

## **A Novel IUPQC for Multi-Feeder Systems Using Multilevel Converters With Grid Integration of Hybrid Renewable Energy System**

In this project, a novel topology of Interline Unified Power Quality Conditioner (IUPQC) for multi-bus/multi-feeder systems is presented, which is capable of compensating both voltage and current imperfections simultaneously for power quality improvement. In this system, four Voltage-Source Converters (VSC) with multilevel configuration are considered and space vector pulse width modulation is used in hexagonal coordinate system to reduce the complexity in generating switching pulses. In the proposed IUPQC, all converters share a common dc-link capacitor. Hence, power can be transferred from healthy feeder to adjacent feeders for compensation of sag/swell and current/voltage harmonics. This IUPQC is implemented between two feeders with hybrid renewable energy system as one of the feeders. The performance of the proposed system for various power quality problems is analyzed and presented using MATLAB/SIMULINK.

**Domain:** Power Systems \_ Hybrid Systems

**Technology:** Electrical