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Low Noise Inverter for Poly Phase Microgrid System (Conference Paper)

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Abstract

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The **inverter** is a power electronics device which changes DC voltage to AC voltage or vice versa. The synchronous **phase inverter** is used in the **microgrid system** to connect the renewable energy sources of minimum **phase error**. For a high-efficiency power transmission and distribution **system**, a **three-phase inverter** is used. The electronic switches of the **inverter** are controlled by a controller circuit which can be a two-level pulse width modulation (PWM), **phase lock loop (PLL)** controller, etc. A fixed reference DC voltage and current generators are used for a stable input-output voltage and current to reduce the higher harmonic distortions. An LC lowpass filter has been designed and simulated for the input and output of the **system** by using MATLAB2014a. The input filter is utilized to reduce the AC ripple component in the DC input supply, and the output filter is used to reduce the higher frequency harmonic distortion from the **inverter** output supply to maintain the IEEE standard THD < 5%. A balanced **microgrid** star configuration load and the input DC voltage of 250V have been considered in this design. The overall conversion efficiency of the **inverter** is 97.62% and THD < 5%. The results show that the design has better performance and can be used efficiently in the **microgrid system**. © 2016 IEEE.

Author keywords

inverter control; LC filter; micro-grid; three **phase inverter**

Indexed keywords

Engineering controlled terms: Electric inverters; Electric switches; Harmonic distortion; **Low** pass filters; Passive filters; **Phase** locked loops; Pulse width modulation; Renewable energy resources; Voltage control

Higher-frequency harmonics; **Inverter** control; LC filter; Micro grid; Overall conversion efficiency; Power electronics devices; Power transmission and distributions; Three-**phase inverter**

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