

#### **40. INTEGRATION OF HYBRID DISTRIBUTED GENERATION USING SHUNT ACTIVE POWER FILTER TO THE GRID**

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The main purpose of hybrid power systems is to overcome the intermittency and uncertainty of power. Integration of solar photovoltaic (PV) plant and fuel cell to the grid offers reduction in greenhouse emissions and independent from fossil fuels for power generation. The effect of reduction and even the absence of the available power from the PV system can be easily tackled by integrating fuel cell with the grid, The Shunt active power filter inverter is integrated with the hybrid system to get the suitable form of three phase output voltage for the grid connected applications, the gate pulses for the inverter is given using sinusoidal pulse width modulation and hysteresis controller techniques. The harmonic analysis of these two techniques is performed using FFT tool in MATLAB.

Keywords— DG(Distributed generation),SAPF(shunt active power filter),PV array (Photovoltaic array),FFT(Fast Fourier Transform),PWM(Pulse Width Modulation).

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