



## SECOND ANNOUNCEMENT

# SOPHIA Workshop PV-Module Reliability

**May 3 – 4, 2012**  
**Lago di Lugano (Switzerland)**

## OBJECTIVES

Type approval testing of PV modules according to IEC 61215 is a qualification test procedure based on experiences and assumptions with modules of the first generation. The market and variety of commercially available modules have grown rapidly during the past years. Manufacturers and investors more and more recognize the lack of appropriate durability assessment procedures or even service life estimation methods. The most recent initiative is the work of the international Quality Assurance Forum. Its main aim is to prepare the scientific background for standards for the durability assessment of PV modules by integrating the input from as many international experts outside the IEC communities as possible.

Fraunhofer ISE and Supsi organize a workshop in the framework of the EU-FP7 project SOPHIA in Lugano/ Switzerland as part of the 30<sup>th</sup> anniversary of the PV activities at Supsi. The SOPHIA workshop shall serve as a European option for the discussion of the main topics of durability testing in order to take into account the big experience with production and operation of PV modules in Europe for the IEC-TC82 WG2 meeting in the week from May 7<sup>th</sup> to 11<sup>th</sup>, 2012.

Registration, hotel recommendation and location plan on:

[www.supsi.ch/go/pv-module-reliability](http://www.supsi.ch/go/pv-module-reliability)

Registration fees: 300 € (reduced price for students: 200 €)



**Organizer**  
Fraunhofer ISE, Michael Köhl



ISAAC Supsi, Thomas Friesen

**For more information please contact**

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## STRUCTURE

The topics will be presented by experts and further developed in small discussion groups.

### Block I: Mechanics

- Jörg Althaus, TÜV Rheinland Group: "IEC-proposal for testing transport stresses"
- Mark Köntges, ISFH: "Crack-statistics for wafer-based silicon solar cell modules in the field"
- Sascha Dietrich, CSP: "Thermomechanical stresses in solar cells"

*Discussion I: Is dynamic mechanical and static mechanical testing at low temperatures necessary?*

### Block II: PID-Humidity (Potential induced degradation)

- Peter Hacke, NREL: "Proposal for PID sensitivity tests"
- Henning Nagel, Schott Solar: "Possible causes for PID of silicon cells"
- Stephan Hoffmann, Fraunhofer ISE: "Comparison of leakage current measurements (indoor and outdoor)"

*Discussion II: Are standards in PID technology needed?*

### Block III: UV-Humidity

- Norbert Lenck, Schott Solar: "Development of UV-sourced light based on fluorescence tubes and experiences of usage in climate chambers"
- Kurt Scott, Atlas: "UV-Testing by Xenon light sources"
- Michael Köhl, Fraunhofer ISE: "UV, temperature and humidity"

*Discussion III: How favorable is combined testing?  
Is UV by Fluorescence or UV by Xenon preferable?*

### Block IV: Failure modes and effects

- Thomas Friesen, ISAAC SUPSI: "Experiences in long-term exposure (FMEA)"
- Tony Sample, JRC: "Field experiences and failure categorization as basis for FMEA"

*Discussion IV: FMEA: Opinions of manufacturers and investors.*

### Block V: Materials

- Gernot Oreski, PCCL: "Accelerated ageing of polymer material for PV-modules"
- Peter Bentz, Solarfabrik: "Standardization requirements: An industrial point of view"

*Discussion V: Do component standards make sense in general?  
Which properties have to be defined and tested? Which influence does the supply chain have on the final product?*

**Plenary discussion** with presentation of discussion results

**Optional: Visit of the outdoor exposure test site of ISAAC Supsi**