中文摘要

本論文旨在研製一當照度及溫度條件大幅變化情況下具最大功率追蹤之太陽能蓄電池儲能系統，追蹤器採用擾動觀察法之設計以獲得最大功率輸出，此追蹤器可快速地追蹤太陽能電池能源輸出之最大功率點。以 dsPIC30F 晶片來實現蓄電池充電器並透過 RS232 將所測得之發電量傳回電腦以進行分析。太陽能電池在各種照度情況之下，經由光電轉換之後皆可產生最大功率輸出，並將發電量回存至鉛酸蓄電池，以提供其他負載使用。

英文摘要

This work implements a solar power battery energy storage system（BESS）with maximum power point tracking(MPPT)under substantial variation in temperature and intensity of illumination. The tracker was designed using the perturbation and observation method to track rapidly the maximum power point of the energy output of the solar cells. The power generation data were transmitted to computers via RS232 for analysis and a battery charger was realized using a dsPIC30F chip. The maximum power was output following photovoltaic transformation under varying intensity of illumination and the power generated by the solar cells was fed back to the lead-acid battery to supply the load.