



Bern University
of Applied Sciences

BFH Energy Storage Research Centre

Infrastructure

Multi-MPPT PV Inverter Test Stand

Multi-MPPT PV Inverter Test Stand

Nearly all modern PV inverters are equipped with two or three maximum power point trackers (MPPT). Testing such devices requires a multistring PV array simulator that is able to simulate several independent sub-arrays. The PV inverter test laboratory – a division of BFH's laboratory for photovoltaic systems – is equipped with a test stand for multi-MPPT PV inverters with up to three MPPT. The centerpiece of the test stand is a self-constructed multistring PV array simulator. The simulator has a linear design ensuring both very high speed and low electromagnetic interference (EMI). The device is freely programmable and allows a multitude of different test scenarios.



BFH PV Inverter Test Laboratory

The PV Inverter Test Laboratory of BFH's Laboratory for Photovoltaic Systems has more than two decades of experience in PV inverter testing. The laboratory is suitable for customer-specific testing of single- and multi-MPPT PV inverters. Due to the extensive experience of the employees and the sophisticated test equipment, the PV inverter test laboratory is the right partner for examinations on prototypes, investigation of non-standard operating conditions and localization of hidden flaws in PV inverters.

- Testing of single- and multi-MPPT PV inverters
- Testing of PV battery-inverter units
- Normative tests (EN 50530, VDE-AR-N 4105)
- Customer-specific tests



Research and Development Activities

- Contributions to both national and international scientific conferences
- Participation in standards committees (TC77 & TC82)





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Multi-MPPT PV Inverter Test Stand Technical Specifications

General Characteristics

- 3 independent sub-array simulators
- Up to 65,536 freely programmable I-V characteristics
- Linear design with liquid cooling
- High stability, thermal drift <100ppm

Electrical Characteristics (one sub-array simulator)

- Open Circuit Voltage $V_{OC} = 50 \dots 1'000V$
- Short Circuit Current $I_{SC} = 0 \dots 20A$
- Peak Power $P_{MPP} = 0 \dots 11.5kW$ (FF = 72%)

Dynamic Characteristics

- Settling time less than $50\mu s$
- Ground capacitance less than 100nF

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