

国家重点基础研究项目

并联型级联多电平逆变器直流电容电压控制方法

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摘要:

对电容独立的并联型H桥级联多电平逆变器电压内外环加电流环的3环控制方法进行研究, 重点研究电压环的控制, 即直流侧电容电压的平衡稳定控制策略, 提出了将误差量化为正弦函数叠加于各H桥调制波上的电压移相控制方法, 在跟踪输出补偿电流的同时, 实现了直流侧电容电压的平衡与稳定控制。仿真实验结果表明: 采用该控制策略, 各H桥的直流电容电压稳定, 各桥之间直流电压平衡, 并联装置补偿效果良好。

关键词:

A Method to Control DC Capacitor Voltage of Shunt Cascaded Multilevel Inverter

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Abstract:

The tri-loop control method of outer voltage loop, inner voltage loop and current loop of shunt H-bridge cascaded multilevel inverter with independent capacitor is researched, and special attention is paid to the control of voltage loops, i.e., the balanced and stable control strategy of capacitors voltage at DC side, and a phase-shifted voltage control method, which transforms the error into sinusoidal function and superposed it to the modulated waves of H-bridges, is put forward. Thus, the balanced and stable control of capacitors voltage at DC side is implemented while the output compensation current is traced. Simulation results show that using the proposed control strategy, the DC capacitor voltage of H-bridges are stable, and the DC voltage among H-bridges are balanced, meanwhile the compensation result of the shunt cascaded multilevel inverter is satisfied.

Keywords:

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