Agilent Smart Energy Test Portal

Agilent provides test equipment that can be applied to test solutions across the Smart Energy market to help engineers characterize the performance of energy conversion systems, ensure the components used meet or exceed the desired specifications, and improve efficiency and reduce production costs. Smart Energy encompasses not only the source of the energy (wind, solar, etc.) but also the applications of that energy (residential solar electric systems, electric cars, LED lighting) and the distribution and management of electric energy (Smart Grid and Smart Meter). Smart Energy includes using measurement and control techniques to create more efficient technologies and processes for environmentally friendly products and systems. There are Smart Energy markets we do not address with test solutions, such as Wind and Hydro, and these are intentionally not included on this portal.

Please click on one of the following links for more information about each market.

Solar Cells, Modules and Panels

Micro-inverters and Optimizers

Fuel Cells

Smart Energy Test – Solar Cell, Modules and Panels

Potential Agilent Products You Can Sell To These Customers:

Residential Installation: SMS, SMU, DMM, DAQ , Power Supplies, eLoad

Producing quality solar modules and arrays in a production environment requires the characterization and sorting of solar cells. Matching the I-V performance of solar cells destined for installation in a common module or array is necessary for achieving optimum output power capability.

Customer-viewable Website

Customer-viewable Videos and Web Seminars

- Capture an IV curve of a solar module part 1 of 2, wmf file Using N6784A SMU under varying light conditions. (3:40 min)
- Capture an IV curve of a solar module part 2 of 2, wmf file Using 34972A data acquisition unit and N6784A SMU while varying temperature of the module. (2:37 min)
- Testing High Power Solar Cells and Modules Using Agilent's Electronic Load Youtube, Neil Forcier
- Developing Flexible Terrestrial Solar Cell/Module I-V Characterization Solutions On Demand web seminar presented by SPD AE Neil Forcier
- Top 5 Reasons to Use Agilent Precision SMU for Solar Cell Testing, Color flyer, Pub No 5990-4434EN

Customer-viewable Publications

- Solar Cell and Module Testing App Note, Pub No 5990-3262EN
- AN B1500-14 IV and CV Characterizations of Solar/Photovoltaic Cells Using the B1500A App Note, Pub No 5990-4428EN
- Solar Cell and Module Testing App Note, Pub No 5990-3262EN
- I-V Curve Characterization in High-Power Solar Cells and Modules App Note, Pub No 5990-4854EN
- Using Two Power Supplies for Higher Current Solar Cell Characterizing App Note, Pub No 5990-3949EN
- Characterizing the I-V Curve of Solar Cells and Modules Measurement Brief, Pub No 5990-4050EN
- IV Characterizations of Photovoltaic Cells Using the Agilent B2900A Series Tech Overview Pub No 5990-6660EN
- Solar Photovoltaic Testing for R&D, DV, and Manufacturing On Demand web seminar presented by SPD AE Neil Forcier
- Agilent-Powering the Solar Revolution , Brochure Pub No 5990-5976EN
- Forcier's blog describing a $3k photovoltaic I-V curve measurement system
- Neil Forcier's artide in Electronic Design describing a low-cost means of testing the output power of PV devices outdoors using a DC electronic load (eload).
- Solar Cell IV Test System data sheet from Taiwan AEO App Note, Pub No 5990-4328ENA

Customer-viewable Presentations

- Contact your Agilent representative

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Smart Energy Test – Micro-Inverters and Optimizers

Potential customers: R&D and production of micro-inverters and power optimizers
Agilent Products You Can Sell To These Customers: SAS, SMS, SMU, DMM, DAQ, AC Power Analyzer (N6705B), Scope

This market started in 2008 with production of micro-inverters by Enphase. It is growing fast and expected to be a $250M by 2014.

Standard Line Inverters: High Power, High Voltage (~600-1000VDC) inverters. One inverter used with few KW PV Modules. Typical residential installation may use one line inverter. Used in residential and commercial installations. **Agilent does not have an SAS solution for this market.**
Micro-inverters: Low power (~200W), Low voltage (~50-100VDC), One micro-inverter is used for each PV module. Some micro-inverters are embedded in the PV module. Multiple micro-inverters are used in a typical residential installation. Used in residential and small commercial installations.
Power Optimizers: Low power, low voltage. These devices improve the energy harvested from a solar panel. They are used with both standard line inverters and micro-inverters. They are not inverters, but they do use the Solar Array Simulator for design test.

Customer-viewable Website

Customer-viewable Videos and Web Seminars

- Testing Solar Power Inverters using Solar Array Simulation Techniques On Demand web seminar presented by SPD AE Gary Raposa
- Powering a Micro Inverter Using an E4360A Solar Array Simulator, you tube, Gary Raposa
- Solar Energy – Distributed MPPT – Technology trends and testing methods - Web Seminar
- Testing Terrestrial Solar-powered Inverters Using Solar Array Simulation Techniques, webcast, Neil Forcier

Customer-viewable Publications

- Testing Terrestrial Solar-Powered Inverters Using Solar Array Simulation Techniques App Note, Pub No. 5990-4132EN
- Designing and Developing Terrestrial Inverters Using Solar Array Simulators Pub No. 5990-4049EN
- Agilent-Powering the Solar Revolution Brochure Pub No 5990-5976EN
- Neil Forcier's blog about simulating the output of PV panels to verify the MPPT design for products such as a solar inverter, micro inverter, or DC optimizer.

Customer-viewable Presentations

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Smart Energy Test – Fuel Cells

Potential Agilent Products You Can Sell To These Customers:
Residential Installation: SMS, SMU, DMM, DAQ

A fuel cell is an electrochemical device used to create electricity through a reaction between a fuel (such as hydrogen) and an oxidant (such as oxygen) in the presence of an electrolyte. In addition to producing electricity, the reaction generates byproducts, which typically are only water and heat. Therefore, using fuel cells is an environmentally friendly way to produce electricity.

Customer-viewable Website

Customer-viewable Videos and Web Seminars

- How a Fuel Cell Works and Measuring its Impedance Using an Electronic Load, youtube, Gary Raposa
- A Technique for Measuring Fuel Cell AC Impedance On Demand web seminar presented by SPD AE Gary Raposa

Customer-viewable Publications

- Fuel Cell Characterization Brochure Pub No 5990-5371EN
- Making Fuel Cell AC Impedance App Note, Pub No 5988-5358EN
- Measuring Fuel Cell AC Impedance Measurement Brief, Pub No 5990-4051EN

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