

ESTI Reloaded

The European Solar Test Installation

ESTI

The European Solar Test Installation (ESTI) is a European reference laboratory for the verification of the power and energy generation of photovoltaic devices.

ESTI is located at the JRC's Ispra site in Italy. It has been at the forefront of developing standards for electrical performance of PV products since its launch in the late 1970s.

ESTI's work supports the EU's renewable energy policy (Directive 2009/28/EC) and the European Strategic Energy Technology Plan (SET-Plan).

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What's new?

After a major modernisation project, the upgraded laboratories were officially opened in 2013. The unique range of class AAA solar simulators for precision cell and module power measurements now includes:

- Wacom and Sciencetech continuous solar simulators for areas of up to 30 cm x 30 cm;
- Oriel simulator for spectral response;
- Science tech. high intensity simulator (up to more than 500 suns) for concentrator devices;
- Pasan IIIB large area pulsed simulator;
- Pasan IIA simulator dedicated to module spectral response and temperature coefficient measurements;
- Apollo large area steady state simulator in a dedicated darkroom (2 m x 2 m test area);
- Spi-Sun large area long-pulse (80 ms) simulator.

ESTI also operates outdoor facilities for

- Flat-plate module and CPV calibrations,
- NOCT tests,
- Energy rating tests,
- Long-term exposure tests

Traceability

ESTI is accredited for three methods. The global sunlight method and the direct sunlight method transfer the irradiance calibration from two cavity radiometers, which are calibrated every five years against the World Radiometric Reference. This ensures the results can be related to a reference through a documented unbroken chain of calibrations. The solar simulator method makes reference to the international irradiance scale, as represented by a standard lamp.

Accreditation

ESTI is accredited to issue calibration certificates for PV devices by the Italian national body Accredia.

Contribution to Standards

ESTI has a Type "A" Liaison with the International Electrotechnical Commission and contributes extensively to Technical Committee 82 (photovoltaics). For Cenelec, ESTI staff act as the Commission's technical representative (non-voting) to the committees dealing with European norms for photovoltaics.

In-house R&D

As part of the JRC's institutional work programme, ESTI staff address issues such as power calibration standards for high efficiency silicon, thin film, concentrated PV, organic PV and other emerging products; extension of lifetime up to 40 years and procedures for economic energy output.

Services

- a) Free-of-charge calibration of reference devices for national laboratories and verification on request of technologies developed in EU programmes.
- b) Collaborative research with industrial partners on new materials and/or concepts to promote European competitiveness and improved standards.
- c) Funded R&D in shared-cost European programmes.
- d) Commercial calibration service for external customers, focusing on new technologies and respecting subsidiarity principles. A pricelist is available on request.

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