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A Project Report On

DESIGN AND IMPLEMENTATION OF A FULLY CONTROLLED THREE PHASE INVERTER USING SPWM TECHNIQUE

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by

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Abstract

Inverter is the most important device to the ever increasing reliance on electronic devices which utilize AC power, highlights the problems associated with the unexpected loss of power from the Electric grid and in the industry. SPWM or sinusoidal pulse width modulation is widely used in power electronics to digitize the power so that a sequence of voltage pulses can be generated by the on and off of the power switches. The pulse width modulation inverter has been the main choice in power electronic for decades, because of its circuit simplicity and rugged control scheme SPWM switching technique is commonly used in industrial applications SPWM techniques are characterized by constant amplitude pulses with different duty cycle for each period. The three sine waves displaced with 120 phase difference are used as reference signals for three phase inverter to obtain pure sine wave by direct current. This project deals with implementing the basic theory of a Sinusoidal Pulse Width Modulated Inverter (SPWM) technique, its simulink modeling, estimating various designing parameters.

The project will be commenced by a basic understanding of the circuitry of the SPWM inverter, the components used in its design and the reason for choosing such components in this circuitry. The output waveforms in the proposed Pulse width modulation inverter are investigated both in simulation and experimentally. The switching scheme from direct current to alternating current results in unwanted harmonic voltages in the range of the switching frequency and higher, which can be easily filtered out. Simulations and experimental work are carried out and results presented to demonstrate the feasibility of the proposed approach. Simulation is carried out by using MATLAB (software) and in the experimental work an innovative design prototype model is proposed and developed to verify the simulation results.