

Location of the infrastructure : Vienna, "48.269N, 16.427E"
Austria

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Objectives :

I-V curves measurement, Precise power determination at STC
Improvements in performance, power and aging behavior can be achieved by multiple R&D-methods.

Main features :
1. Indoor Performance measurement

- Three solar simulators including:
 1. Class AAA solar simulator (pulsed), conforming to the requirements of EN 60904-9 with maximum size of the PV-modules: 220 cm x 150 cm ($\pm 2\%$)
 2. Class BAA solar simulator (Steady state), test area 8m² ($\pm 10\%$)
 3. Class AAA: maximum test field 30 x 30 cm²
Class ABA: maximum test field 55 x 55 cm² Steady States Sun Simulator according to EN 60904-9 for measuring cells or mini modules

The set-ups are used for IV measurements and precise power determination.

Special pre-treatment installations combined with flasher measurements enable the metastability behaviour analysis of emerging technologies with the scope of irradiance and temperature influences.

The test sample temperature inside the pulsed sun simulator can be changed between 5 and 65°C, as a result precise temperature coefficient measurements can be performed. Different slide-in meshes can be used to achieve low irradiance.


2. Outdoor Measurements

- The test bench is located in Vienna. Outdoor test facilities and especially 2-axial solar tracker for performance tests and NOCT measurements are available.
- For monitoring purposes every five seconds the I-V-curves are measured. Between two successive measurements the PV modules are at Uoc. In addition, the irradiance on module level and the rear module surface temperature as well as the field meteorological data are measured and recorded in the same time stamp (5 seconds).
- All instant measurements are sent through network storage in order to be processed on PC. A ten-minutes average is calculated and it will be available for the customer. The data are available as ASCII files. The period of measurement is at least one year.



Limitations or constraints :

The access will be allowed with technical and scientific assistance from AIT.

Typical services or results :

These test benches can be used for the following applications:

- Power measurements under STC, NOCT or other conditions, Temperature range between 5-65°C and irradiance 200-1100 W/m²,
- Monitoring and aging behavior
- Metastability behavior of emerging technologies.
- Characterisation methods e.g. Electroluminescence, IR-Thermography are available for detailed analysis

AIT researchers provide users with scientific assistance for defining the experiment and analyzing the results. Users can use their own tool to validate their data.

Examples of research projects :

- Metastability behavior analysis
- Harmonisation of IV tracing methods and relevant data format
- Round robin measurement with an accredited test institute with years of experience in IV tracing and measurements