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直接甲醇燃料電池應用於可攜式混合電源管理系統之設計研究

周寶華; 鍾翼能; 張啟原; 周政南

摘要

本文針對直接甲醇燃料電池(DMFC)電源管理之系統架構，應用於可攜式電子產品，以延長其操作時間取代傳統電池系統為目標。由於 DMFC 運作時不會有電力中斷或電池更換之問題,使其成為本研究之電源管理系統中主要的電力供應者。本文針對 DMFC 系統、直流-直流轉換器、電池充放電控制及電源管理系統設計進行探討，以改善系統之性能。實驗結果顯示本系統於實際供電時，可連續工作至甲醇燃料完全耗盡為止且不會有電力中斷之問題。

關鍵字: 直接甲醇燃料電池; 電源管理系統;
可攜式電子產品及直流-直流轉換器

The Study and Design of DMFC Application on Portable Hybrid Power Management Systems

周寶華; 鍾翼能; 張啟原; 周政南

Abstract

In this paper, subject to the portable electronic device, the power management systems is constructed to prolong the system operation time and to replace the traditional battery systems. The Direct methanol fuel cell (DMFC) becomes the main electrical power supply on power management systems in this research, for neither electrical power interruption nor battery changing problems. In order to increase the systems performance, the DMFC system, DC/DC converter, battery charging and discharging control, and power management systems will be discussed. The result of the experiment is observed that the power management systems can operate continuously under sustained feeding methanol and has no electrical power interruption problems.

Key words: Direct methanol fuel cell (DMFC);
Power management system;
Portable electronic device and DC/DC converter