Performance, Operation and Reliability of Photovoltaic Systems

IEA PVPS Task 13

Welcome and Introduction

Boris Farnung, Fraunhofer ISE

InterSolar, 14th May 2019, Munich, Germany

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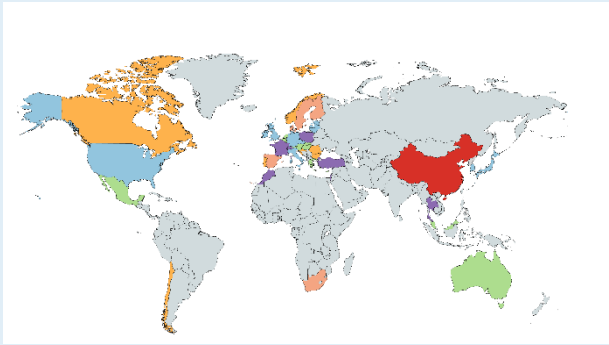
The IEA PVPS Programme

- The IEA Photovoltaic Power Systems Programme (PVPS) is one of the collaborative R&D Agreements established within the IEA
- Global network of expertise, Independent, objective, neutral
- 32 members: 27 countries, European Union, SolarPower, Smart Electric Power Alliance (SEPA), Solar Energy Industries Association (SEIA), Int. Copper Association
- Activities are carried out collaboratively on a country basis along a number of technical and non-technical subjects
- Currently, 8 Tasks are active
- Chairman: Stefan Nowak



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PVPS Task 13 Participation

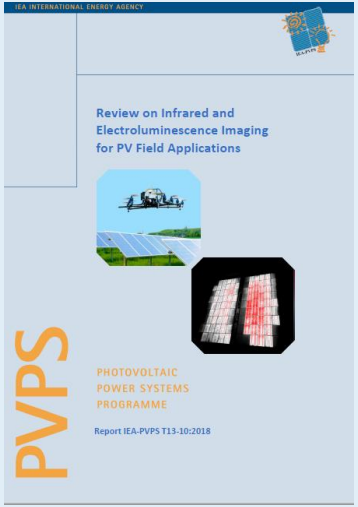
14th Task13 Meeting in Bolzano, Italy, 06-08 April 2016

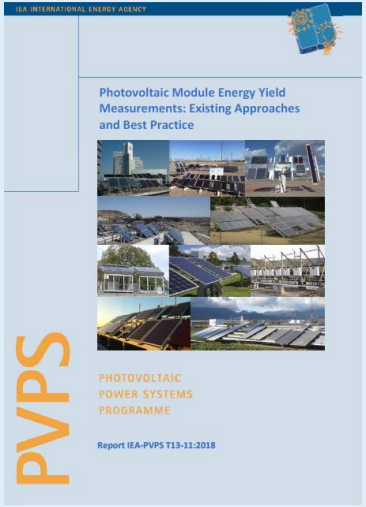
20+ IEA countries, 36+ institutions
⇒ 45 participants, 60+ members

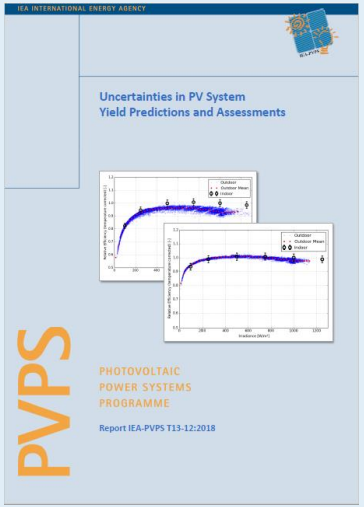
Overall Objectives of Task 13

- Gather up-to-date information on a variety of technical issues related to PV performance and reliability.
- This includes summaries of different experiences with a variety of PV technologies and system designs
- Gather measured data from PV systems from around the world to test and compare data analysis methods for PV degradation, operation & monitoring (O&M), performance and yield estimation, etc.
- Communicate to our stakeholders in a number of impactful ways including reports, workshops, webinars, and web content.

IEA PVPS Task 13 Deliverables: Published 2018







Technical Reports – Public Documents

For Download at: www.iea-pvps.org

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PVPS Task 13 Structure 2018–2021

Subtask 1: New Module Concepts and System Designs

Subtask 2: Performance of Photovoltaic Systems

Subtask 3: Monitoring - Operation & Maintenance

Subtask 4: Dissemination

- 1st period: May 2010 – April 2014
- 2nd period: Sep 2014 – Dec 2017
- **3rd period: Sep 2018 – August 2021**

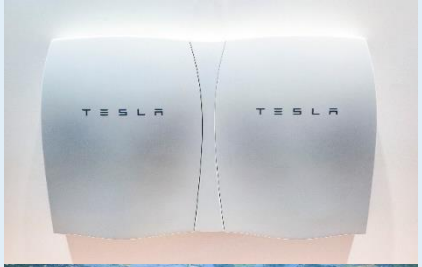
ST1: New Module Concepts and System Designs

PV Modules

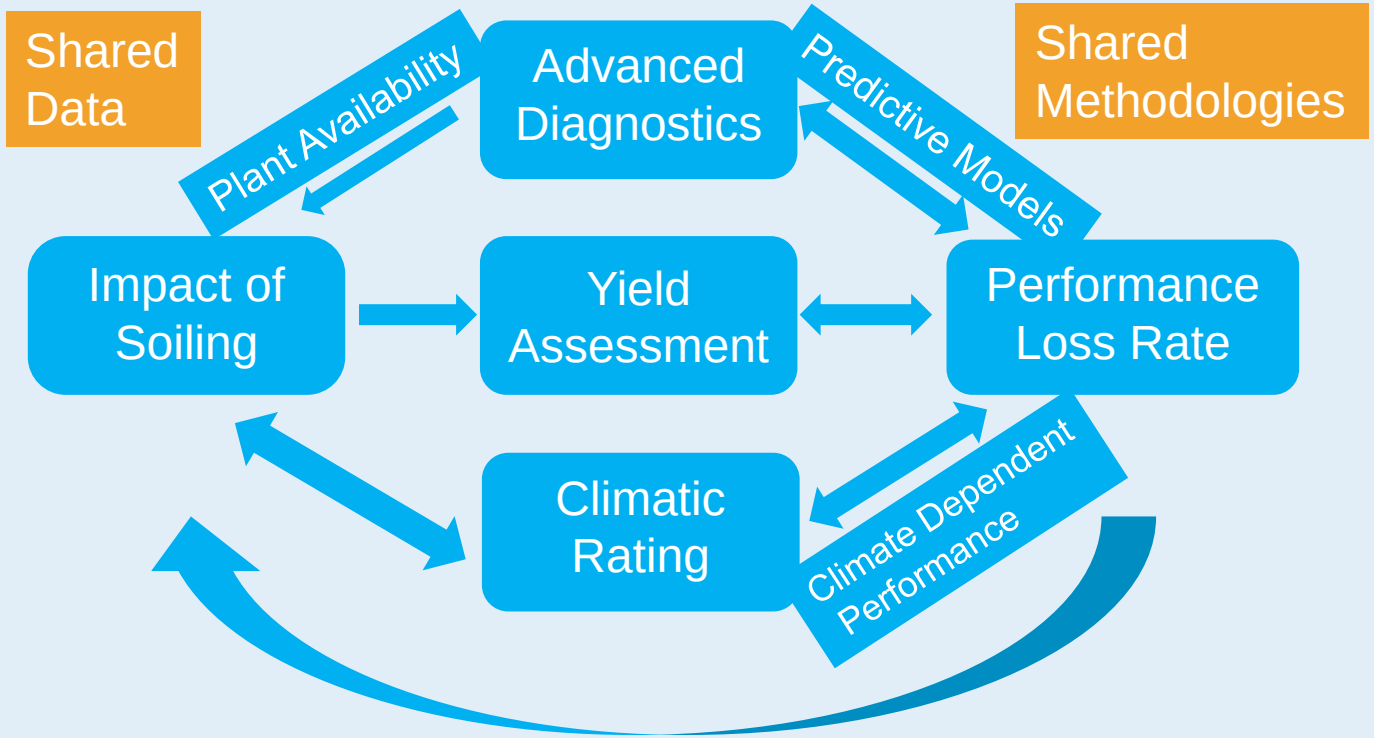
- Encapsulants, Backsheets
- Bifacial module designs
- Shingled cells, half-cell, new interconnections
- Glass-glass, frameless, Lightweight
- Coatings

PV Systems

- PV with Energy Storage or other combinations
- High DC/AC ratios and 1500+ Vdc
- Module/string-Scale Power Electronics
- Floating PV, Agriculture PV
- PV Tracking technologies and issues

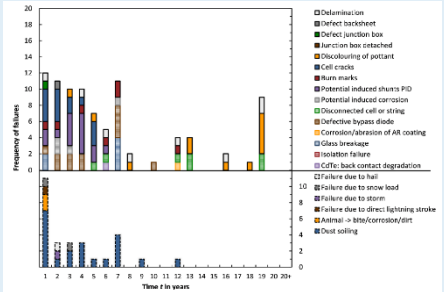


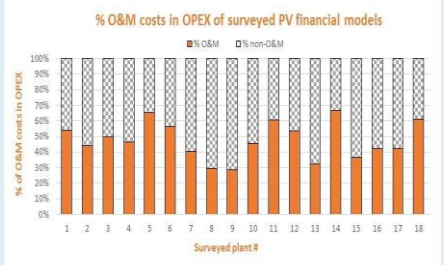
ST2: Performance of Photovoltaic Systems



ST3: Monitoring - Operation & Maintenance of PV Power Plants

- Increase the knowledge of methodologies to assess technical risks and mitigation measures in terms of economic impact and effectiveness during operation.
- Provide best practice on methods and devices to qualify PV power plants in the field.
- Compile guidelines for O&M procedures in different climates and to evaluate how effective O&M concepts will affect the quality of power plants in the field.





Maximize Performance & Reliability of PV Power Plants

Moderator: David Moser

Introduction to IEA PVPS and Task 13

Boris Farnung

From Fault Detection to Fault Avoidance: Review of the State of the Art
Mike Green

Do We Really Know how to Calculate Performance Loss Rates?
Sascha Lindig

Impact of Soiling on PV Performance: Measurements, Models, Mitigation
Christian Schill

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Best Practice Concepts for Operation & Maintenance of PV Power Plants

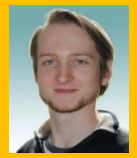
Today, at 02.30 pm, Room 14C

Moderation

Ulrike Jahn
Introduction of this IEA PVPS Task 13 Workshop

Dr. Marc Köntges
Applications and Interpretation of UV Fluorescence Imaging for PV Plants

Magnus Herz
Common Practice for Quantifying the Impact of Technical Risks During Operation



Caroline Tjengdrawira
Operation & Maintenance Guidelines in Different Climates

Panel Discussion

Edward Gillespie
Renewable Energy Assistant Underwriter, Axis Capital, United Kingdom

Mike Green
Consultant and Owners Engineer, M.G. Lightning Electrical Engineering Ltd., Israel

Ingo Klute
Publicly Certified Expert for PV Systems, PV-Experts.co, Germany

Thomas Nolden
Team Leader PV Germany, BayWa r.e. Operation Services, Germany

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