



Short Introduction of IEA PVPS of Task 13

Ulrike Jahn, VDE Renewables, Germany

From Bankability to Reliability, 26 September, 2022



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

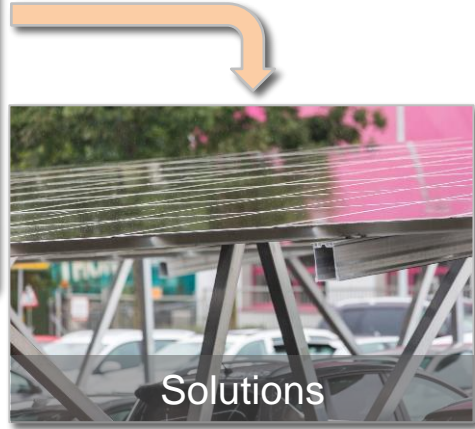
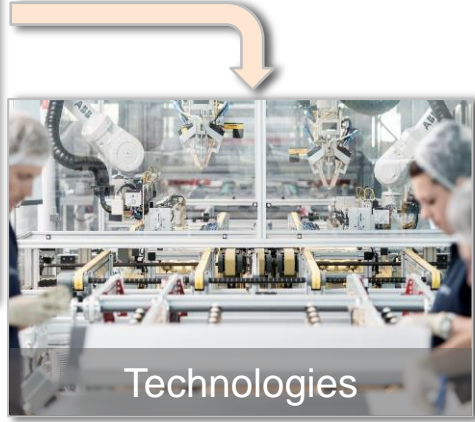
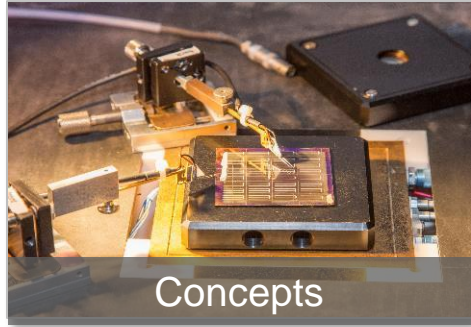
IEA PVPS TCP in a nutshell



- 31 members - 26 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”*



Working along the value chain



PVPS



← PVPS expertise and outreach →

8 Active PVPS Tasks...

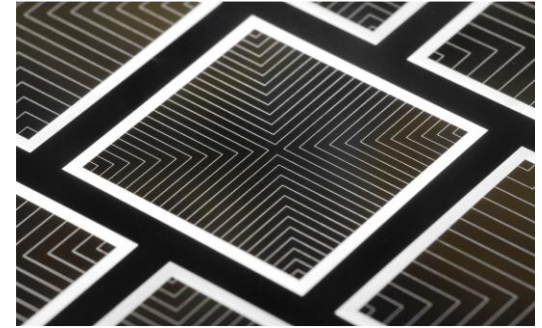


- Task 01 – Strategic PV Analysis & Outreach
- Task 12 – PV Sustainability
- **Task 13 – Reliability and Performance of PV Systems**
- Task 14 – High Penetration of PV Systems in Electricity Grids
- Task 15 – Enabling Framework for the Development of BIPV
- Task 16 – Solar Resource for High Penetration and Large-Scale Applications
- Task 17 – PV for Transport
- Task 18 – Off-Grid and Edge-of-Grid Photovoltaic Systems



PV Cells and Modules

- Degradations modes of new backsheet materials
- Degradation modes in new cell and module technology
- Impact of testing strategies under specific load conditions
- Review of PV module repair strategies
- Re-qualification & standardization of 2nd life PV



PV + Storage Systems

- Application-specific performance and degradation
- Estimating lifetime of PV + storage systems
- Guidelines for O&M of PV + storage systems
- Cost estimations for O&M of PV + storage systems



Task 13: Performance and Durability of PV Applications (ST2)



PV Applications

- Floating PV performance (modelling vs. real data)
- Floating PV - Degradation modes and PLR
- Agri PV: Performance of dual land use
- Bifacial PV tracking systems: Performance modelling
- Bifacial PV tracking for optimal performance and cost



PV Integration

- Digital integration of PV systems from design to O&M
- Digital twinning of PV power plants
- Module Level Power Electronics (MLPE) in PV systems
- Performance comparison of MLPE vs. string inverter



Task 13: Techno-Economic Key Performance Indicators (ST3)

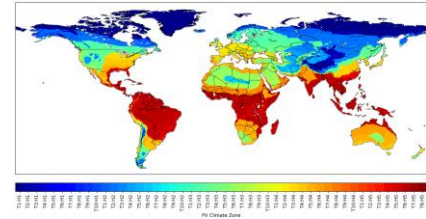


Overview and Assessment of

- Extreme weather events and impact on KPIs
- Diagnostics, repair and mitigation strategies
- Best performing technologies for climatic conditions
- Guidelines for module selection and system design

Mapping of PV economic KPIs

- Decision matrix of KPIs along the value chain
- Develop best practice flowcharts for PV projects
- Analysis of large-scale impact on reliability KPIs
- Visualization of techno-economic KPIs and global mapping



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



Technology Collaboration Programme
Task 11

Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Uncertainties in Yield Assessments and PV LCOE 2020**

Report IEA-PVPS T11-02-2020

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Climatic Rating of Photovoltaic Modules: Different Technologies for Various Operating Conditions 2020**

Report IEA-PVPS T11-03-2020

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Assessment of Performance Loss Rate of PV Power Systems 2020**

Report IEA-PVPS T11-03-2020

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Bifacial Photovoltaic Modules and Systems: Experience and Results from International Research and Pilot Applications 2021**

Report IEA-PVPS T11-04-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Performance of New Photovoltaic System Designs 2021**

Report IEA-PVPS T11-05-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Designing New Materials for Photovoltaics: Opportunities for Lowering Cost and Increasing Performance through Advanced Material Innovations 2021**

Report IEA-PVPS T11-06-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Qualification of Photovoltaic (PV) Power Plants using Mobile Test Equipment 2021**

Report IEA-PVPS T11-07-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Service Life Estimation for Photovoltaic Modules 2021**

Report IEA-PVPS T11-08-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Quantification of Technical Risks in PV Power Systems 2021**

Report IEA-PVPS T11-09-2021

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Figure 11: Performance, Operation and Reliability of Photovoltaic Systems

PVPS **Guidelines for Operation and Maintenance of Photovoltaic Power Plants in Different Climates 2021**

Report IEA-PVPS T11-10-2021



Our speakers of today

Ulrike Jahn

Introduction of IEA PVPS Task 13



Karl-Anders Weiß

Reliability for New Applications



David Moser

Yield Assessments and Performance
Loss Rates of PV Power Systems



Franz Baumgartner

Will PV optimizer lead to optimum solar
output at light shading conditions?



Christian Schill

Soiling Losses – Impact on the
Performance of PV Power Plants



Panel Discussion:

From Bankability to Reliability

iea-pvps.org

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

Meet us during this conference at Booth A5 (PVPS)

Ulrike Jahn
IEA PVPS Task 13 Manager
ulrike.jahn2@vde.com

