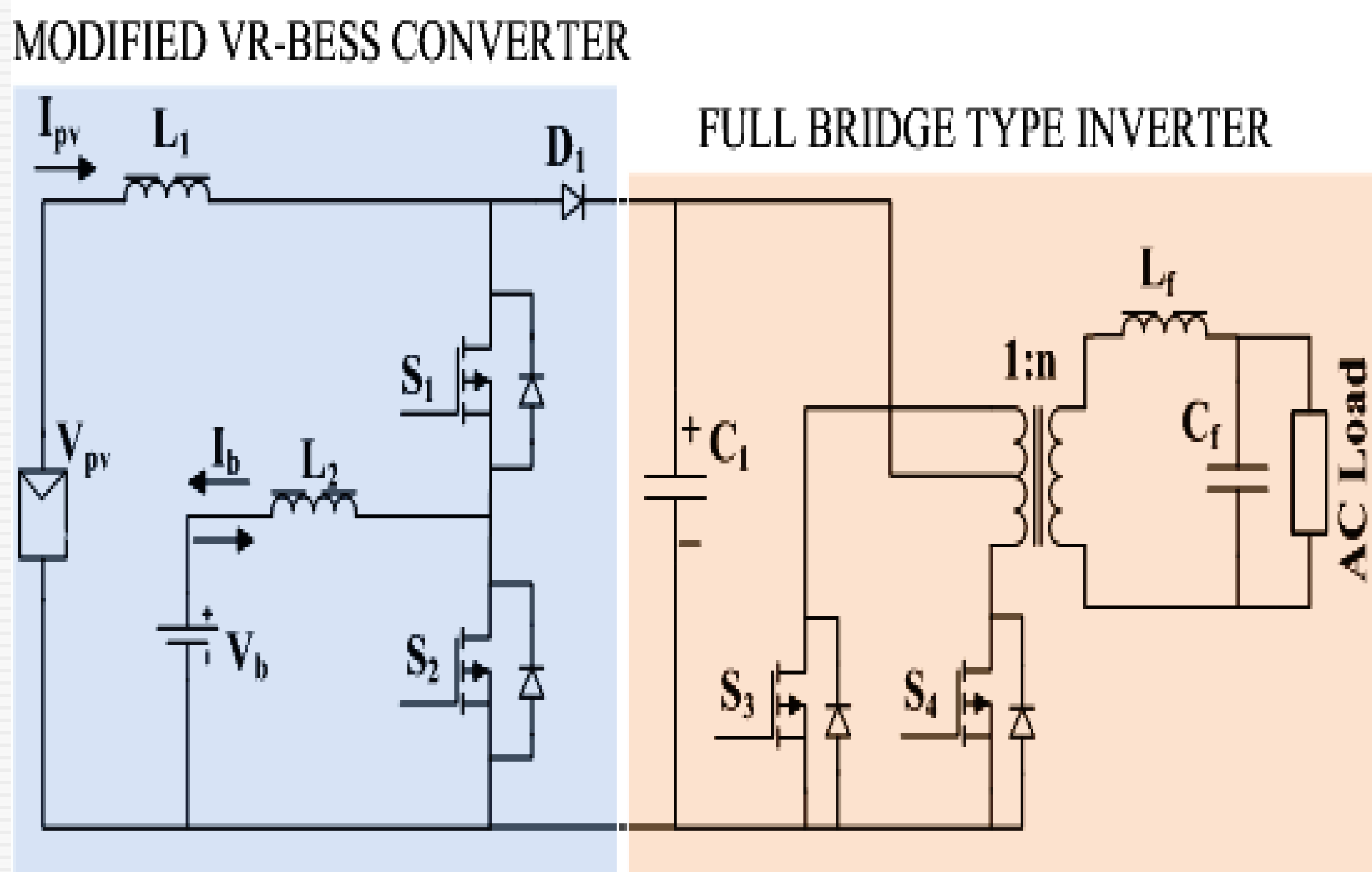


## Low Cost Reliable Battery Integrated Stand-Alone Photo-Voltaic System Rajesh S. Farswan, Huma Khan, Girish Kamble, Prof. B G Fernandes

### 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.

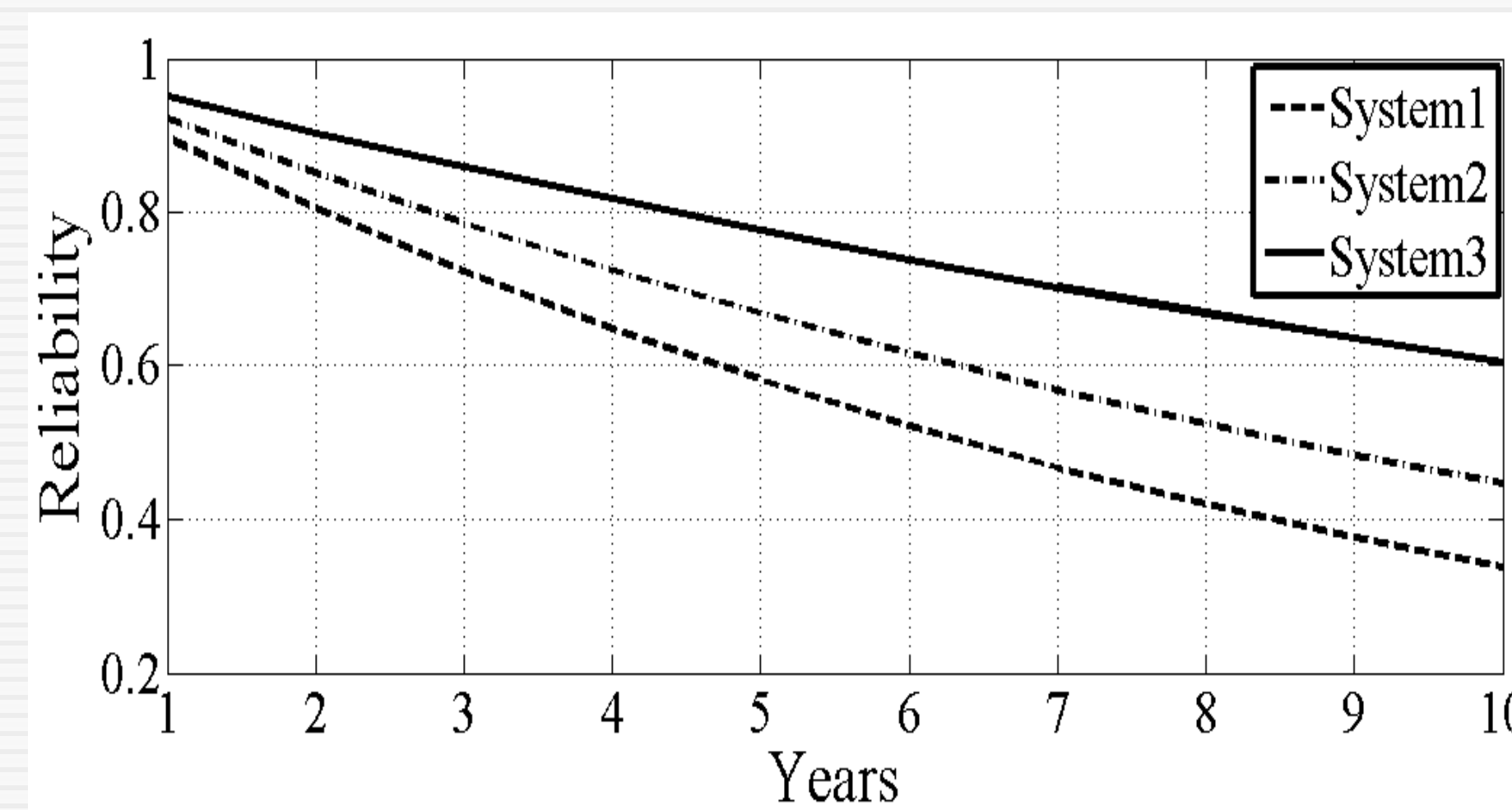
### Schematic



### 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



**System 1 : Converter with high frequency link.**  
**System 2 : Converter with low frequency link.**  
**System 3 : Proposed System**

Life time of capacitor is determined by:

$$L_2/L_1 = 2^{\frac{T_1 - T_2}{10}}$$

where,

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

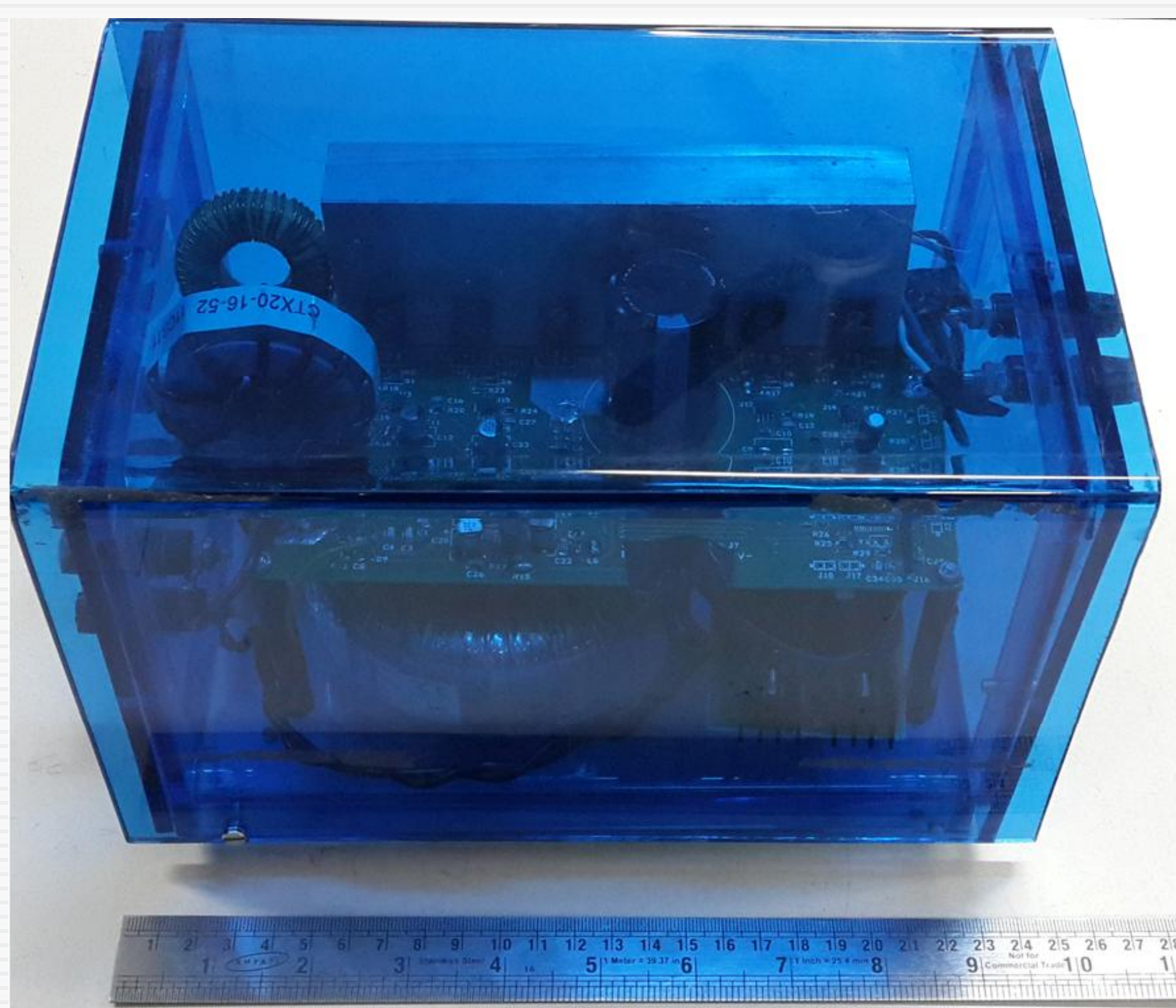
### Design Specifications

PV Panel : 2 panels of 125W, 12V (BP 3125J)

Battery : 12V, 150AH

Output Parameter : 250VA, 230V, 50Hz, sine wave

### Laboratory Prototype



### Hardware Results

