

高电压技术

基于彩色图像的玻璃绝缘子缺陷诊断

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摘要:

探讨了架空送电线路直升机巡检系统, 提高玻璃绝缘子损伤诊断效率的方法。首先采用分块图像的颜色统计识别以及连通域的形状和边缘链码特性, 识别出玻璃绝缘子所在区域; 然后采用滑动窗口直方图统计及直方图匹配判决的方法, 识别出玻璃绝缘子损伤的区域。该方法适用于野外环境中的实时检测, 因此可以在一定的光线变化范围和背景复杂度内识别诊断玻璃绝缘子损伤。通过此方法可以在较低的漏检率下快速而准确地检测玻璃绝缘子损伤故障, 能在机载系统中具备实时处理能力。

关键词:

Defects Detection of Glass Insulator Based on Color Image

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Abstract:

Helicopter patrol inspection system has been applied to diagnose the insulator injuries of overhead transmission lines. In this paper a method is proposed to improve the diagnosis efficiency. Firstly, the statistical information of blocked image, the form of connected domain and the characteristics of edge chain code are utilized to recognize the area where the defective glass insulator locates; then by use of sliding window histogram statistic and histogram matching judgment, the damaged region of glass insulator is recognized. The proposed method is suitable to real-time detection in field environment, and it can diagnose the injury of glass insulator under a certain light variation range and background complexity. Using the proposed method, the injury of glass insulator can be rapidly and accurately detected at lower omission factor while the real-time processing can be also implemented by airborne system.

Keywords:

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