



Cascade Multilevel Inverter for Utility Applications

Description

Cascade multilevel inverters use single-phase H-bridges and separate dc sources to synthesize single-phase or polyphase ac waveforms.

Technology Importance

- Circuit topology is modular and compact, which leads to lower manufacturing costs.
- Operation of multilevel inverter with fundamental frequency switching enables high efficiency and much lower EMI.
- Easy to incorporate redundant levels into design to significantly increase operating reliability.

Technology Applications

- Interface between distributed generation sources such as photovoltaics or fuel cells and an ac utility.
- Var, sag, and harmonic compensation or power flow control on a medium or high-voltage ac utility system.
- AC traction motor drive in an electric vehicle (EV) or hybrid electric vehicle (HEV).

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Fang Peng (left) and Cliff White demonstrate how the ORNL cascade multilevel inverter interfaces between low-voltage renewable energy modules (simulated by five 48Vdc power supplies) and users on a high-voltage utility grid (simulated by a 120 Vac fan motor).

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