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电力电子与电力传动

使用平均电流控制的逆变器并联系统

肖岚[1];刘爱忠[1];方天治[1];阮新波[1]

南京航空航天大学自动化学院[1]

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摘要
研究了基于平均电流控制的逆变器并联系统。通过分布在各模块中的平均电路，对各模块的电流给定信号进行平均后产生共享的电流基准信号，由此实现负载均分。推导了带负载电流前馈补偿的并联系统的数学模型，其等效传递函数与单台逆变器相似；通过理论分析、仿真和实验对有、无负载电流补偿两种控制方式下的并联系统外特性和均流性能进行了对比分析。实验结果表明并联系统具有动态响应快速，均流性能好的特点。

关键词 并联 逆变器 平均电流控制 负载均分 负载电流补偿

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Multi-Inverter Parallel System Applying Average Current Controlling Method

Abstract
A parallel-inverter system based on the average current control scheme is studied in this paper. Current-sharing is achieved through the shared current reference which is the average of paralleled-inverters'current references. The average circuit equally distributes in each module of parallel system. The mathematics model of parallel system with load current feed forward is deduced, which proves that the equivalent transfer function of parallel system is similar to that of the single inverter. Through theoretic analysis, simulation and experiment, output voltage characteristic and current-sharing performance of the parallel system with load current compensation are compared with that of without load current compensation. Experimental results indicate that the system has fast transient response and good current-sharing performance.

Key words parallel inverter faults planar bending load current sharing load current compensation

DOI:

通讯作者 刘爱忠 laz_4919@yahoo.com.cn

作者个人主页 肖岚 刘爱忠 方天治 阮新波