

**IMPROVING SINGLE PHASE BOOST INVERTER POWER  
FACTOR BY POWER FACTOR CORRECTION  
MATLAB/SIMULINK**

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## ABSTRACT

Power factor is defined as the ratio of the real power,  $P$  to the apparent power,  $S$ . The value of power factor is between 0 to 1 (unities), which are related to power angle of the system. The low power factor electric system can produce more disadvantages effect such as increase losses and total harmonic distortion, decrease efficiency system with produce high energy costs. This paper are to design and simulate DC to AC converter with control by Sinusoidal Pulse Width Modulation (SPWM) and install the value of capacitor at resistive load to get new power factor correction greater than 0.85. The output AC voltage at the load is connected to AC power system. The DC to AC converter is included by Boost Chopper and Single-Phase Full Bridge inverter with Resistive load. Boost converter (step-up converter) is a DC-to-DC power converter with an output voltage greater than its input voltage. Single-Phase Full Bridge inverter with Resistive load is to convert DC to AC power system using Insulated gate bipolar transistor (IGBT). The design and simulation single phase boost inverter circuits are simulated using MATLAB. The circuit design was simulated to get the original and improvement value of power factor by using capacitor improvement method at the load.

Keyword:

Power factor, boost chopper, single-phase full Bridge inverter with resistive load, sinusoidal pulse width modulation (SPWM), capacitor, MATLAB SIMULINK

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