

SPWS Webinar 4:

Towards more sustainable and efficient Solar Powered Water Systems

Securing PV Module Quality for Relief/Humanitarian Projects

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eternalsun**spire**

Who are you listening to?



Speaker:

Paige T. Campbell

Director Business Development | Eternalsun Spire

pcampbell@eternalsun.com

+31.618182055



We are highly specialized in the output and overall quality of PV modules



1. Manufacturer of highly accurate test equipment

2. In-house inspection of PV-module production facilities

3. Own physical laboratories in strategic locations

In 2016, Eternal Sun acquired Spire (founded 1969) creating a powerhouse of module measurement and quality control services

Key Challenges for Implementing Solar Projects in Developing Countries

1. Know-How & Expertise



2. Overall Module Quality



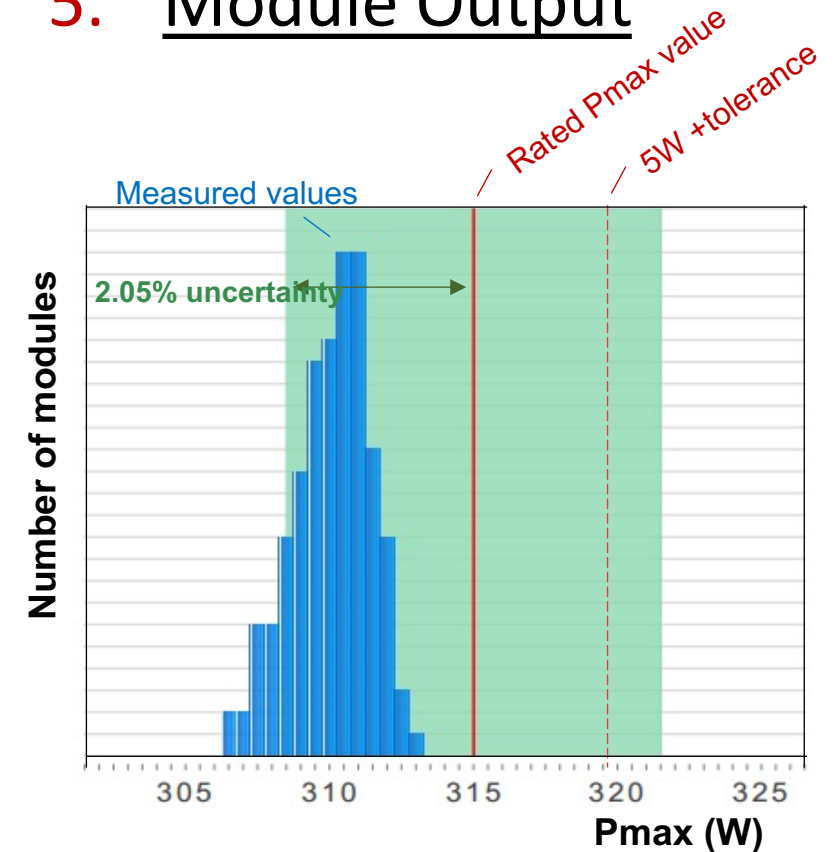
3. Module Authenticity



4. Damage



5. Module Output



These 5 challenges can negatively impact **project lifetime** but can also single-handedly determine **success**.

Identifying Solar Quality Issues During Relief/Humanitarian Projects

AUTHENTICITY

- Label Orientation
- Cell Alignment
- Junction Box Orientation
- Connector Branding
- Glass or Plastic?
- Cell Color
- Packaging
- Module Function

VISUAL INSPECTION
IEC 61215 MQT01

HIDDEN DAMAGE & PRODUCTION DEFECTS

- Cell Cracking
- Soldering Defects
- Delamination
- Grid-Finger Defects
- Busbar Misalignment
- Hotspots
- Cell disconnection

EL TESTING
IEC 60904-13

PERFORMANCE

- Module Function
- Pmax lower than Pnom

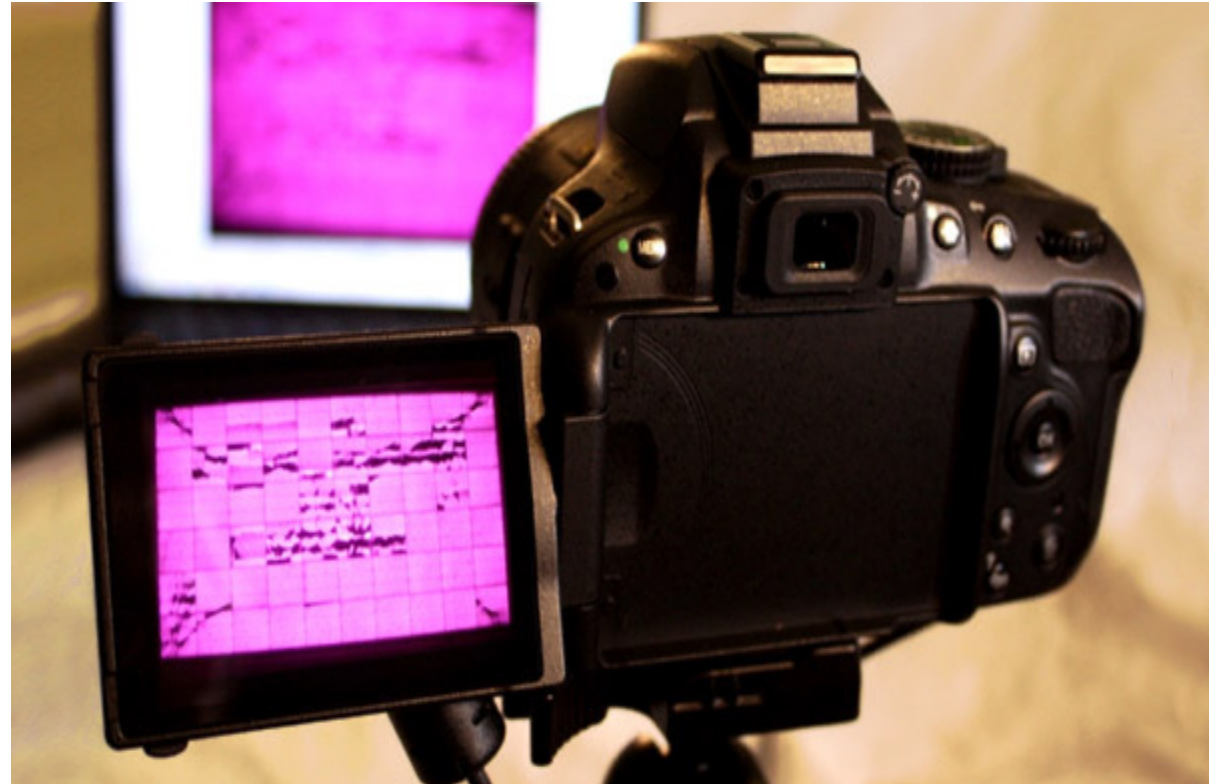
IV TESTING
IEC 61215 MQT 06

Sending a sample to a laboratory is the best way to do these tests, however they can also be done on-site with affordable equipment.

Affordable & Easy to Use Tools to Validate Performance and Quality



Handheld IV Tracer



Portable EL Camera + Power Supply

Quality Issues Visualized : 1 of 2



Installation Issues



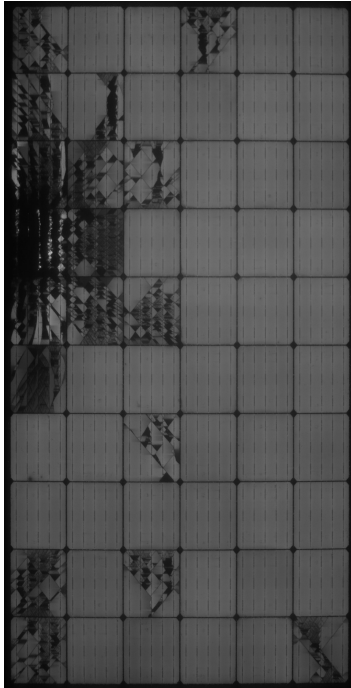
Transportation Damage



Cell Homogeneity

Make sure that there is at least 1 person that can identify quality issues. They are often not hard to spot!

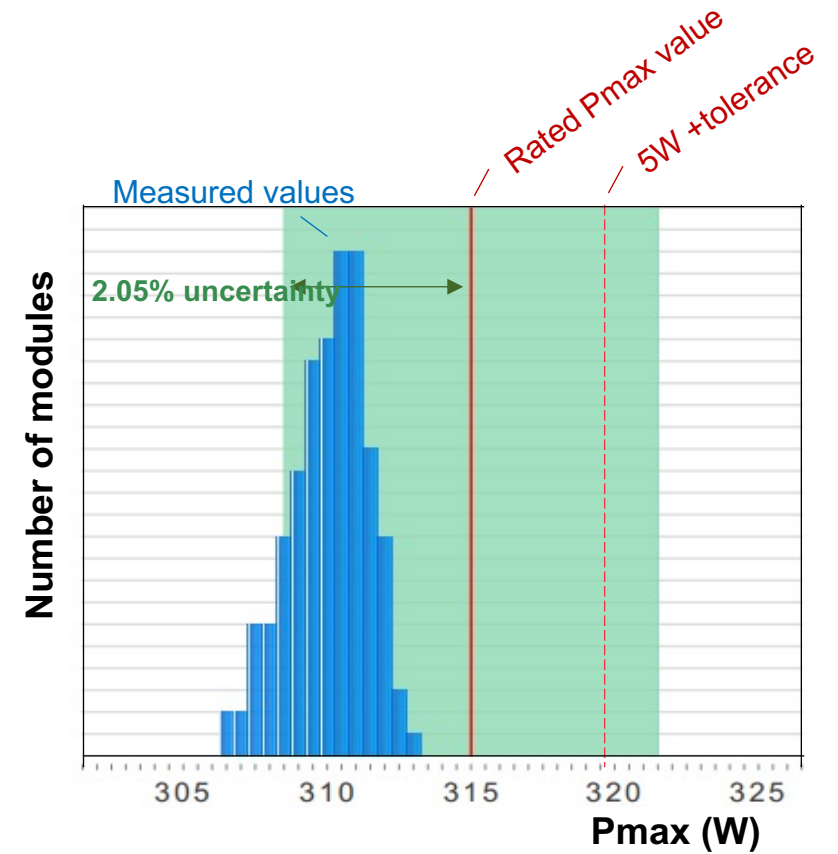
Quality Issues Visualized : 2 of 2



How EL Identifies Hidden Damage



Barcodes not matching Manufacturer



Underperforming Modules

However, some types of quality issues require testing or additional data to be uncovered.

4 Key Tips to Securing PV Module Quality

1. Buy Direct from the Manufacturer

- Or reputable wholesaler potentially in a different country

2. Define Quality Requirements in Purchase Contract

- Specify acceptable quality levels for modules (EL, performance)

3. Validate quality and performance by testing

- During production, before the transfer of ownership and at the moment of delivery

4. Appoint at least one person who can identify and monitor quality

- Be on-site during key project milestones

Availability of quality control professionals and facilities are limited in developing countries. Research this up front.

4 Specific Tactics to Securing PV Module Quality

1. Ask for EL photos and flash data from the manufacturer up front
 - Supplier can't give the data? Alarm bells!
2. Clearly inform that you will validate authenticity, quality and performance
 - This can scare off non-reputable sellers or at least give an incentive to ship a product of quality!
3. Validate before the transfer of ownership
 - Try before you take! Validate before ownership is transferred.
4. Negotiate full payment only after you have inspected the goods
 - Don't pay in full until quality is verified! Give an incentive to deliver quality.

Securing PV Module quality in developing countries requires out of the box thinking and doing. Thinking is always free! Doing can (sometimes) cost money. Include a budget for this in your project planning.

How can I get more information / advice?



Eternalsun Spire provides quality control services in all global markets.

Want to know how your next Solar Water project can get a quality boost?

For more information :

Paige T. Campbell
Director Business Development | Eternalsun Spire
pcampbell@eternalsun.com
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