

MINIMIZATION TECHNOLOGIES FOR SMART INVERTER BASED ON CIRCUIT TOPOLOGY AND ITS CONTROL

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Abstract

The requirement of the high-power density for power converters becomes stronger and stronger even the smart inverters which are applied to PCS for PV, WPT and BESS. Nowadays, the volume of cooling system is smaller and smaller by appearing wide band gap devices such as SiC and GaN. In contrast, passive components such as inductor and capacitor dominate the volume of the power converter.

In this presentation, the minimization technologies for passive components which is used in the smart inverter are introduced with many kinds of circuit topology and control. The ac-to-ac direct power converters not requiring smoothing DC capacitor, the active power decoupling circuit reducing smoothing DC capacitor in the single-phase ac converters, the current discontinuous mode control reducing interconnection inductors and FRT control for minimum inductor will be presented.