**ABSTRACT**

**(Highly Efficient Grid-Tied PV System)**

The need for a clean environment and the continuous increase in power demands makes decentralized renewable energy production, like solar and wind, more and more interesting. Decentralize energy production using solar energy or fuel cell could be a solution for balancing the continuously-increasing power demands. This continuously increasing consumption, overloads the distribution grids as well as the power stations, therefore having a negative impact on power availability, security and quality. One of the solutions for overcoming this is the grid-tied photovoltaic (PV) system or fuel cell.

The work presented in this paper deals with the power obtained from fuel cell or solar cell. The major task of this research is the investigation and verification of the proposed system using two stage converters viz. hard switching boost converter and a resonant converter, that can determine the required output voltage. Thereby making the system more efficient and reliable for a three phase power.

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