

POWER QUALITY ENHANCEMENT USING D-STATCOM WITH LCL FILTER FOR DISTRIBUTION SYSTEMS

**FIRAS MARWAN FAKHRALDIN¹, JYOTI SHRIVASTAVA², MOHAMMED RAMIZ ALMALLAH³
& ISRAA TAWFIK AZIZ⁴**

¹General Directorate of North Distribution Electricity, Ministry of Electricity, Iraq

²Department of Electrical Engineering, SHIATS, Allahabad, Uttar Pradesh, India

³General Directorate of Electricity Transmission, Northern Ministry of Electricity, Iraq

⁴College of Science, University of Mosul, Ministry of Higher Education, Iraq

ABSTRACT

This paper presents the improvement of voltage sags; harmonic distortion and low power factor by preparing model of Distribution Static Compensator (D-STATCOM) with LCL Passive Filter in distribution system using MATLAB Simulink, then evaluate and analyze the performance of D-STATCOM and LCL filter in distribution system. The model is based on the Voltage Source Converter (VSC) principle. The D-STATCOM injects a current into the system to mitigate the voltage sags. LCL Passive Filter was then added to D-STATCOM to improve harmonic distortion and low power factor. The simulations were performed using MATLAB SIMULINK version R2009b.

KEYWORDS: Distribution Static Compensator, Power Quality, Passive Filter, LCL Filter, Voltage Sags, Current Harmonics