DuPont and TSEC Collaborate on New High-efficiency Solar Panels

Customized DuPont™ Solamet® metallization pastes enable more powerful solar panels

DuPont™ Tedlar® film-based backsheets ensure reliable operation for 25 years or more

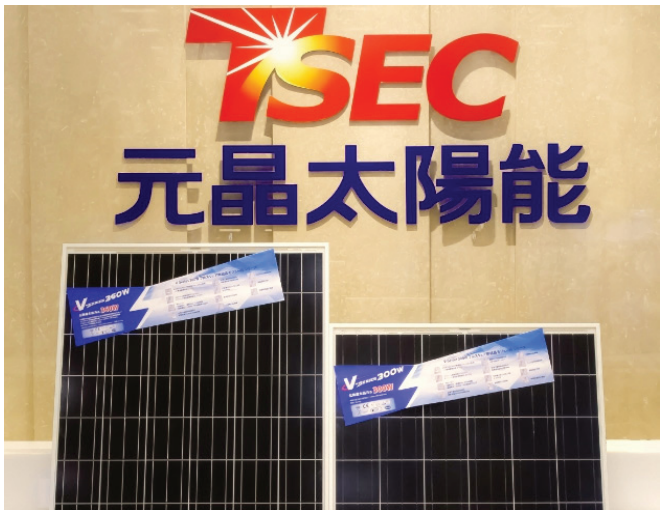
Successful collaboration sets new standards for solar cell efficiency using PERC technology

More efficient panels lower overall system costs

SUMMARY

Maximizing the conversion efficiency of solar cells offers a host of benefits for solar energy systems, including lower overall costs and a higher return on investment. For Taiwan-based TSEC Corporation, a leading manufacturer of solar cells and panels, a collaboration with DuPont has resulted in a conversion efficiency breakthrough. Thanks to new customized silver paste materials from DuPont, TSEC has developed the V-Series high-efficiency solar panels, marking the first time that a TSEC solar cell of this type has achieved a conversion efficiency of over 21 percent.

"By integrating the most efficient and most durable materials in our V-Series solar panels, we've reached key cost and quality milestones and we'll continue to work together with DuPont on next-generation advances."



Challenge

For TSEC, the challenge was to find materials that would support its goal to build a solar cell that would convert sunlight into electrical energy more efficiently than any of its kind to date. The materials also had to be suited to lower temperature processing in order to boost the efficiency of TSEC's proprietary passivated emitter and rear cell (PERC) solar cell architecture.

Solution

The solar cells in the V-Series panels are made using new DuPont™ Solamet® photovoltaic metallization pastes that have been customized and optimized to help achieve more efficient conversion of sunlight to electrical energy, significantly improving the panel's power output. The panels also are protected by DuPont™ Tedlar® polyvinyl fluoride film-based backsheets that are proven to deliver long-term reliability for 25 years or longer, under all weather conditions.

Use of the new Solamet® silver pastes on the front and rear sides of the solar cells allowed TSEC to gain an additional 0.15 percent conversion efficiency to push the total to over 21 percent, its highest yet for this type of solar cell. Increasing efficiency helped improve the power output of the V-Series panels to more than 300 watts and 360 watts in 60-cell and 72-cell configurations, respectively.

To learn more about DuPont Photovoltaic Solutions, visit photovoltaics.dupont.com

The higher efficiency can also lower overall system costs and improve the return on investment for solar energy systems.

Results

Using DuPont™ Solamet® pastes optimized for TSEC's V-Cell manufacturing process, TSEC was able to achieve a conversion efficiency target of over 21 percent, not only in the lab, but also in production. The use of Tedlar® film-based backsheets will help extend that power production advantage reliably for 25 years or more.

"TSEC strives for the best quality solar panels at the lowest cost of ownership," said C.J. Hung, chief operating officer, TSEC. "By integrating the most efficient and most durable materials in our V-Series solar panels, we've reached key cost and quality milestones and we'll continue to work together with DuPont on next-generation advances."

Through the collaboration in R&D, DuPont and TSEC together are innovating for a more sustainable future.

PROJECT LOCATION

TAIWAN

PROJECT DETAILS

Project	V-Series high-efficiency solar panels
Milestone reached	First solar cell of its kind to achieve conversion efficiency of over 21 percent at TSEC
Benefits	Lower overall costs and higher return on investment for solar power systems
Material specified	Customized DuPont™ Solamet® metallization pastes and DuPont™ Tedlar® polyvinyl fluoride film-based backsheets