

Voltage Sag Compensation using Dynamic Voltage Restorers: A Performance Analysis

K. M. P. C. B. Senevirathne, A Jayasundera, K. A. Ariyawansa, P. G. Abeynayake,
Udaya Dampage¹

Kotelawala Defence University, Sri Lanka

Voltage sags are considered to be one of the most severe and frequent power disturbances occurring in the power system. The electronic devices used today are very sensitive to power quality, any disturbance in the power supply will negatively affect end user equipment. In order to overcome these voltage sags, implementation of a dynamic voltage restorer (DVR) has been proposed to compensate for voltage sags. Hence this technology can provide power regulation as well as power quality improvement. Electric vehicle (EV) batteries, connected in a vehicle-to-grid (V2G) system, act as the power source to the DVR, offering feasibility as well as mobility in delivering energy, thereby making it an ideal choice for energy storage used for improving power quality. This paper presents a simulation, using MATLAB, on the performance of a Dynamic Voltage Restorer (DVR) which utilizes energy from the batteries of Electric Vehicles (EV) as its power source.

Keywords: Power Quality; Voltage Sag; Voltage Correction; EV Battery; Vehicle-to-Grid Technology; Dynamic Voltage Restorer.

*

¹ Corresponding author. Udaya Dampage
E-mail address udayadampage@ieee.org