

## 一种新型光伏独立发电系统拓扑及控制策略

肖鹏, 陈国呈, 吴春华, 张翼

(上海大学 机电工程与自动化学院, 上海市电站自动化技术重点实验室, 上海 200072)

## Topology and Control Strategy of a Novel Standalone Photovoltaic System

XIAO Peng, CHEN Guo-cheng, WU Chun-hua, ZHANG Yi

(School of Mechatronics Engineering and Automation, Shanghai Key Lab of Power Station Automation Technology, Shanghai University, Shanghai 200072 China)

- [摘要](#)
- [参考文献](#)
- [相关文章](#)

Download: [PDF \(1355KB\)](#) [HTML \(0KB\)](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

**摘要** 提出一种采用推挽输出的新型光伏独立发电主电路拓扑结构, 系统由光伏电池阵列、充电器、蓄电池和逆变器组成. 该逆变器能同时实现升压和逆变, 省去了蓄电池之后的DC-DC升压部分. 在简化主电路拓扑的同时, 能够有效输出稳定的220 V交流电压. 此外, 该系统采用基于高频链SPWM调制方法及电压有效值外环、瞬时值内环的闭环控制策略. 采用该系统不仅可以减小系统体积, 降低系统成本, 而且具有输出电压动态响应好、稳态精度高等优点.

**关键词:** [独立光伏发电](#) [高频链](#) [调制](#)

**Abstract:** Topology of a novel standalone photovoltaic system is proposed, which uses a push-pull output circuit. The system consists of a photovoltaic battery array, a charger, a battery and an inverter. The inverter is used for boosting and inversion so that a DC-DC boost circuit is omitted. The system can supply stable 220 V AC-voltage with a simplified main circuit. Besides, a modulation method based on HF-link SPWM and a control strategy for external voltage RMS loop and instant voltage internal loop is adopted. In this way, size and cost of the device are reduced, and excellent output voltage dynamic response and high steady state output accuracy are achieved.

**Keywords:** [stand-alone photovoltaic system](#), [HF-link](#), [modulation](#)

收稿日期: 2007-08-09; 出版日期: 2008-12-21

通讯作者 陈国呈

引用本文:

肖鹏, 陈国呈, 吴春华等. 一种新型光伏独立发电系统拓扑及控制策略[J] 上海大学学报(自然科学版), 2008, V14(6): 633-636

XIAO Peng, CHEN Guo-cheng, WU Chun-hua etc. Topology and Control Strategy of a Novel Standalone Photovoltaic System[J] J. Shanghai University (Natural Science Edition), 2008, V14(6): 633-636

链接本文:

<http://www.journal.shu.edu.cn//CN/> 或 <http://www.journal.shu.edu.cn//CN/Y2008/V14/I6/633>

没有本文参考文献

没有找到本文相关文章

### Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

### 作者相关文章

- ▶ [肖鹏](#)
- ▶ [陈国呈](#)
- ▶ [吴春华](#)
- ▶ [张翼](#)