URN etd-0407109-183724-1972
Author Chia-Ming Cheng
Author's Email Address No Public.
Statistics This thesis had been viewed 65 times. Download 29 times.
Department
Year 2007
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Analysis and implementation of a single-phase active power filter
Date of Defense 0000-00-00
Page Count 75
Keyword
active power filter

Abstract
Harmonic current distortion has become a major power quality problem in recent years. This is mainly due to the introduction of nonlinear loads, especially power electronic converters adopted in the power systems. Because of the inherent shortcomings of the conventional passive power filters, the current trend of design opts for active power filters. Also, it is well-known that fuzzy-logic controllers are preferable to conventional controllers for the flexibility, especially in the absence of a precise system model. In this thesis, a single-phase, full-bridge parallel active power filter architecture with a fuzzy-logic controller is proposed.
We pass DC capacitor voltage error and prior error in the voltage control loop, and add a current feedback loop utilizing the source current and the fundamental frequency component of it. All these information are incorporated in the input of a fuzzy-logic controller for PWM switching to generate the compensation current.
In view of the advantages of digital controllers over analog controllers, such as low cost, compactness, robustness against noise and programmability, the aforementioned fuzzy-logic controller is further realized in digital fashion by using FPGAs (Field Programmable Gate Arrays).
Advisory Committee Chi-Jo Wang - advisor

Files etd-0407109-183724-1972-001.pdf

indicate access worldwide
Date of Submission 2007-08-20