

光电系统与工程

90W太阳能LED路灯的设计及优化

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摘要:

针对LED在灯具配光、散热等方面达不到实用要求,无法真正体现出经济节能的问题,参照已有太阳能LED路灯产品,根据相关国家标准和行业标准,确定90W太阳能LED路灯系统的技术指标和性能要求,在此基础上进行初步设计.对系统中的主要部件进行设计论证和选型,得出一个可行的设计方案,通过MATLAB软件对LED的照度分布和灯具的配光进行仿真,并就配光和散热这两个方面对系统进行优化,使其符合道路照明要求.

关键词: 太阳能发电 LED照明 配光 优化设计

Design and optimization of 90W solar LED street lamp

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Abstract:

Since LED lamp can not meet the practical requirements in light distribution and heat dissipation, its power saving and economic advantages are not fully utilized. Based on the existing solar LED streetlamps, technical specification and performance requirement of 90W solar LED streetlamp are established according to relevant national standards and the industry standards, and the preliminary design is made accordingly. The major components are selected and reviewed, and a design scheme is obtained. MATLAB is used to simulate LED's illumination profile and light distribution, light distribution and heat dissipation are optimized to meet the requirements of street light.

Keywords: solar photovoltaic LED illumination distribution of light optimal design

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