PV Reliability: Database and Lifetime Prediction

A joint India-U.S. research consortium funded under the *Joint Clean Energy Research & Development Center (JCERDC)*

Objective:

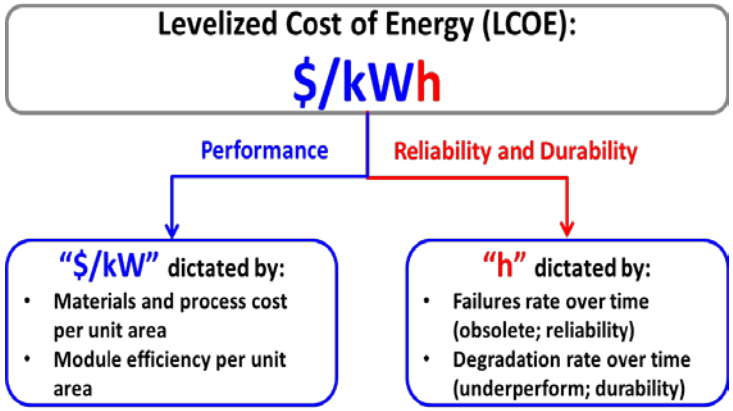
To develop a comprehensive reliability database for the lifetime prediction of PV technologies, especially in the context of the environment of India and the United States.

Achievement:

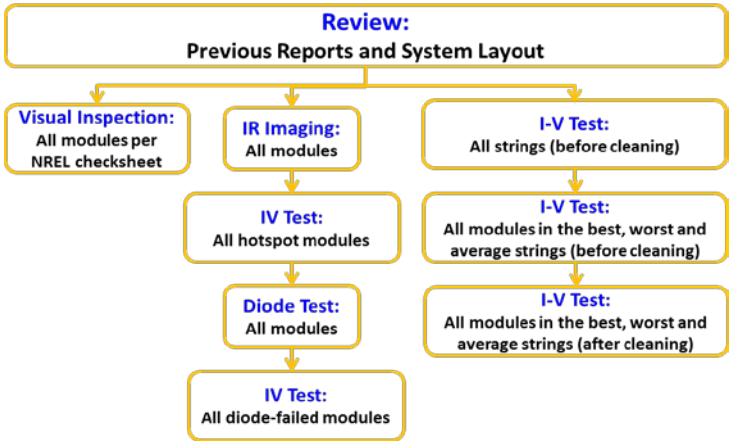
Four power plants in a desert climate of United States and several systems in five climatic zones of India have been evaluated for reliability and durability—and catalogued for the SERIIUS reliability database.

Research Details:

- ASU has evaluated four power plants (4–16 years old) installed in a desert climatic condition of Phoenix, Arizona, through: visual inspection, infrared (IR) imaging, diode testing, and current-voltage (I-V) testing, as shown in the flow diagram.
- IITB and SEC have evaluated various PV systems covering five climatic zones in India.
- The data processing and analyses of all the PV systems and power plants investigated in this study will be completed.
- All modules in the rooftop PV system at FSEC will be examined for reliability and durability.
- Complete the construction of small-scale setup for reliability testing of unencapsulated cells.



LCOE dictated by performance, reliability, and durability



Various tests performed at the older power plants in India and U.S. to populate the reliability and durability database

Publication(s):

Six publications from ASU, FSEC, and IIT-B were presented at the IEEE PVSC, Tampa, Florida, June 2013 (see www.SERIIUS.org).

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