



Sandia National Laboratories

SUPSI PVLab

U.S. DEPARTMENT OF
ENERGYPVPerformance
MODELING COLLABORATIVE

2023 European PVPMC Workshop Program (Final)

Date: November 8-9, 2023

Site: SUPSI, Mendrisio, Switzerland

Day 1 **Wednesday, November 8, 2023**

8:00 0:30 Registration Check-in

8:30 0:05 Welcome from SUPSI

Mauro Cacciò

SUPSI

8:35 0:10 Welcome from IEA PVPS Task 13 and Sandia National Laboratories

Joshua Stein

Sandia National Laboratories

Session 1

PV Yield Assessment and Uncertainty

Chair: Joshua Stein

Sandia National Laboratories

8:45 0:15 The Importance of Terrain-Shading Losses in PV Yield Assessment: The Case of Oahu

Kyle Seymour

Clean Power Research

9:00 0:15 Uncertainty in Annual Yield: Conceptual Approaches and Implementation in SAM

Clifford Hansen

Sandia National Laboratories

9:15 0:15 Analysis and Reduction of Uncertainties in Yield Assessments of Large-Scale Bifacial PV Projects

Anne Sophie Freunek

BayWa.r.e

9:30 0:15 Uncertainties of module tilt and orientation, distance between rows and albedo on photovoltaic performance modeling

Katherine Alvino

Mines Paris

9:45 0:15 Discussion

10:00 0:30 Networking Break

Session 2

Performance Analytics

Chair: Marios Theristis

Sandia National Laboratories

10:30 0:15 Introducing the Baseline Performance Reference

Anton Driesse

PV Performance Labs

10:45 0:15 In-Situ Module-Level I-V Data for PV System Diagnostics and Digital Twinning Verification

Bill Stueve

Atonometrics

11:00 0:15 Collecting datasets of PV power stations for performance analysis

Claudia Buerhop

Forschungszentrum Jülich GmbH

11:15 0:15 UAV-based decision-making and modular approach to support PV plant diagnosis using image processing with electrical data analysis

Georgios Tziolis

University of Cyprus

11:30 0:15 Data-driven predictive analytics and system monitoring workflows for streamlined utility-scale photovoltaic power plant failure diagnosis

Juergen Sutterlueti

Gantner Instruments

11:45 0:15 Discussion

12:00 1:15 Lunch

Session 3

PV Tracking

Chair: Clifford Hansen

Sandia National Laboratories

13:15 0:15 Enhancing Accuracy in Bifacial Photovoltaic Performance Modeling under Dual-Axis Tracking Constraints

Vivek Balani

Enertis Applus+

13:30 0:15 Enhancing Photovoltaic Yield through Diffuse Optimization

Maddalena Bruno

Fraunhofer ISE

13:45 0:15 Analyzing the optimal orientation of single- and dual-axis tracking PV systems

Youri Blom

TU Delft

14:00 0:15 Performance comparison of different tracking algorithms for horizontal single-axis tracking systems

Gregorio Olivares

CENER

14:15 0:15 2023 IEA PVPS Bifacial Tracking Modeling Comparison

Joshua Stein

Sandia National Laboratories

14:30 0:15 Discussion

14:45 0:30 Networking Break

Session 4

PV Applications

Chair: Mauro Cacciò

SUPSI

15:15 0:15 Offshore Floating PV - DC and AC Yield Analysis Considering Wave Effects

Alba Alcañiz Moya

TU Delft

15:30 0:15 Modelling and Validating Heat Transfer Effects in Floating PV Installations

Monica Nicola

Fraunhofer ISE

15:45 0:15 A new thermal model for ground and floating PV installations

Lukas Dvonc

Solargis

16:00	0:15	Case study of power mismatch of a bifacial PV canopy using ray-tracing model with improved sampling method	Wang Shuo	TUAS
16:15	0:15	Discussion		
16:30	0:15	Short Break		
Session 5		Tools and Applications	Chair: Clifford Hansen	
16:45	0:15	Recent and Planned Improvements to the System Advisor Model (SAM)	Brian Miretz	NREL
		A Compact, Cost-effective, and Extensible Data Collection Device for Very-Short-Term Solar Irradiance Forecasting Using All-Sky Imagery and Solar Meteorological Data	Liwenbo Zhang	University of Nottingham
17:00	0:15	CSEM all-in-one PV tools for module design and analysis	Fahradin Mujovi	CSEM
17:30	0:15	BIPV Digital Twin innovations with CAD/CAMation	Philippe Alamy	EnerBIM
17:45	0:15	Discussion		
18:00	1:30	Break before dinner		
19:30	2:00	Welcome Dinner and Reception Hosted by SUPSI (open to all participants)		



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Day 2		Thursday November 9, 2023		
8:00	0:30	Registration and Check in		
Session 6		PV Digitalization	Chair: Pierluigi Bonomo	SUPSI
8:30	0:15	Towards a Digital Twin: strategy and research for the PV industry	Lluvia Ochoa	TotalEnergies
8:45	0:15	Standardized Information Models as a base for Digital Twins	Christian Schill	Fraunhofer ISE
9:00	0:15	Loss decomposition in utility scale plants with 3E Solar Analytics	Maitheli Nikham	3E
9:15	0:15	Discussion		
9:30	0:30	Networking Break		
Session 7		PV Modeling Topics	Chair: Marios Theristis	
		Recent improvements in accuracy and interactivity of satellite-derived irradiance data, and associated validations	Michael Foley	Solcast
10:00	0:15	Simulation of Front Irradiance Sensor Mounting Position	Marc Korevaar	OTT Hydromet
10:15	0:15	Impact of local albedo variations and sensor positions on validation of simulated rear irradiance	Marie Syre Wiig	IFE
10:30	0:15	Dynamic thermal models with the Filter-EWM-MBE (FEM) correction approach	Bert Herteleer	KU Leuven
10:45	0:15	Analysis of partial shading and EY optimisations of coloured perovskite BIPVs	Daniele Braga	Fluxim
11:00	0:15	Discussion		
11:15	0:15			
Session 8		PVPMC Activities	Chair: Joshua Stein	Sandia National Laboratories
11:30	0:15	Feedback on the PVPMC blind modeling exercise of 2021	Bruno Wittmer	PVsyst
11:45	0:15	2023 PVPMC Modeling comparison	Marios Theristis	Sandia National Laboratories
12:00	0:15	Closing Remarks	Joshua Stein	Sandia National Laboratories
12:15	1:00	Lunch Break		
Session 7		PVLIB		
13:15	1:00	pvlib-python user group meeting	Cliff Hansen	
14:15	2:15	pvlib-python tutorial	Cliff Hansen, Anton Driesse, Joshua Stein, Marios Theristis	
16:30		End of Workshop		