



Training Seminar

Best Practices for Power Measurement of Photovoltaic Devices

Organised by the
European Commission Joint Research Centre, as part of the
SOPHIA European Photovoltaic Research Infrastructure Coordination Action
3-4 July 2014, Ispra, Italy

Scope:

Explain the basics of precision power measurement techniques for PV modules and introduce the current best practice approaches for a range of technologies including thin film, multi-junction, OPV/DSSC and concentrator devices. The presentations (see programme below) will be given by senior ESTI staff as well as experts from other [SOPHIA](#) labs. They will be accompanied by a series of measurement demonstrations in the JRC's **European Solar Test Installation Laboratory** ([ESTI](#)).

Location:

European Commission Joint Research Centre, Ispra, Italy

Who should attend?

Scientists/engineers from industry or from institutional or academic organisations, who are working on PV and who wish to learn more about specialised power measurement and calibration techniques.

Fee:

There is no fee.



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Registration:

Prospective participants are invited to email esti.services@jrc.ec.europa.eu stating:

- Name
- Organisation and role
- Work address
- Brief reason for interest in the training seminar.

The initial deadline is 16 April 2014. There is a limit of 40 places. In the case of over-subscription, priority will be given to those in the target group. Participation will be confirmed by 30 April 2014. The confirmed participants will then need to register on the JRC events management system for security clearance.

Any remaining open places will be allocated on a first-come first-served basis.

Training materials:

Participants will receive copies of the presentations in digital form.

Accommodation and travel:

In principle, participants will be responsible for their own accommodation and travel arrangements. We are exploring possibilities for a block booking at a nearby hotel with a bus service to and from the JRC.



Programme: Training Seminar on Best Practices for Power Measurement of Photovoltaic Devices

Thursday, 3 July 2014

- 09:30 Welcome & Intro
- 09:45 I-V measurement techniques and equipment
Irradiation sources
- 10:45 *Break/Refreshments*
- 11:15 Traceability (from primary international references
to production standards, including spectral
traceability)
- 12:00 Spectral responsivity and mismatch (standard
lamps, spectroradiometry, multijunction modules)
- 13:00 *Lunch*
- 14:00 ESTI visit and demonstrations: flash simulators, steady state simulators, natural
sunlight measurements, spectral responsivity and temperature coefficient.
- 16:15 *Break/Refreshments*
- 16:45 PV Standards: current situation and developments
- 17:30 End Day 1

Friday, 4 July 2014

- 09:00 Uncertainty analysis: worked example
- 10:00 Measurement issues with organic and DSSC
devices
- 10:30 Calibration of low/high concentrator modules
- 11:00 *Break/Refreshments*
- 11:30 Getting from power to energy yield
- 12:00 From cal lab to production line
- 12:30 Closing remarks
- 13:00 *Lunch & Departure*