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Title: How to avoid poor soldering of photovoltaic panels

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Why is solar cell soldering important?

Today, most solar module manufacturers utilize automatic solar cell soldering. This automation ensures more consistent quality, reduces breakages, and allows for the use of thinner solar cells. The soldering process is critical, as it enables the photovoltaic module to effectively transmit electricity.

What happens when a solar cell is soldered?

When light hits the solar cell, it excites electrons in the semiconductor, creating a flow of electric current. The tabbing and stringing conduct this current to external interfaces. If the soldering process is not optimal, tabbing is insufficient, or stringing is broken, the internal resistance of these electrical connections' increases.

Why is thermal accuracy important for detecting small soldering issues in solar modules?

In this application, thermal accuracy, resolution, and measurement field of view (MFOV) are crucial for detecting small soldering issues in solar modules. High thermal accuracy ensures that even the slightest temperature variations, indicative of potential faults, are detected.

What happens if the soldering process is not optimal?

If the soldering process is not optimal, tabbing is insufficient, or stringing is broken, the internal resistance of these electrical connections' increases. During the end-of-line test, higher resistance at faulty points leads to a temperature rise or no thermal increase if the connection is completely interrupted.

This article discusses 21 common quality issues found in photovoltaic modules, including causes, impacts, and preventive measures. Understanding these problems can help improve ...

In photovoltaic (PV) module manufacturing, precision in soldering directly determines power output, reliability, and lifespan of solar panels. Yet, even the most advanced soldering lines encounter ...

Dark Lock-in Thermography Identifies Solder Bond Failure as the Root Cause ... Series resistance in a PV cell represents finger breakages, busbar breakages, corrosion, and poor soldering, which causes ...

Soldering processes play a significant role in module manufacture and module reliability. In order to improving module performance and reliability, this paper first detailed a microscopic ...

How to avoid poor soldering of photovoltaic panels

How to detect poor soldering in photovoltaic panels How to detect a solar panel defect? However, this method is based on expanding a UV beam to illuminate an extensive area of the PV sample, making ...

Cold soldering has become the highest frequency problem found during pre-shipment electroluminescence inspection of PV modules.

Advanced Thermal Inspection for Faulty Soldering, Tabbing, and Stringing of Photovoltaic Modules In the production of solar panels, each module undergoes a final quality check to determine ...

In this PV Tech article, Paul Wormser, Vice President of Technology, and Jake Edie, Vice President of Marketing, discuss the prevalence of soldering defects in solar panels, their impact on ...

How to Prevent Soldering Defects in Solar Panels: Quality ... Learn how soldering defects in solar panels impact performance & how QA measures can mitigate risks for better long-term results.

o1. In the factory the solder joint between cross connect ribbon and solderpad in the JB must be checked visual for „cold solder joints" o2. And during flash/EL testing apply a reverses voltage ...

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