Short Introduction of IEA PVPS of Task 13

Ulrike Jahn, VDE Renewables, Germany

Performance of New System Design, 06 October, 2021

Overview

- What is IEA PVPS?
- Task activities & deliverables
- Programme outline

IEA PVPS TCP in a nutshell

- 32 members - 27 countries covering 5 continents, European Commission, 4 associations
- A truly global and unbiased network of PV expertise
- Representing main stakeholders in R&D, industry, implementation and policy
- Covering a large majority of worldwide production, applications and markets
- *Mission: "To enhance the international collaborative efforts which facilitate the role of photovoltaic solar energy as a cornerstone in the transition to sustainable energy systems"*

European Copper Institute · SEIA · SEPA · SolarPower Europe

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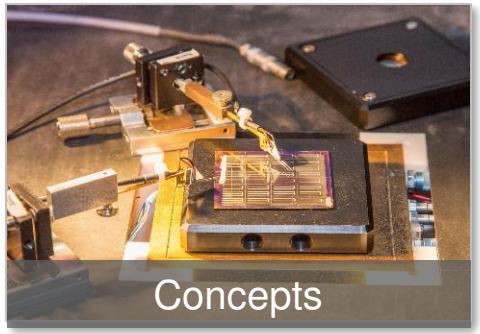
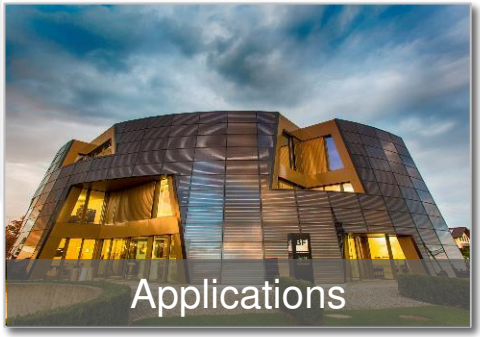
Working along the value chain





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Research | Components | Systems | Integration | Market

PVPS expertise and outreach

International Cooperation: Role and Benefits

- Look into the present and future of PV worldwide
- Identify and understand relevant issues for large scale deployment
- Collect and exchange facts and experience
- Analyse precisely and draw appropriate lessons learned
- Communicate in a clear and targeted way

- Provide sound advice to different stakeholders, including policy makers
- Accelerate the development and learning, prevent errors to be repeated
- Identify successful policy approaches and business models
- Provide long-term market, environmental and policy insights
- Expand and accelerate the deployment

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8 Active PVPS Tasks…

- Task 1 - Strategic PV Analysis and Outreach
- Task 12 - PV Sustainability
- Task 13 - Performance, Operation and Reliability of Photovoltaic Systems
- Task 14 - Solar PV in the 100% RES Power System
- Task 15 - Enabling Framework for the Acceleration of BIPV
- Task 16 - Solar Resource for High Penetration and Large-Scale Applications
- Task 17 - PV and Transport (new 2018)
- Task 18 - Off-Grid and Edge-of-Grid Photovoltaic Systems (new 2019)

… and how they address the TW challenge

- Task 1 - Understanding markets, business and policy
- Task 12 - Providing facts about PV sustainability
- Task 13 - Tracking and securing quality and reliability
- Task 14 - Preparing for 100% renewable energy systems
- Task 15 - Understanding the BIPV market and promoting its dynamics
- Task 16 - Enabling predictable PV production
- Task 17 - Studying an important new field of applications
- Task 18 - Addressing the off-grid challenges

Task Activities & Deliverables: 2018 – 2021

- Subtask 1: New Module Concepts and System Designs
  - ST 1.3 Performance of New PV System Design
- Subtask 2: Performance of Photovoltaic Systems
- Subtask 3: Monitoring - Operation & Maintenance
  - ST 3.1 Quantification of Technical Risks in PV Power Systems
  - ST 3.2 Qualification of PV Power Plants using Mobile Test Equipment
  - ST 3.3 Guidelines for O&M in Different Climates
- Subtask 4: Dissemination

Task 13: New Module Concepts and System Designs

PV Modules

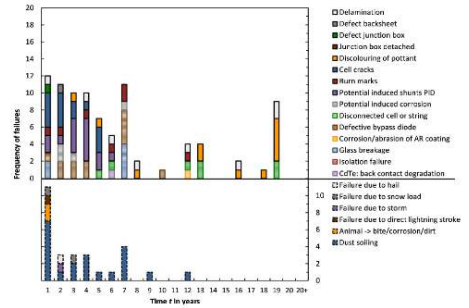
- Encapsulants, backsheets
- Bifacial module designs
- Shingled cells, half-cell, new interconnections
- Glass-glass, frameless, lightweight

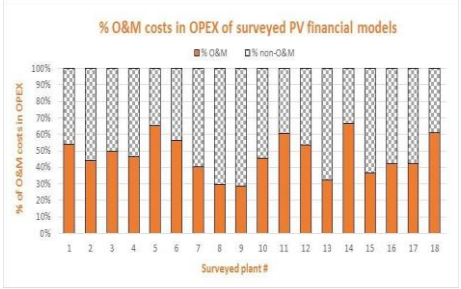
PV Systems

- 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

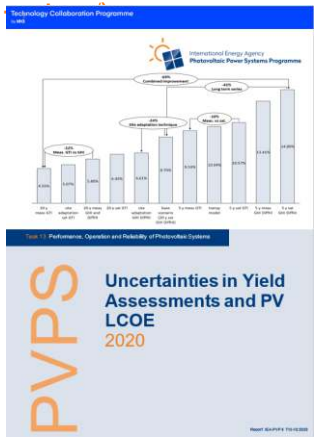
ST 3: Monitoring – Operation & Maintenance of PV Power Plants

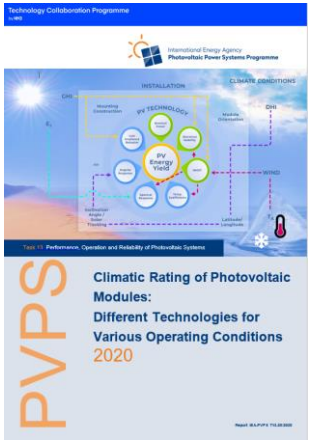
- Increase the knowledge of methodologies to assess technical risks and mitigation measures in terms of economic impact and effectiveness during operation.
- Provide best practice on methods and devices to qualify PV power plants in the field.
- Compile guidelines for O&M procedures in different climates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

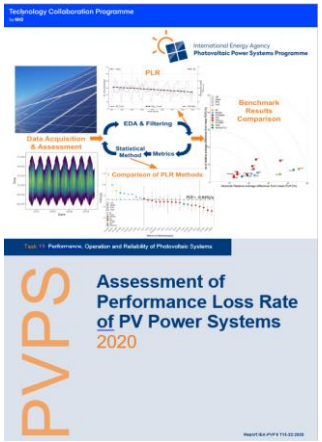


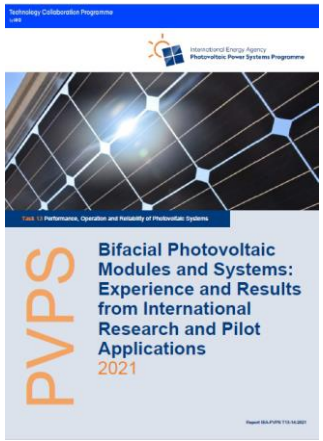


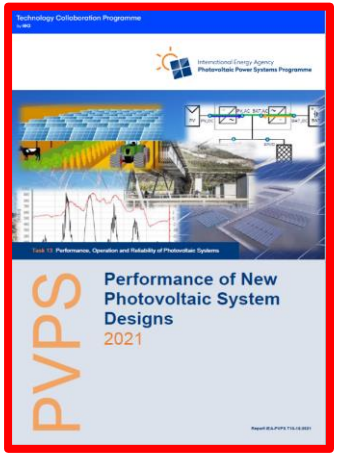
Technical Reports (https://iea-pvps.org/research-tasks/performance-operation-and-reliability-of-photovoltaic)

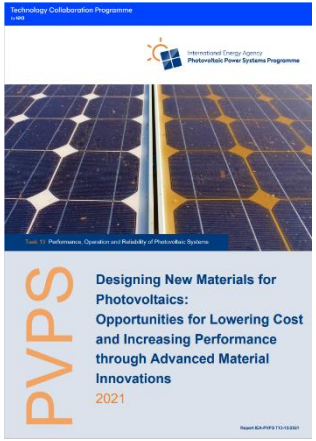


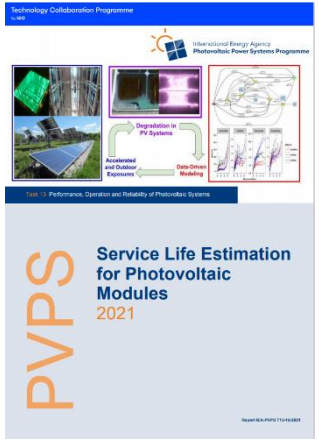


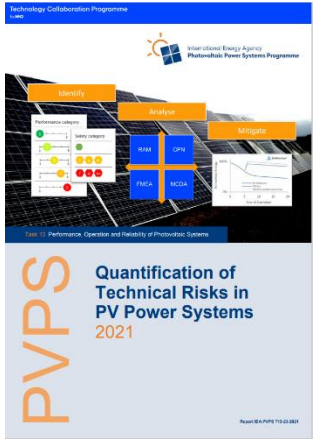


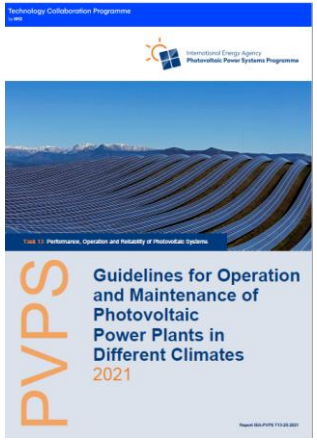












Performance of New System Designs

Our speakers of today

Ulrike Jahn
Introduction of IEA PVPS Task 13

Marc Köntges
Using a Dynamic System Model to Characterize a Complex PV System

Cyril Allenspach, Dan Riley
Performance Assessment of MLPE Equipped PV modules & Performance rating of shaded PV systems

Boris Farnung
Performance and Reliability of Floating PV Technology

Franz Baumgartner
Performance Indices for Double Use Installations of Foldable PV Generators

Wrap-up of this Workshop

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https://iea-pvps.org/research-tasks/performance-operation-and-reliability-of-photovoltaic

Thank you

Ulrike Jahn, IEA PVPS Task 13 Manager
ulrike.jahn@vde.com