GE and First Solar, Inc. will join their competing thin-film solar panel technologies in an effort to improve efficiency and decrease costs.

The companies announced Tuesday that First Solar will acquire General Electric Co.'s technology for making thin film panels. In return, GE will receive 1.75 million shares of First Solar stock. That represents $82 million, and 2 percent of First Solar's outstanding shares.

First Solar is the world's largest producer of thin-film panels and among the world's largest solar farm developers. GE's thin-film technology has performed well in lab tests, but is not manufactured at large scale.

First Solar, based in Tempe, Ariz. will attempt to incorporate GE's technology into its extensive and well-developed manufacturing process. GE, based in Fairfield, Conn., will purchase and brand First Solar panels for its own installations.

First Solar's panels made of thin metallic films were once far and away the cheapest way to generate solar electricity. The technology is not as efficient at turning the sun's rays into electricity as traditional crystalline silicon panels, but it was so comparably cheap to manufacture that the overall cost of solar electricity was lower.

But an oversupply of crystalline silicon manufacturing capacity, a reduction in global renewable energy subsidies, and lower prices for the raw material for traditional panels sent prices for all panels plummeting.
This helped make solar much more affordable for customers, but it eroded the price advantage of thin film solar and eviscerated the profits of both First Solar and its crystalline silicon competitors.

First Solar announced Tuesday after the market closed that its net income for the second quarter fell 70 percent, to $34 million from $110 million a year ago. Revenue fell by 46 percent to $520 million. On a per-share basis the company earned 37 cents, down 71 percent from $1.27 last year.

Analysts polled by FactSet had expected First Solar to earn 56 cents per share, on average. First Solar shares fell $4.14, or 9 percent, to $42.61 per share in after-market trading.

General Electric, a leader in wind turbine manufacturing, began to dabble in solar when it acquired part of a small Colorado-based solar panel maker called PrimeStar Solar in 2007. It later bought all of PrimeStar, which focused on the same type of thin film panels that First Solar makes, and announced in 2011 that it would build the nation's largest solar panel manufacturing plant. GE announced last year it was putting the plant on hold. Earlier this year GE's panels set a record for thin film efficiency at the National Renewable Energy Laboratory in Golden, Co.

Now First Solar and GE hope that by combining their technology, they can increase the efficiency of the panels, which would have the effect of reducing the cost of electricity produced by them, in hopes of regaining the cost advantage of thin film over crystalline silicon.

First Solar also announced Tuesday that it would acquire a 1.5-gigawatt portfolio of solar farm development projects in the U.S. and Mexico from Element Power, which was owned by the clean energy private equity firm Hudson Clean Energy Partners. Terms were not disclosed.