70 degrees.