



Advanced Materials Help Turn Rocky Road into Smooth Path Forward at Solar Park in France

Hanau Energies Concept Counts on DuPont™ Tedlar® Films and Solamet® Pastes for Superior Durability, Longevity and Power Output

Background

The growing adoption of solar energy continues in France, with close to 400 megawatts (MW) of solar-generated electricity connected across the country in the first six months of 2014 alone.¹ One of the organizations driving this growth is Hanau Energies Concept, a French project developer and investor in solar installations. With the completion of the Sallèles-Cabardès installation, its third for 2014, Hanau continues to play a prominent role in helping France move toward the goals set by the European Commission in its Renewable Energy Action Plan.

The 6.8-megawatt solar park in Sallèles-Cabardès, near the town of Carcassonne, is spread over 20 hectares (almost 50 acres), and features 26,334 multi-crystalline silicon solar panels. The panels were manufactured by Jinko Solar, a global leader in the solar PV industry.

The panels in the array are made with two key materials: DuPont™ Tedlar® polyvinyl fluoride (PVF) film-based backsheets, which help protect the panels from the environment and provide essential electrical insulation; and DuPont™ Solamet® photovoltaic metallization pastes, which help improve the power output of the solar panels during their expected lifetime of 25 years or more.

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Challenges

For this high-profile project, choosing the right materials was key. Developers had to select materials that would deliver the high-efficiency performance and durability that the installation required.

They also had to take into account two key aspects of the location: the high reflectance of the site's limestone soil, and the rocky terrain.

The high reflectance, or albedo, of the site refers to the diffuse reflectivity or reflecting power of a surface. The limestone soil at the Sallèles site has up to four times the ground reflectance of grassland, which means that the back of the solar panels (which face the ground) are exposed to significantly higher levels of ultraviolet (UV) light, which can prematurely degrade some types of backsheet materials that are essential to protect solar panels from the elements. Due to the rocky nature of the soil, a rock breaker had to be hired to drill 4,000 holes into the terrain for the substructures to be erected. Each hole was then filled with cement to solidify the base for the substructures holding the solar panels in place. This entailed extra costs for hiring the equipment, sourcing cement and additional manpower.



Rock breaker drilling holes for panel substructures



Solution

Because of the high reflectance at this location, it was critical for Hanau Energies Concept to select solar panels with backsheets that could resist the high levels of albedo over multiple decades. The design team specified DuPont™ Tedlar® film-based backsheets for the installation, based on the track record and long history of Tedlar® film. It is field-proven to protect solar panels for over 30 years, offering durable and long-lasting protection to solar panels and a high resistance to UV light degradation.

The ability of Tedlar® film to perform consistently and reliably over decades, under all types of environments and applications including rooftops, deserts or high-albedo sites like Sallèles, makes it the backsheet of choice for solar project developers and investors looking for long-term, reliable solutions.

The Solamet® photovoltaic metallization pastes used in the solar cells in the panels also play a central role in the performance of the installation. Solamet® pastes help deliver higher solar cell efficiency and higher power output from solar panels, helping to reduce overall system costs. DuPont continues to advance solar cell efficiency. Over the last 12 years, these advances have almost doubled the efficiency of solar cells, so today it takes half the number of panels to generate the same amount of electricity that it would have 12 years ago.

Collaboration also was key. Hanau Energies Concept was already knowledgeable about the advantages of Tedlar® film and Solamet® pastes, having worked closely with DuPont to specify both materials for improved power output and durability in a 4.5 MW array at a DuPont production facility in Cernay, France, inaugurated in June 2014.

Results

Connected to the grid in August 2014, the Sallèles project is expected to produce over 9,800 megawatt hours (MWh) of electricity per year, roughly equivalent to the amount of electricity that 7,000 homes consume every year in France. In addition, 2,000 tons of carbon dioxide emissions will be offset. The power generated at the site falls under a power purchase agreement with energy provider Électricité Réseau Distribution France (ERDF), which manages the public electricity distribution network for 95% of continental France¹.

For Hanau Energies Concept and for France, solar power is delivering cost-effective, clean and sustainable energy to more and more inhabitants. Choosing proven suppliers for materials and panels is central to the success of large-scale, high-profile projects like Sallèles. The choice of Jinko Solar and the specification of DuPont materials in this latest installation will ensure the delivery of durable and reliable electricity for many years to come.

“Working with world-class leaders such as DuPont and Jinko Solar, who bring their know-how in photovoltaic materials science and solar panel design and manufacturing, is a deliberate choice to help ensure the solar parks produce reliably and durably for their expected lifetime and beyond.”

— Jean-Luc Westphal, president, Hanau Energies Concept

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

¹Panorama des énergies renouvelables au 1er semestre 2014, http://www.erdf.fr/medias/Institutionnel/ERDF_Panorama_ENR_S12014.pdf

²From the ERDF website: www.erdf.fr/home