

Study: First Solar Modules Offer Over 4% More Energy than Silicon PV in South Africa

Report by Arup confirms First Solar modules can outperform mono- and poly-crystalline silicon PV in South Africa

CAPE TOWN, South Africa – May 13, 2015 – Independent research into the performance of four solar photovoltaic (PV) module technologies in South Africa, has confirmed that First Solar's (Nasdaq: FSLR) advanced modules can offer over 4 percent more energy than conventional silicon PV panels.

The study was conducted by Arup, an independent engineering consultancy, and was commissioned by First Solar. It examined the performance of First Solar's thin film modules and panels from top tier poly- and mono-crystalline silicon PV module manufacturers, in a utility-scale setting at three sites in South Africa. The consulting firm used sophisticated modelling techniques to examine the projected energy yield of the four module types in three hypothetical solar PV plants, with a capacity of about 84 megawatts (MW)_{DC} each, in Bloemfontein, Upington, and Vryburg.

Engineers from Arup conducted 24 energy yield simulations, using plant design parameters that were kept constant across all technologies, and examined the energy yield probability for the first year of production, for each module type. The analysis factored in site-specific meteorological data, which included temperature, irradiance and other weather data. This industry-standard approach ensured that the hypothetical plants closely represented actual onsite conditions based on a typical meteorological year.

The analysis clearly demonstrated that, in South Africa, First Solar's advanced modules can deliver more energy per year than poly-crystalline silicon panels and mono-crystalline silicon panels in both a fixed-tilt configuration and with the use of trackers. The report revealed that, at the three hypothetical sites:

- First Solar modules offered a 1.3 percent energy yield advantage over mono-crystalline silicon technology and as much as 4.2 percent more energy than poly-crystalline silicon panels, in a fixed-tilt configuration.
- Using single-axis trackers allowed First Solar's modules to deliver 1.7 percent more energy than mono-crystalline silicon technology and 4.3 percent more than poly-crystalline panels.

"This research is particularly important in light of the highly competitive tariffs that we're seeing in South Africa's Renewable Energy Independent Power Producer Procurement Programme. It's clear that every kilowatt-hour of energy is important and that selecting the right technology for a utility-scale PV Power Plant can add a significant financial upside to the project value," said Justin Wimbush, Renewable Energy Business Leader at Arup Southern Africa.

First Solar's advanced thin film PV modules have set the industry benchmark with over 10,000MW installed worldwide. Offering highly predictable energy in all climates and applications, the modules have been independently tested to pass accelerated life and stress tests beyond industry standards. Offering both, a superior temperature coefficient and superior spectral response, they have been independently certified for reliable performance in high temperature, high humidity, extreme desert and coastal environments.

"The results of this extensive analysis validate the suitability and superiority of our module technology in real-world conditions, here in South Africa. It also makes the case for the solar industry to move away from legacy

metrics, such as nameplate capacity, and to focus on what truly matters, which is energy,” said Nasim Khan, Vice President for First Solar in Africa. “It is evident that not all PV technologies were created equal and that, in the same configuration, 1MW of First Solar modules will yield more energy than 1MW of crystalline silicon-based modules in actual operating conditions, due to an inescapable fact of semiconductor physics. We hope that this effect will be considered in the energy predictions and financial models used in the development and evaluation process of new solar power plants in South Africa.”

A fully vertically integrated solar energy company, First Solar consistently accounts for the PV industry’s largest investment in research and development (R&D)*. It is also a leading developer of utility-scale solar energy projects, having developed some of the world’s largest solar power plants such as Desert Sunlight (550MW) and the Topaz Solar Farm (550MW) in the US. Additionally, with a portfolio of nearly 3,000MW, First Solar is also the industry’s operations and maintenance (O&M) services leader. The company’s global footprint includes two manufacturing facilities in the United States and Malaysia, and an office in Cape Town, South Africa.

The report can be downloaded from http://www2.firstsolar.com/EnergyYield_SouthAfrica.

Notes to the Editor:

- Modelling was conducted using the industry standard PVsyst V6.34 software package.
- * Source: PV Tech’s Top Module Manufacturers R&D Spending.
- Detailed energy yield difference results for the various sites and configurations are as follows:

Configuration: Fixed-Tilt

Location	Average annual performance during year 1	% additional energy yield of First Solar Thin Film compared to conventional silicon PV panels		
	First Solar Thin Film	Module 1 Polycrystalline	Module 2 Polycrystalline	Module 3 Monocrystalline
Bloemfontein	2,033 kWh/kWp	3.1%	3.3%	0.6%
Upington	2,078 kWh/kWp	3.1%	3.5%	0.4%
Vryburg	2,021 kWh/kWp	3.9%	4.2%	1.3%

Configuration: Single-Axis Tracker

Location	Average annual performance during year 1	% additional energy yield of First Solar Thin Film compared to conventional silicon PV panels		
	First Solar	Module 1 Polycrystalline	Module 2 Polycrystalline	Module 3 Monocrystalline
Bloemfontein	2,373 kWh/kWp	3.3%	3.6%	1.0%
Upington	2,472 kWh/kWp	3.5%	3.9%	1.0%
Vryburg	2,384 kWh/kWp	4.0%	4.3%	1.7%

About First Solar, Inc.

First Solar is a leading global provider of comprehensive photovoltaic (PV) solar systems which use its advanced thin-film modules. The company’s integrated power plant solutions deliver an economically attractive alternative to fossil-fuel electricity generation today. From raw material sourcing through end-of-life module recycling, First Solar’s renewable energy systems protect and enhance the environment. For more information about First Solar, please visit www.firstsolar.com.

For First Solar Investors

This release contains forward-looking statements which are made pursuant to safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These forward-looking statements include statements, among other things, concerning: our business strategy, including anticipated trends and developments in and management plans for our business and the markets in which we operate; future financial results, operating results, revenues, gross margin, operating expenses, products, projected costs, warranties, solar module efficiency and balance of systems cost reduction roadmaps, product reliability and capital expenditures; our ability to continue to reduce the cost per watt of our solar modules; our ability to reduce the costs to construct PV solar power systems; research and development programs and our ability to improve the conversion efficiency of our solar modules; sales and marketing initiatives; and competition. These forward-looking statements are often characterized by the use of words such as "estimate," "expect," "anticipate," "project," "plan," "intend," "believe," "forecast," "foresee," "likely," "may," "should," "goal," "target," "might," "will," "could," "predict," "continue" and the negative or plural of these words and other comparable terminology. Forward-looking statements are only predictions based on our current expectations and our projections about future events. You should not place undue reliance on these forward-looking statements. We undertake no obligation to update any of these forward-looking statements for any reason. These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ materially from those expressed or implied by these statements. These factors include, but are not limited to, the matters discussed in Item 1A: "Risk Factors," of our most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other reports filed with the SEC.

Contacts

Media

Reuven Proença
EMEA Corporate Communications
+971 (0)4-4559 410
reuven.proenca@firstsolar.com

Teresa Settas or Anne da Silva
TSC for First Solar South Africa
+2711 894 2767
teresa@tscommunications.co.za

First Solar Investors

Stephen Haymore,
+1 602-414-9315
stephen.haymore@firstsolar.com

SOURCE: First Solar, Inc.