

## Welcome to PERFORMANCE IP

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**European Commission DG JRC**

## AIM of The Project

### Understanding of

- PV device testing methods
- PV module and system performance
- PV module and system stability

### for increased

- - transparency for all market actors
- - confidence and planning reliability

## Approach of the Project

Cover a long section of the value chain:

from cells to systems

Harmonise between labs and industry, provide traceability  
from power to energy

Cover 9 orders of magnitude in space: from cm shading  
effects to performance prediction for every place in  
Europe

Cover 8 orders of magnitude in time: from seconds (e.g.  
inverter clipping) to life-time effects (ageing)

## Justification

There is much knowledge on measurement and testing  
procedures as well as PV performance prediction and  
assessment, but

- it is not integrated along the dimensions mentioned
- it is not implemented in real life
- it is not sufficient for industry and market needs in a  
multi gigawatt market

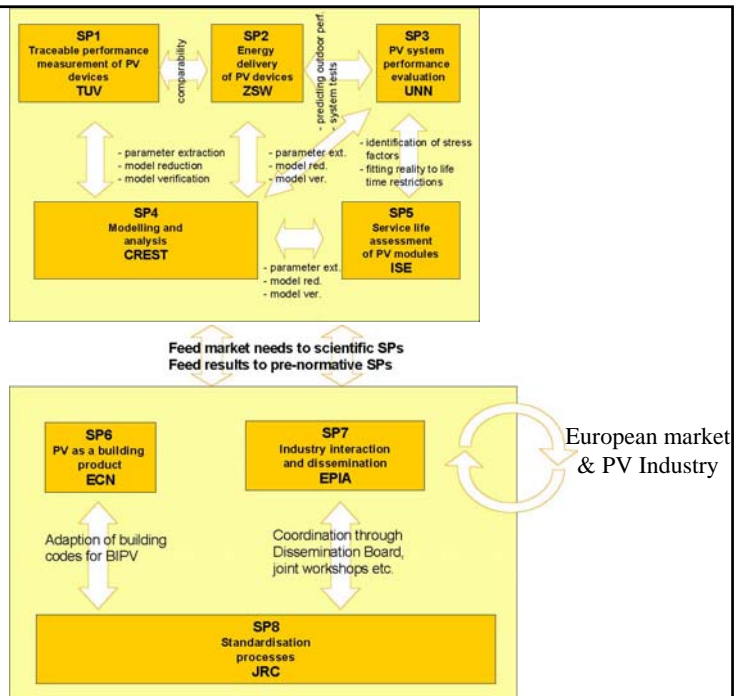
PERFORMANCE will be a project with a profound and  
large scientific core, serving the market's need for  
transparency, confidence and planning reliability

## Sub Projects

- 1: Indoor PV device calibration
- 2: Outdoor PV module performance
- 3: PV system performance evaluation
- 4: Modelling and analysis
- 5: Service life assessment of PV modules
- 6: Building integration special issues
- 7: Industry feedback loops
- 8: Standardization process



## Project Structure



## Performance Project Data

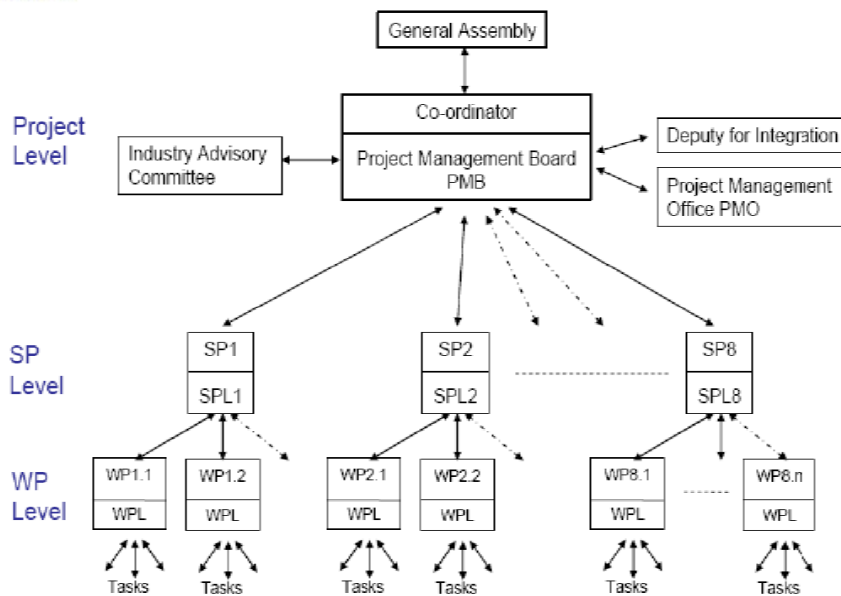
- Number of partners: 28
- Total costs: 11,810,000 €
- EC contribution: 7,000,000 €
- Project starting date: Jan. 1st, 2006

## Project Partners

Fraunhofer ISE, Freiburg, DE  
PSE, Freiburg, DE  
EPIA, Brussels, BE  
CIEMAT, Madrid, ES  
WrUT, Wroclaw, PL  
Joint Research Centre, Ispra, IT  
TÜV, Cologne, DE  
ECN, Petten, NL  
CREST, Loughborough University, UK  
CEA-GENEC, Cadarache, FR  
SUPSI-TISO, Canobbio, CH  
UNN-NPAC, Newcastle, UK  
ZSW, Stuttgart, DE  
Isofotón, Malaga, ES

## Project Partners

*Shell Solar, München, DE*  
 Phönix Sonnenstrom, Sulzemoos, DE  
 Conergy, Hamburg, DE  
 RWE Schott Solar, Alzenau, DE  
 Scheuten Solar Systems, Venlo, NL  
 Arsenal, Wien, AT  
 Ben Gurion Univ., Beer Sheva, IL  
 Tallin Univ., Tallin, EE  
 MeteoControl, Augsburg, DE  
 FH Magdeburg, Magdeburg, DE  
 SP, Boras, SE  
 PCCL, Leoben, AT  
 Ecofys, Utrecht, NL  
 IT Power, Basingstoke, UK



## SP8: Standardisation Process

### Objectives

- To obtain from organised meetings, workshops and surveys the understanding of the needs of the market players and stakeholders in the full implementation chain of photovoltaic solar electricity. **“covering the entire spectrum of the performance of photovoltaics in order to improve the competitiveness of European Industry”**
- To create the appropriate communication from the identified needs of the stakeholders industries through the research of the technical work packages (WP 1 to WP 6) and convert/interpret this in to an appropriate form for international standardisation, normalisation or guidelines. **“Bring the right people together”**
- To provide the bridge between the international standards bodies and the individual sub projects within this project. The key goal is to communicate between ongoing activities in the standards committees and the activities of the pre-normative research teams in this project to coordinate not only the research of current interest but to guide the introduction of new work proposal to the standards committees. **“Bridge the gap between needs, solutions and standards”**

## What do we need to go forward

- Clear problem areas where the R& D effort can be focused
- Industry survey



2. Where do you perceive missing or unclear issues where standards norms or guidelines could improve industrial competitiveness and enhance end user confidence?

General area	Specific issue	Example	Comments
e.g. 1. No clear indication for system voltage sizing	Where to target system voltages to improve cross compatibility	Customer wants to include several different power conditioning units	Industry guide or agreement of voltage bands to harmonise power conditioning choices
Eg. 2 Module power in operating condition ,	What is the power in a given mounting integration conditions	System includes , roof integrated open rack and façade elements what is power output expected	Test at present foresee only performance at NOCT open rack , further standard performance data is needed for other installations

