

A photograph of a solar panel in a field under a cloudy sky. The panel has a grid of silver lines. A red rectangular box highlights a dark, irregularly shaped defect on the panel's surface. To the right of this box, a portion of another panel is visible, showing a bright orange-red color, likely from a thermal imaging overlay.

**Power losses?  
Transport damages?  
Hidden defects?**

## Mobile quality inspection for photovoltaic panels

Fast, precise and objective on-site testing

Power measurement + Electroluminescence + Thermal imaging = your safety



The on-site laboratory measuring service of Solar measuring service of Solar Tester is carried out with a mobile PV-testcenter from MBJ Services GMBH

## Precise and objective testing of photovoltaic panels: power measurement + electroluminescence + thermal imaging



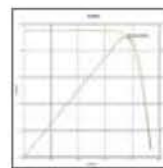
### Problems with power losses, transport damages or hidden defects?

The photovoltaic market is a global market. Solar panels are increasingly being transported over long distances by different means of transport to their place of installation in the entire world.

A quality control at the end of the production process in the solar panel manufacturer's production site is not enough because incorrect handling during transport as well as unsuitable packaging can lead to damage to the PV panels. This damage is often invisible to the human eye but can have a very negative effect on the solar panel's output so that the solar power plant's capacity can no longer be guaranteed on a permanent basis.

More and more manufacturers of solar panels are coming onto the market, but little is known about their quality standards. Furthermore, one repeatedly finds offers for low-cost panels, but are these of good quality too? Planners of solar power plants need solar panels that are financed by banks, i.e. are 'bankable'. In order to convince investors and insurance companies of their projects, they have to make sure that the panels are of a good quality too.

### Solution: power measurement, electroluminescence and thermal imaging



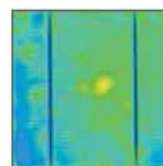
#### Power measurement

The panel's STC power is determined and verified by measuring I-V curves on the basis of the high-power LED flasher.



#### Electroluminescence

High-resolution EL-images make inactive areas and micro-cracks on the cells in the panel visible to the human eye.



#### Thermal imaging

An integrated IR camera permits the detection of diode errors and hotspots through viewing the live image on the 24" monitor.



## The Mobile PV-Testcenter

- Check performance data
- Identify hidden defects
- Directly on-site



Mobile PV-Testcenter  
from MBJ Services

With its Mobile PV-Testcenter MBJ Services offers a solution for on-site panel testing directly before installation or during maintenance work.

The Mobile PV-Testcenter provides all measurement and test methods needed for an objective analysis of solar panels in the field. With our device insufficient output as well as hidden defects - like micro-cracks, inactive areas or hotspots - can be identified quickly and reliably on site.

The Mobile PV-Testcenter combines a power measurement based on innovative LED technology, a high-resolution electroluminescence system and an IR camera in one testing system. It is operated by – intuitive – software. The measured data is saved automatically in a database. A very detailed report that compiles all of the results in one document is generated automatically for analysis purposes. A unique feature of the mobile measuring unit is its compact installation in a car trailer.

Check the quality of PV panels directly on site so that you know what's up!

**Power measurement  
+ Electroluminescence  
+ Thermal imaging**

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**= Your safety**

### Partner network

Order an on-site test through our partner network.  
Inquiries to [www.mbj-services.com/partner](http://www.mbj-services.com/partner)





## Technical data

### Details of the vehicle

Chassis

Trailer for cars, >1400 kg gross vehicle weight.  
Other chassis available on request.

Max. panel dimensions

1060mm x 1700mm (optional up to 1965mm)

Power supply / output

~230V, 16A / 3200W

Dimensions (L x W x H)

4.50 m x 2.08 m x 3.00 m



### Power measurement data

Flasher technology

Long-Pulse-LED-Flasher

Illuminated area, luminous power

1200mm x 1900 mm, 850-1100W/m<sup>2</sup>

Light spectrum

Warm white (400-800 nm)

Local inhomogeneity

< +/-2% (Class A acc. to IEC60904 Ed2)

Lighting instability

< +/-2% (Class A acc. to IEC60904 Ed2)

Repeating accuracy (flash to flash)

< 0.5% deviation

Deviation current/voltage measurement

Current: < +/- 0.1% (FSR); voltage < +/-0.1% (FSR)



### Electroluminescence data

Camera

cooled NIR CCD cameras from MBI Solutions

Maximum current feed

up to 240 volts / up to 20A

Image resolution (total) / pixel size

approx. 20Mpixels / approx. 300µm

Image acquisition time

< 20s



### Thermal imaging data

Camera

MBJ camera, Optris based

Resolution

160 x 120 pixels / optional 382 x 288

Image acquisition time

Live image presentation on 24" monitor

