



Announcement

1st SOPHIA PV-Module Reliability Webinar

May 28th – 29th, 2020,

EPFL École Polytechnique Fédérale de Lausanne, Neuchâtel, Switzerland

OBJECTIVES:

REQUIREMENTS OF NEW AND UPCOMING PV APPLICATIONS FOR MATERIAL SELECTION AND RELIABILITY ASSESSMENT

The École Polytechnique Fédérale de Lausanne EPFL (Switzerland) and the Fraunhofer Institute for Solar Energy Systems ISE (Germany) gladly invite you to a **FREE compact webinar as a friendly compensation for the loss of this year's workshop, which had to be cancelled due to the Corona pandemic**. The presentations will highlight selected expert results and experiences on reliability, degradation and testing aspects of innovative PV applications and also a bundled overview of the results of the EU-Project SolarTrain will be given.

Structure – Part I

Edward Hsi (Swiss RE): “Insurability, Bankability, and Investability – How reliability matters in the underwriting decisions”

How PV module reliability is factored into the underwriting process for Insurance and Financing (Debt & Equity) decisions.

Andrew Fairbrother (EPFL): “Degradation patterns of module packaging materials across length scales: global, local, sub-module”

Effective packaging of PV modules is the key to reliable and long-term operation. However, the patterns of degradation are often inhomogeneous, even at the array and module levels. This behavior is discussed with examples from the field, as well as implications for module and plant design and accelerated lifetime test development.

Juan Lopez-Garcia (JRC- European Commission): “Performance testing of bifacial PV modules according to IEC TS 60904-1-2: a route towards bifacial reliability”

Bifacial crystalline Silicon (Si) photovoltaic (PV) devices are attracting considerable interest from manufacturers and the market since they can enhance the performance in comparison with traditional monofacial PV devices. Technical specification IEC TS 60904-1-2 was published in 2019 and proposes several characterization methods for bifacial PV device testing based on single-side, double-sided and natural sunlight illumination. This TS establishes a reference point for module comparison and a reliable starting value for long-term degradation rate and reliability investigation. Since two sides need to be considered, the effects of non-uniformity of irradiance on the rear side become a relevant issue for long-term degradation. This work analyses the advantages, disadvantages, the suitability and the feasibility of the different methods and compares the electrical performance obtained by the proposed approaches at the European Solar Test Installation (ESTI) for the testing of bifacial Si devices. In addition, preliminary data of the real operating conditions of stand-alone modules and two test arrays (both vertical east-west oriented and tilted equator facing) installed at the outdoor test field of ESTI facilities for long-term studies are analyzed.

Structure – Part II

SolarTrain Post Graduates: “Solar-Train – Climate, Materials and Performance”

Presentation of the latest results of the SolarTrain project. The complete value chain from solar module materials up to PV fleets will be addressed. Based on identified climate stressors, experiments and tests have been developed, and an in-depth study of PV module encapsulants and back-sheets has been carried out. Furthermore, the complexity of PV module and system degradation in different climate zones has been investigated. This was done to better understand past behavior patterns but also to enable more efficient O&M strategies.

“Understanding climate related operation conditions of PV systems”

Julian Ascencio Vasquez, University of Ljubljana: “Main climate degradation factors”

Nikoleta Kyranaki, University of Loughborough: “Is Henry’s law appropriate for real polymers (absorption under equilibrium)?”

Stefan Mitterhofer, University of Ljubljana: “Moisture diffusion in different encapsulants and backsheets”

“Advanced characterization of PV materials: natural and artificial ageing”

Chiara Barretta, PCCL: “DH/UV of different encapsulants ”

Luis Castillon, PCCL: “Accelerating testing of backsheets ”

Djamel Eddine Mansour, ISE: “Effect of different backsheets on encapsulant degradation”

“PV module performance evolution”

Ismail Kaaya, ISE: “PV degradation modelling”

Nikola Hrelja, EDF: “Electrical parameter evolution”

“Field Performance Losses and Service Lifetime Prediction”

Sascha Lindig, EURAC: “Nonlinear Multi-step Performance Loss Rate”

Guillermo Oviedo Hernandez, BayWa: “Modelling applied to O&M activities”

This webinar is FREE OF CHARGE but registration is required.

For more information and for **REGISTRATION** please visit the workshop’s website:

www.pv-reliability.com



Organizer

Fraunhofer ISE, Dr. Karl-Anders Weiß

Host

EPFL, Dr. Alessandro Virtuani

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