

Efficiency Claims Vs Energy Yield

A couple solar panel manufacturers claim they are more efficient and deserve a premium in their price because of this. Below we will explain why they are not as efficient in real world conditions as they are in the laboratory 'Flash' test. Also we will explain that even if they were more efficient it is cheaper to produce kWh's with SolarWorld.

- Efficiency Test vs Real World

o All solar panels worldwide are tested using STC (Standard Test Conditions). STC tests a clean solar panel, perpendicular to the light source, light equal to 1,000w per square meter, 77 degrees F (25 C) and 1.5 atmospheres. In the real world dust will settle on the panel and it will rain. In the real world the sun isn't always perpendicular to the panels. So like the car companies have figured out ways to claim gas mileage ratings are higher then you will experience, some solar companies have also figures out how to claim (using the factory conditions) that their panels are more efficient.

o Panels are DC series wired circuits. Like the old Christmas lights were one would go out and they all would go out. Electric golf carts also use series wired circuits in their multiply batteries they use. When one battery has one bad cell the whole battery bank goes down. When it rains the dust on the solar panels build wash down to the frame and build up as a line of dirt that could be 1" wide. This will shade the whole length of the solar panel. Manufactures like SolarWorld add an additional 1" lip all the way around their panel for this 'dirt lip'. It increases the size of the panel, decreasing the STC output per square meter, but actually will substantially increase the output. Some manufactures, in order to maximize the STC results, do not have this extra lip, reducing material cost, reducing real world output but allowing them to claim they are more efficient and deserve more money because of it.

- If a Panel is More Efficient Does it Matter

o Solar panels are sold by the watt output per their STC rating. So a 290w panel is a 290w panel. A more efficient panel will require slightly less space to produce the 290w. If panels were sold by the square meter then true efficiency would be important. But you don't buy 10 – 1 square meter panels, you will buy 10 – 290w panels. A 290w, most efficient panel may take up a little less than one square foot less space than another 290w panel, but they both are 290w panels and will put out 290w at STC.

The Department of Energy, through their SunShot program, has launched an attempt to standardize the design of all solar panels. Among other items they want to mandate all manufactures include this 'dirt lip' in their design.
