Low Cost Reliable Battery Integrated Stand-Alone Photo-Voltaic System
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Features
- Single phase 250VA Battery Integrated standalone inverter.
- Low cost and high reliability.
- MOSFETs as switches with switching frequency of 100 kHz.
- DC link capacitor selection for longer life time.
- Low cost micro-controller.

Description
- Modified Voltage regulator Battery energy storage system.
- Inverter stage is modified for a low frequency Push-Pull type DC to AC inverter.
- Open loop control is proposed for inverter output voltage control, hence no additional voltage and current sensor.
- OPAMP less sensing circuits.
- Reduce number of power electronics switching devices.

Predicted life time for different stand-alone PV inverter system

Life time of capacitor is determined by:

\[ L_2/L_1 = \frac{T_1 - T_2}{T_2} \]

where,
T1, T2 : Ambient temperatures in Kelvin
L1, L2 : Capacitor life time in Hours
L2 at 50°C is 34000 hrs.

Hardware Results

Design Specifications
PV Panel : 2 panels of 125W, 12V (BP 3125J)
Battery : 12V, 150AH
Output Parameter : 250VA, 230V, 50Hz, sine wave

Laboratory Prototype