

Intelligent Customization Process for Bundle-shaped Pigtails in Photovoltaic Power Plants

Article Overview

Intelligent customization of bundle-shaped pigtails in PV plants involves AI-driven design, real-time monitoring, and adaptive inspection to optimize interconnections and system performance.

Overview

Bundle-shaped pigtails are the electrical interconnections linking PV modules to inverters or combiner boxes. Their design and deployment significantly affect energy efficiency, reliability, and maintenance costs. An intelligent customization process integrates data-driven analysis, AI algorithms, and IoT-enabled monitoring to optimize these interconnections for each PV plant configuration.

Key Components of the Process

1. Data-Driven Design and Quality Assurance Advanced monitoring systems collect performance data from PV modules, inverters, and interconnections. Machine learning algorithms analyze these data streams to detect anomalies, predict failures, and optimize pigtail configurations for minimal energy loss and maximum reliability . This approach allows for customized pigtail lengths, bundling patterns, and connector types based on site-specific conditions. 2. UAV and IoT-Based Inspection Unmanned Aerial Vehicles (UAVs) equipped with RGB and thermal cameras, combined with IoT...

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