

INDEPENDENT EXPERTS MEASURE YOUR PV MODULES

Detailed reports about real operating behavior to safeguard your investment



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Sample Evaluation Results

- > Yield comparison of different PV module technologies (i.e. a-Si, c-Si, CIS, CdTe)
- > Comparison of seasonal effectiveness
- > Determination of the performance ratio
- > Analysis of degradation behavior
- > Effectiveness in partial load region (weak light behavior)
- > Presentation of temperature and radiation dependencies

Our Measurement System

- > Open-field test stand at a location with high variance of environmental conditions in the course of the year
- > Ability to measure almost all PV modules on the market
- > Special construction situations can be replicated – i.e. corrugated metal roof
- > Measurements based on DIN EN 60904-1
- > Standard-based calibrated measurement technology
- > Visual checks on the PV modules with Webcam
- > Real operating conditions – PV modules are kept at MPP between measurements

Our Services

- > Initial measurement of PV modules determine nominal performance under STC
- > Short-term measurements (1 week) and long-term measurements (several months or years) in the PV module test field
- > Evaluation of measurement data according to the desired criteria (i.e. degradation behavior, determination of performance)
- > Determination of module parameters for the simulation environment from the measured data
- > Year-round direct supervision on location from our experienced engineering team

Reference Values

Setup angle: 30°
(can be varied at customer request)

P_{max} : 800 W

V_{max} : 600 V

I_{max} : 60 A

Measurement accuracy (V, I): < 1 %

Measurement cycle : 1 min
(can be varied at customer request)

Data recorded (excerpt):

- V-I curves of the PV module
- Module temperature
- Incoming radiation at the module level (radiation sensor, pyranometer)
- Horizontal incoming radiation (pyranometer)
- Wind speed and direction
- Air temperature, pressure and humidity
- Amount of precipitation

BEC-Engineering GmbH – As an independent service provider in the photovoltaic energy field we draw on our long and extensive experience in measuring and evaluating PV modules. These include on-site investigations of PV installations as part of providing expert knowledge, studies and long-term investigations. We have also published numerous scientific articles and cooperated on research projects.