

国家重点基础研究项目

采用模型参考自适应控制策略的单独注入式有源滤波器控制方法

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摘要:

为降低滤波系统和电网的参数变化对单独注入式有源电力滤波器(hybrid active power filter with single injection branch, SIBAPF)滤波性能的影响, 提出了SIBAPF的模型参考自适应控制策略. 建立了SIBAPF数学模型, 并根据该模型建立了滤波系统参数自适应律. 仿真结果表明, 模型参考自适应控制方法较非线性PI控制方法滤波控制效果更好. 基于该方法研制了SIBAPF试验样机, 该样机投运后滤波效果良好, 满足系统运行要求.

关键词:

Control Method of Hybrid Active Power Filter with Single Injection Branch Applying Model Referenced Adaptive Control Strategy

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Abstract:

To reduce the affects of parameter variation of filtering system and power grid on filtering performance of hybrid active power filter with single injection branch (SIBAPF), a model referenced adaptive control (MRAC) straegy based on SIBAPF is proposed and a mathematical model of SIBAPF is built, and based on this model the adaptive law of parameters of filtering system is obtained. Simulation results show that by use of SIBAPF-based MRAC method a better control effect can be obtained than by nonlinear PI control method. Based on the proposed control method a experimental prototype of SIBAPF is developed. Operation experience indicates that the filtering effect of this prototype is satisfied and can meet the demand of system operation.

Keywords:

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