



“ Consensus Guidelines For Quality Assurance and Their  
Role as a Foundation for Lifetime Prediction”

## PV Module Reliability Workshop



“ Consensus Guidelines For Quality Assurance and Their  
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or

“SAY WHAT”

**PV Module Reliability Workshop**



# “The Birth of a Solar Module”

## Concept / Design

- Get samples
- Graphics
- Sketches

## Prototype

- Drawings
- Material bids
- Eng. Build
- Test

## Pre-release

- Establish BOM's and Drawings
- Make small runs or lots
- Test, send samples to Labs for Certification

## Production

- Formal release all drawings, parts, etc.
- Make changes as required
- Achieve certs.
  - Qualification / Performance
  - Safety
- Sell the stuff



# How does one assure they are good enough for an extended reliability test or “for my house”?

- Good Question
  - Test them?
  - Check warranty?
  - Ask Sales people?
  - Buy from reputable companies?
- Or request copy of their “Quality System”
  - QA manual
    - Test plans and performance measurements
    - Etc.



# A Fair Response

“Is to insist on a Quality System  
Or a Foundation”

- Policy
- Needs of customer (or requirements)
- Control of Processes
- Control of Documents
- Customer Feedback (warranty admin)
- Improve Everything (continuous improvement)



# “Consensus” QA

- ISO-9000-2008 “Certification”
  - Is a consensus quality system
  - Has world recognition
  - Baseline Quality System
  - Requires compliance audits
    - Document control / configuration control
    - Calibration control
    - Supplier control
    - Training / qualification of employees
    - Corrective / Preventive action system



# How does the “Quality System” Relate to Performance?

- Control of Processes (examples)
  - EVA in lamination process
  - Glass in handling, storage, and consistency
  - Backsheet for protection, safety etc.
  - Junction Boxes or connection schemes for connectivity
- Control of Suppliers
  - Monitor changes to their product



# How does the “Quality System” Relate to Performance?

- Ongoing test and evaluation system
  - Continuously test samples of outgoing product
  - Frequently test samples of incoming material
  - Constantly monitor customer feedback for clues
- Bank warranty reserves and “pray”



## “ Consensus Guidelines For Quality Assurance and Their Role as a Foundation for Lifetime Prediction”

- In Summary;
  - The Industry as a whole needs to recognize the whole system (Quality / Business System) and educate the public
  - The Consumers (Big or Small) need to Demand the publication of lists of “certified companies” that supply under the ISO and IEC requirements etc.
  - It is the Quality System that Consistently delivers the “Goods”



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Finally

Thank You for your Time

(for luckily it is soon to be “Miller Time”)



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