

SunPower's Dick Swanson Still Very Much Alive

"The Father of Solar in the U.S." asks if you know how many joules are in a kilowatt-hour. (Answer below.)

ERIC WESOFF | JUNE 29, 2011

Richard Swanson is listed as President Emeritus on the SunPower (<https://www.greentechmedia.com/articles/read/sunpower-racking-up-the-ppas-711-mw-with-sce/>) website and he's regularly introduced as "The Father of Solar in the U.S."

Which makes him sound like he's:

- On his farewell tour
- Waving to people at the parade from the back seat of a limo
- In a glass sarcophagus on display in a solar museum

But Swanson is alive and kicking. He's involved with the DOE and the DOE's SunShot program (<https://www.greentechmedia.com/articles/read/does-chu-and-sunpowers-swanson-on-the-27m-sunshine-initiative/>), looking to drive the cost of installed solar down below \$1.00 per watt (<https://www.greentechmedia.com/articles/read/stanford-univ-funded-by-doe-shooting-for-0.50-per-watt-pv-modules/>). And he's on the speaking circuit, rallying for ubiquitous solar power and a public with some energy intelligence.

The arc of Swanson's career is an American success story.

Swanson received his Ph.D. in Electrical Engineering from Stanford University in 1974 and joined the faculty at Stanford where he and his group developed the point-contact solar cell. Lab versions of these cells set a record 28 percent conversion efficiency in concentrator cells and 23 percent in large-area one-sun cells (<https://www.greentechmedia.com/articles/read/Efficiency->

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Matters-SunPower-Sets-Efficiency-Record-With-a-20-Module/). In 1991, Dr. Swanson resigned from the faculty to work full-time at SunPower, the firm he founded to develop and commercialize cost-effective photovoltaic power systems. The company had some lean times, raised capital from Silicon Valley entrepreneurs and has gone on to become a technological and financial powerhouse (<https://www.greentechmedia.com/articles/read/sunpower-q1/>).

In what could be the start of a second wave of oil company interest in solar, SunPower recently struck a massive deal (<https://www.greentechmedia.com/articles/read/capital-factory-expansion-key-to-sunpower-total-deal-say-execs/>) with French oil and gas conglomerate Total.

Swanson has gone from Stanford Ph.D. project to being a player on the world energy stage -- a good life's work by any measure.

He spoke yesterday at Singularity University (<http://singularityu.org/>) on a variety of energy and solar topics. The audience included the usual brilliant, international student body, as well as Silicon Valley celebrities such as Steve Wozniak (<http://www.woz.org/wozscape/wozbio.html>).

Swanson sees the solar industry transitioning to its next phase. The current high-growth phase of "explosive growth" has been driven by investment capital from public markets and incentives from Germany, Spain, and Italy. But in Swanson's words, "This is rapidly coming to an end. We are now at a transition point."

The subsidy regimes are fatigued, according to Swanson: "You can't have exponential growth of incentives."

But the costs of solar are coming down so fast, "we're approaching grid parity (<https://www.greentechmedia.com/articles/read/does-grid-parity-matter/>)" with the cumulative amount of solar PV in the world at 40 gigawatts.

Swanson said that even with the Investment Tax Credit expiring at the end of 2016, the falling cost of solar will more than make up for that 30 percent reward.

He declared, "We'll have weaned ourselves off of subsidies." and "We will have arrived as an industry."

Question: How many joules are in a kilowatt-hour?

Answer: There are 3,600,000 joules in one kilowatt-hour. A joule is equivalent to one Newton-meter, or the energy required to lift an apple from the floor to a table. We pay about \$0.12 per kilowatt-hour in the U.S. for our electricity. That's \$0.12 to lift 3.6 million apples from the floor to the table -- a testament to the low cost of our power and the sheer volume of the embedded energy in fossil fuels.

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