Simulation Studies for Power Quality Problem (Voltage Sag) by Using Dynamic Voltage Restorer

Prepared by: Lee Tze Wern

ABSTRACT

Abstract

Technology has been improving drastically in these recent years; it has led to the increment of electrical power demand. Indirectly, with the technology nowadays, high end power electronics are widely used in different sectors. These power electronics are very sensitive to power quality problems. Thus, in order to use the equipment efficiently while maintaining the lifespan of it, the power quality of the supply should be in a "healthy" state. Based on the data acquisition from different power researches, voltage sag has proven to be the most severe type of power quality problem faced by end users. One of the most common solutions to mitigate this voltage sag is by installing a mitigation device. The mitigation device proposed in this project is dynamic voltage restorer (DVR). Therefore in this project, the emphasis is on voltage sag which is the main power quality problem. The content is based on the design of dynamic voltage restorer and the feedback control system. The simulation results are obtained by using MATLAB SIMULINK software. The sequences of power injection and the impact of types of power on the cost of the dynamic voltage restorer are explained in the content. This project also explained on the process of detecting voltage sag and injection of power to compensate the power quality problem mentioned.

Keywords — Dynamic voltage restorer, power quality problem, voltage sag, Simulink.