

论文

基于小区域跟踪的多晶硅视频检测系统

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摘要:

为实时测量多晶硅棒直径,研制了多晶硅棒径在线视频检测系统. 该系统采用双相机成像的机器视觉方法实现目标硅棒的监测,采用左中右差分的图像分割技术提取目标,采用基于小区域的质心跟踪算法跟踪目标. 系统标定后,可实时测量还原炉内多晶硅棒的直径. 实验结果表明:该系统能检测微弱边缘,在直径为8 ~ 150 mm的范围内,测量精度高于工业视觉图像测量的要求.

关键词: 机器视觉 微弱信号 图像分割 小区域跟踪 系统标定

Polycrystalline Silicon Video Inspection System Based on Small Area Tracking

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Abstract:

A polycrystalline silicon video inspecting system was designed for the real-time measuring the diameter of polycrystalline silicon stick. In this system, the machine vision method founded on the imaging information from two fixed cameras are adopted to track the edge of goal silicon stick and measure its diameter. The image partitioning method based on left-middle-right difference is used to pick up targets, and the mass centroid tracking algorithm based on small area tracking is utilized to track the targets. The system can measure real-time the diameter of polycrystalline silicon after it is calibrated. The experimental result shows that the system can find and track feeble edges, and its precision can meet the industry demand in the range of 8 to 150-mm-diameter.

Keywords: machine vision feeble signal image segmentation small area tracking system calibration

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