



Short Introduction of IEA PVPS of Task 13

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Focus Workshop on O&M, 30 September, 2021



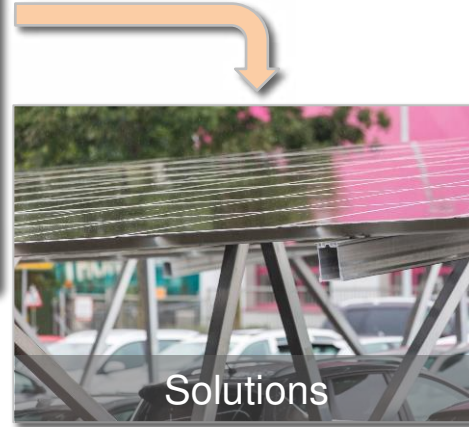
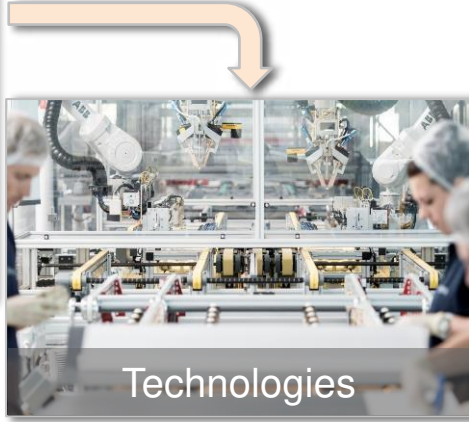
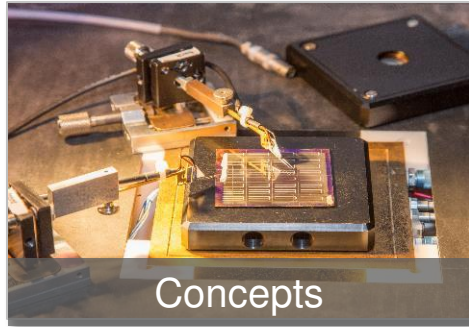
- What is IEA PVPS?
- Task activities & deliverables
- Programme outline



- 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”*



Working along the value chain



PVPS

Research

Components

Systems

Integration

Market

PVPS expertise and outreach



- 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

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

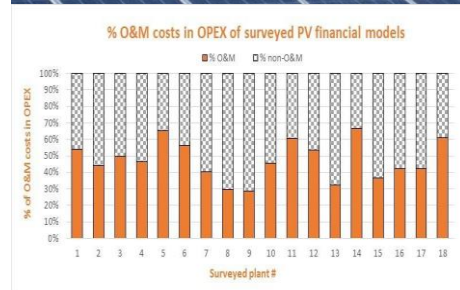
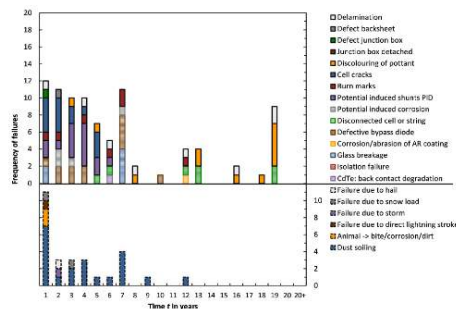


- Subtask 1: New Module Concepts and System Designs
- Subtask 2: Performance of Photovoltaic Systems
 - ST 2.4 Impact of Soiling on PV System Performance and Reliability
- Subtask 3: Monitoring - Operation & Maintenance
 - ST 3.1 Quantification of Technical Risks in PV Power Systems
 - ST 3.2 Qualification of PV Power Plants using Mobile Test Equipment
 - ST 3.3 Guidelines for O&M in Different Climates
- Subtask 4: Dissemination

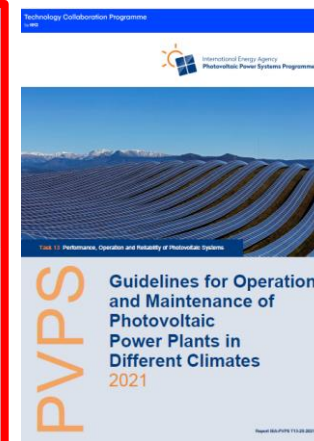
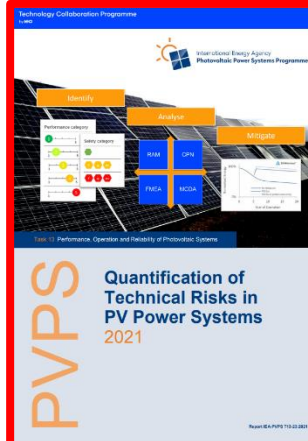
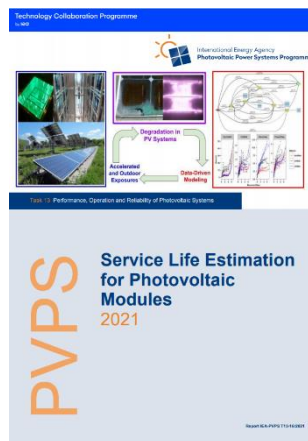
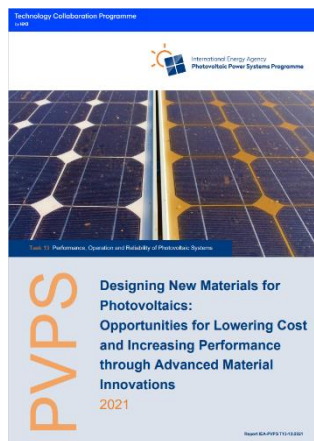
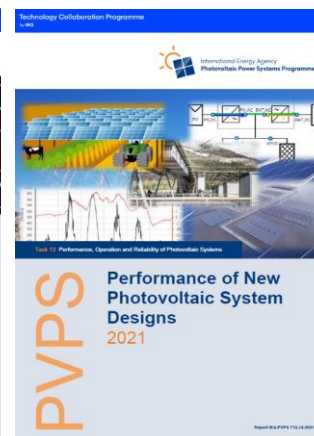
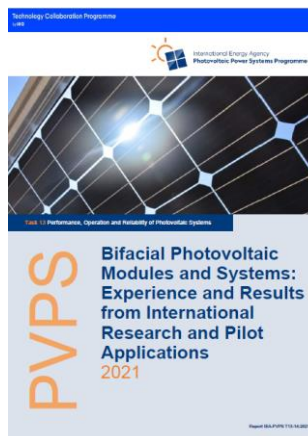
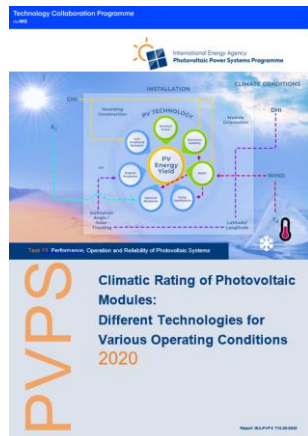
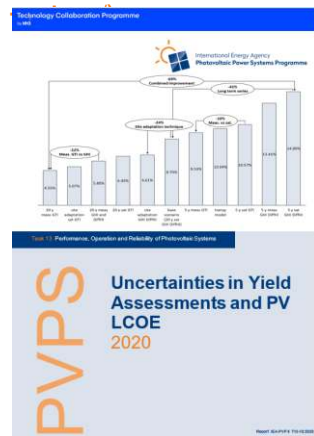
ST 3: Monitoring – Operation & Maintenance of PV Power Plants



- 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.



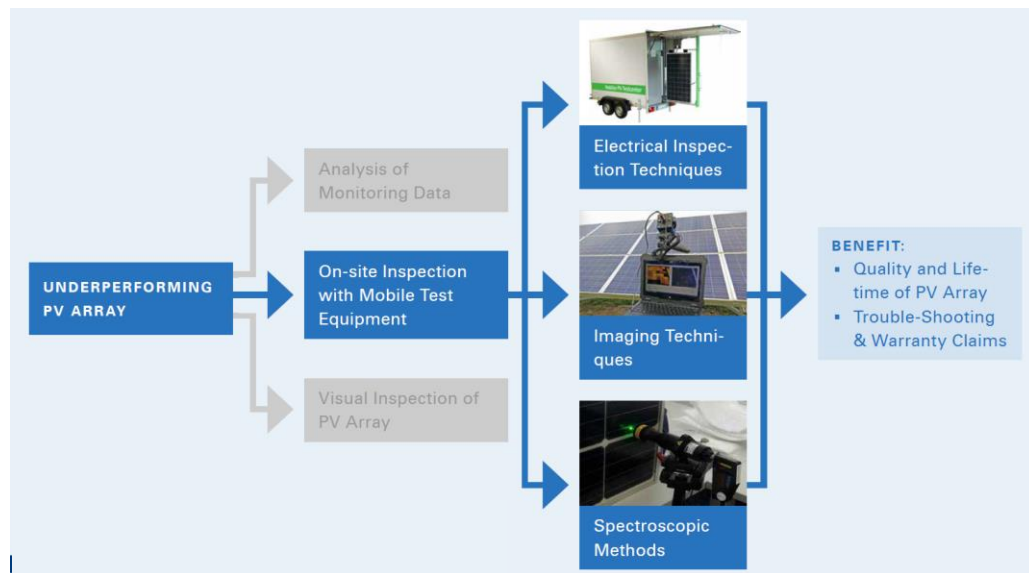
Technical Reports (<https://iea-pvps.org/research-tasks/performance-operation-and-reliability-of-photovoltaic>)



ST 3.2 Motivation for using Mobile Test Equipment in PV Power Plants



- On-site inspection methods are helpful tools to identify the drivers for underperforming PV power plants.
- **Particular strength:** Tests can be performed without dismantling PV modules and shipping them to a test laboratory ⇒ avoid transport risks and long PV systems down time.
- On-site inspection allows a **targeted failure analysis** by selecting suitable test methods from:
 - Electrical inspection techniques
 - Imaging techniques
 - Spectroscopic methods



ST3.1 Quantification of Technical Risks in PV Power Systems



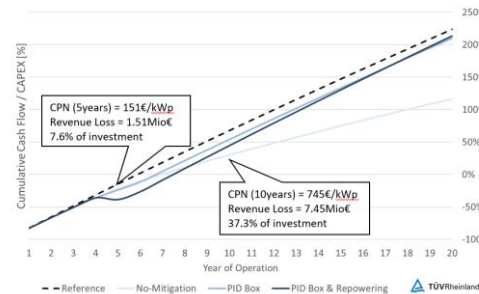
Assess the economic impact of risks and the effectiveness of mitigation measures

Overview of O&M measures

Costs of O&M measures

Strengths and weaknesses

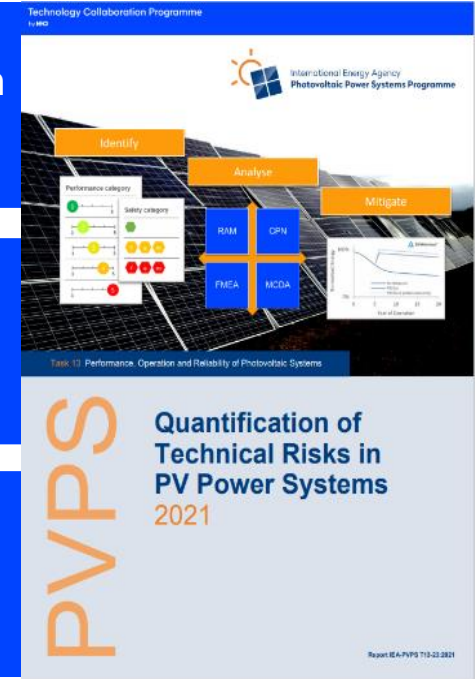
Quantification of the effectiveness



Common Practice

Risk Analysis

Cost-Benefit Analysis





Focus Workshop on Operation & Maintenance

Ulrike Jahn

Introduction of IEA PVPS Task 13



Werner Herrmann

Qualification of PV Power Plants using Mobile Test Equipment



Ioannis Tsanakas

Aerial Inspections for Optimized O&M and Diagnostics of PV Plants



Christian Schill

Soiling Issues for O&M of PV Plants



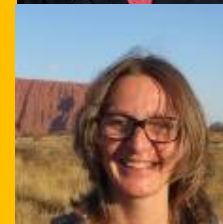
Erin Whitney

Snow Losses in PV Arrays at High Latitudes



Gabi Friesen

PV Failure Fact Sheets (PVFS)





Focus Workshop on Operation & Maintenance

Christian Reetz

Optimize O&M - New Webtool for
Data Monitoring and Analysis



Christian Reise

PV Module Benchmarking -
an Outlook



Anna Heimsath

Panel Discussion of Lessons Learnt
for O&M of PV Power Plants



Panel Discussion:

- **David Moser, EURAC (Remote)**
- **Bert Herteleer, KU Leuven**
- **Christian Reetz, Mondas**
- **Jonas Brückner, VDE Renewables**

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

Thank you

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