7th PV Performance Modeling Workshop Highlights

There were a number of exciting modeling results announced at this workshop, which was held on March 30-31 in Lugano, Switzerland. The workshop presentations are available on the web: https://pvpmc.sandia.gov/resources-and-events/events/2017-7th-pv-performance-modeling-workshop/

Below is a summary of a few of these.

Session 1. Energy Rating

- Workshop participants were briefed on progress being made on IEC 61853. Parts 1 and 2 have been finalized but Parts 3 and 4 have been delayed for many years. While efforts are moving ahead to finalize these parts of the standard, it was clear that there is still some uncertainty about the form of the model described in the standard (Part 3) and some disagreement on the specific locations and weather data sources listed (Part 4).
    - Ralph Gottschalg presented an overview and history of the IEC 61853 Parts 1-4
    - Stephan Winter presented a technical summary of the current plans for Part 3 and Part 4.
    - Bengt Jaeckel presented an overview and status of the EN 50380 ed. 2.0 – "Marking and documentation requirements for Photovoltaic Modules."

Session 2: PV Module Modeling

- Several presentations on new methods for calibrating PV module performance models using data reported from IEC 61853-1 and 2 were presented
    - PVsyst presented ideas for how it plans to offer users the ability to calibrate model coefficients needed by the model (PAN file) using the IEC 61853-1 data matrix.
    - NREL presented a method that converts IEC 61853-1 matrix data into single diode equivalent circuit parameters.
    - Steve Ransome presented a comparison and evaluation of empirical models for predicting energy yields.

Session 3: Cell and Module Calibration Methods and Uncertainties

- This session highlighted specific technical methods for characterizing cells and modules.
    - Ingo Kröger described PDB's differential spectral responsivity (DSR) capability.
    - Jochen Hohl Ebinger of Fraunhofer ISE discussed the methods used for characterizing cell and module AOI and temperature responses indoors.
    - Werner Herrmann of TÜV Rheinland described the energy rating methodology used at TÜV.

Session 4: Energy Prediction of New Technologies or Features

- This session focused on the modeling needs for novel PV technologies including building integrated PV (BIPV), module level power electronics (MLPV) and bifacial PV.
    - Pierluigi Bonomo of SUPSI gave a very interesting talk about BIPV and specific research projects from SUPSI.
    - Gianluca Corbellini of SUPSI discussed the capabilities of a new software applications called inSun, which can very quickly calculated 3D shading patterns and effects on PV systems.