

Location of the infrastructure :

Petten, the Netherlands

<http://www.ecn.nl/solar>

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Objectives :

IV measurements for the characterization of the modules at outdoor conditions.

Main features :

Outdoor IV test benches

- The IV-tracer set-up allows module designers to keep track of their own module's IV characteristics over elongated periods of time in Petten's marine environment, i.e., temperature mild with high salinity and moisture rate for various technologies.
- Currently the IV curves can be measured of 14 modules (<300 Wp/module) at the same time, in Q1 of 2012 the capacity will be extended with a system for 8 modules (<500 Wp/module).
IV curves are scanned every 10 minute during 1 s (100 datapoints). In between the measurement, the module is kept at Pmpp. The irradiance is measured by inplane x-Si reference cells (with and without KG3 filter) and pyranometers (inplane and horizontal). The temperature is measured at the back of each module and of the surroundings. From the IV curves the characteristic values of the modules are derived (Isc, Voc, Impp, Vmpp, Pmpp, FF). At least one of the channels will be available for the Sophia project.



Prior and after the out-door test, the modules can be optionally characterized by IV-flash with a Pasan IIIb (max 2x3 m, class AAA) under STC conditions and/or EL and DLIT for detailed analysis

Limitations or constraints :

The access of the facilities will only be allowed with technical and scientific assistance from ECN.

Typical services or results :

Support will be given for the definition of the experiment. Standard results are:

- IV curves and derived data (Pmpp, Isc, Voc, FF) in time
- Module characteristics, such as temperature corrected values of
 - Pmpp, Isc Voc and FF in time for various irradiation levels
 - Pmpp, Isc and efficiency as function of the irradiation

Support can be given for the analysis of the data. On request other parameters can be derived from the data, such as the temperature coefficient of Pmpp for different irradiation levels.

Examples of research projects :

Various projects are carried out for industrial partners and other research institutes.