Outdoor Test Facility

outdoor performance analysis

The Outdoor Test Facility (OTF) from Gantner Instruments provides all required data sets for an easy and accurate validation and technology comparison of your PV module. The OTF solution measures all parameters for energy yield, low light behavior and thermal coefficients for any PV technology in order to create track record data and bankability support.

## Who will benefit from the Outdoor Test Facility?

- Real PV Module behavior is essential for PV module producers, system integrators, insurance companies, banks, investors, R&D departments and others which want to understand and verify PV technology behavior.

Key advantages:

- Real outdoor performance analysis of PV Modules (e.g. energy yield, performance factor PF, temperature coefficients, low light behavior, NOCT, AOI effects)

- Best method to secure your bankability at PV power plants (warranty, insurance, predictions, safety, product quality) and track record with highest data quality

- Enables optimized O&M concepts for large plants an real time performance prediction (dust impact, cleaning strategy, site assessments ..)

- Comparison of module performance with simulation tools for your PV projects or preliminary studies

- Separate spectral influence, seasonal and degradation changes

- Loss Factors Model (LFM)
  The LFM determines a module's performance from its I-V curve simply as the product of five physically significant and independent normalized "loss factors" as well as spectral and temperature corrections.

Analysis Functions:

- Typical Energy yield parameters like performance ratio dc (PRdc), Energy Yield (YA), Reference Yield (YR), sun hours per year etc.

- PV Module performance over the day/month/year for fixed, tracked installations,

- Benchmarking, validate tracking benefits, Long term trends, fault finding

- Thermal behavior (insulation, TC), low light behavior, seasonal variation, LID effects

- Morning/evening behavior, Angle of incidence (AOI) effects, Spectral sensitivity

- Weather types

- Validation of Simulation functions (e.g. PV Syst, PV_Lib Functions) and modelling data sets, e.g. 1Diode parameters, Loss Factor Model (LFM) coefficients - site independent

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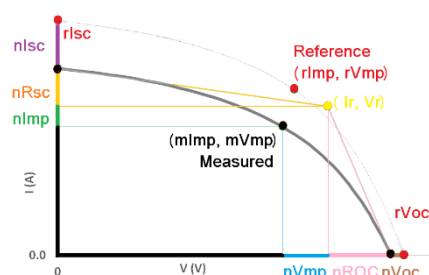
Hardware and Software Key features - to get the DNA of your PV Module

- Measurement range: V: 0….60V, I: 0 … 50A, Pmax: 400W (800W max.)

- 24bit resolution with high galvanic isolation voltage (1200 VDC permanent)

- Fast & high accuracy digitalization, 50 kHz sample rate per channel, accuracy 0.01 % typical

- Fast response time: (10…100%): 30us

- Dynamic sweep time and scan interval (from seconds to hours)

- Different tracking modes between IV scans: Mpp, Voc, Isc

- Fully synchronized scan concept for maximum comparability between different PV Modules and sensors - resulting in highest accuracy for PV module comparisons)

- On the fly calculation of all key parameters Isc, Rsc, Imp, Vmp, Roc, Voc; all multiplied together shows PRdc

- Data is stored in a high performance data base, allows real time performance prediction and enables optimized O&M concepts for large plants

- Optional Outdoor spectroradiometer for understanding the spectral influence

- Four wire concept to eliminate cable influence and Ohmic losses

- Reliable and proven industry components and calibrated sensors (reference cells, pyranometer)

- Data is stored in a high performance data base

- Enclosure Indoor or Outdoor IP54 Air conditioned cabinet