



Module & System Performance

European Commission Joint Research Centre

European Solar Test Installation (ESTI)

Location of the infrastructure :

Ispra (VA), Italy

<http://re.jrc.ec.europa.eu/esti>

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Objectives :

- Development of energy yield and rating methods for emerging PV technologies

Main features :

ESTI is a European reference laboratory for the verification of the power and energy generation of advanced photovoltaic devices through the development of experimental methods suitable for international standardisation.

Concerning energy yield and energy rating, ESTI's approach uses:

- solar radiation and temperature data, as modelled in the geographical information system PVGIS,
- a "performance surface" model for the conversion efficiency of specific PV module types, with the module temperature and incident irradiance as independent variables.

The energy yield models are also implemented in the JRC PV-GIS system to provide location-specific yield estimates in Europe and Africa.

The experimental facilities include a dedicated module test stand with high frequency monitoring of performance data and I-V characteristics.

ESTI staff have been at the forefront of this area for several years, in the Performance projects and in IEC TC-82's WG2, which is developing the IEC 61853 energy rating standard.

Limitations or constraints :

Users would assist in the performance of a focussed series of experiments and analysis following an agreed programme. They would be supported by experienced ESTI scientists and technicians.

Within certain limits, users' costs for travel and subsistence may be covered by the JRC

Typical services or results :

- Generate the power (Pmax) matrix as per IEC 61853-1
- Studies on linearity and stability of given technologies
- Experimental sensitivity studies
- Data analysis of new and existing data sets

Examples of research projects :

As above