



LPS Industries Demonstrates Commitment to the Environment with Solyndra Rooftop Solar System

Solyndra, Solis and Allied help manufacturer demonstrate its leadership in sustainable packaging

OVERVIEW

SOLUTION AT A GLANCE

- 3,870 panels deployed on a 165,000 sq. ft manufacturing facility
- Installed capacity 704.34 kW (DC) based on 182 W rating per panel
- 1st year electricity output: 825,000+ kWh
- CO₂ emissions offset annually: 1,100,000+ pounds
- Two 260 kW inverters from PV Powered

SOLYNDRA PROVIDERS

- Solis Partners LLC (www.solisllc.com)
- Allied Building Products Corp. (www.alliedbuilding.com)

BUSINESS VALUE SUMMARY

- Projected to supply 25% of building's energy
- 50% less installed weight than crystalline panels, making project possible
- Up to 20% reduction in cooling costs estimated from new white TPO roof
- Installed in 40% less time than crystalline panels
- Larger ITC grant available by bundling roof and solar improvements
- Coterminous warranties for solar and roof systems



IT'S ALL IN HOW YOU DO IT

A sustainable world needs sustainable packaging. LPS Industries is determined to be a leader.

The company, based near New York City in Moonachie, New Jersey, has over 50 years of experience manufacturing flexible packaging that protects items such as foods, medical tests and devices, and electronic products.

One step in making the packaging is laminating materials together, such as foils and papers. To reduce environmental impact, LPS switched from solvent-based lamination to solvent-free lamination. The new process eliminates the use of dangerous chemicals and reduces energy and waste.

To save additional energy and serve customers faster, LPS created a

national network of warehouses. "We now produce and ship goods for all of the customers in a region to a nearby warehouse," says CEO Madeleine Robinson. "When customers reorder, truck travel is minimized."

As LPS grows its product line, sustainability is important. "We are continually looking to expand our portfolio of materials that are recyclable, biodegradable or compostable," Robinson explains.

LPS studied its next step in sustainability for months: The 165,000 sq. ft flat roof on its manufacturing facility was as big as three football fields. How much energy could it yield if covered with solar panels?

CHOOSING A SOLAR TECHNOLOGY

Robinson has the right background for evaluating investments: She

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— Madeleine Robinson, CEO, LPS Industries

had a 13-year career on Wall Street in a leadership role at a large financial institution before assuming management of LPS, the company her father started. She also has an MBA in finance from the Wharton School of the University of Pennsylvania.

Leading a thorough analysis of solar power options was easy. But the conclusion, after examining several proposals for installing traditional, flat crystalline solar panels, was hard to accept. “The roof of our building couldn’t stand the load,” she says.

AGAINST THE WIND

“LPS is located in a high-wind zone like many areas of New Jersey,” explains Jamie Hahn, managing director of Solis Partners LLC, the solar developer and integrator that provided the turn-key solution to Robinson’s company. “With traditional, flat-plated crystalline panels, you’re essentially putting a bunch of mini-sails on your roof. To

produce the maximum kilowatt hour yield, which is critical now that we are in a production-based environment, you want to tilt them at about 35 degrees here in New Jersey. That makes each panel more of a sail. In most cases on commercial flat roofs, we compromise at a 10 degree panel tilt, but at this site it would have to be done at five degrees. That cuts into yield which correlates into income to the owner.”

Even at five degrees, Hahn points out, the panels would need heavy ballast and the structural reinforcement necessary would severely impact the project’s ROI. The panels could be attached with hundreds of roof penetrations—but the risk of causing leaks and taking the system offline was too great.

HALF THE WEIGHT AND VIRTUALLY NO WIND RESISTANCE

After conducting a thorough analysis, Solis recommended a new solar panel technology from Solyndra. Its panels,

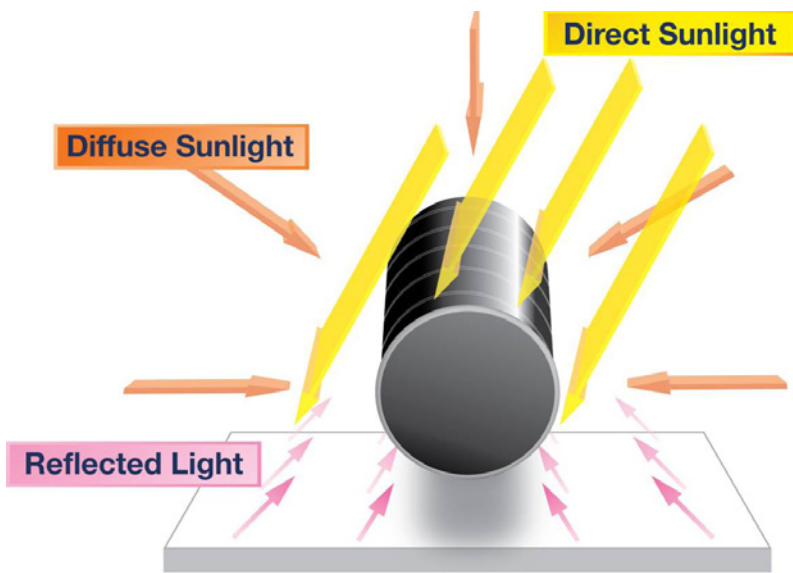
instead of being flat-plated, are made up of photovoltaic (PV) cylinders that lie flat. Wind naturally flows through the spaces between cylinders, simplifying mounting requirements. “Even in areas with high winds, there is no need for roof-penetrating mounts or ballast to hold the Solyndra panels in place,” Hahn explains. “Solyndra’s panels have been tested and are certified for use in winds over 208 kilometers per hour (130 mph). The area around LPS Industries is rated up to 110 miles per hour.”

Solyndra panels are about 50% of the weight that crystalline panels would need to be at LPS. “The Solyndra system is about 3.4 pounds per square foot,” Hahn points out. “Traditional ballasted crystalline panels would be about 6.5 to 8.5 pounds per square foot.”

CUTTING COOLING COSTS BY UP TO 20% WITH A WHITE ROOF

Notes Robinson: “Solyndra technology made the solar project at





Solyndra panels generate power not just from direct sunlight, like crystalline panels, but also from diffuse and reflected light.

LPS practical.” The new technology also provided a major reason to replace the building’s black roof with a new white, reflective ThermoPlastic Olefin (TPO) roof. By itself, studies have shown, a white TPO roof can reduce cooling costs by as much as 20 percent.*

Teamed with Solyndra’s patent-pending cylindrical modules, a white TPO roof helps generate more power. That’s because the roof bounces sunlight back at Solyndra modules from below. Unlike crystalline panels, which are designed to receive direct sunlight on one face, the full 360-degree photovoltaic surface of a Solyndra module captures sunlight direct from above, diffused from the sides, and reflected from the roof—typically yielding more power per rooftop.

ELIGIBLE FOR A LARGER INCENTIVE

In addition, by installing Solyndra panels, LPS had the potential to include the cost of the white reflective roof system, along with the solar package, in its 30 percent Federal Investment Tax Credit (ITC) application. This was based on a recent IRS ruling involving Solyndra’s panels, thus reducing costs. Had crystalline panels been used, the required roof work would

not have been eligible for the ITC, as it wouldn’t have contributed to increased power production.

AVOIDING UP TO \$270,000 IN LOST SUBSIDY INCOME

The new roof at LPS includes a 20-year No-Dollar-Limit (NDL) warranty from Carlisle, the roof manufacturer, explains Hahn. “That provides LPS with a coterminous warranty between the roof and solar installation, so they will not have to look at re-addressing the roof 10 to 15 years down the road. Solyndra comes with a 25-year warranty.”

If a roof needs to be replaced or patched after solar has been deployed and operational, the lost revenue to the owner can be substantial, Hahn points out. Not only will there be a decommissioning/recommissioning cost, but much more importantly, the system will not be off-setting electricity usage and producing income. In New Jersey, an SREC or production credit is earned for every 1,000 kilowatt-hours generated by solar. That means LPS is earning Solar Renewable Energy Certificates (SRECs), which are used to pay back its PSE&G loan. The program is a powerful incentive: “Utilities operating in New Jersey are required to increase the annual

percentage of electricity generated from renewable sources within their portfolio,” Hahn observes. “If they don’t, they pay a high penalty to the state. One way to meet their renewable energy obligation is by purchasing SRECs from solar generators like LPS. They purchase the SRECs in an open market, typically below the penalty amount. It’s a renewable offset for the utility and income for LPS.”

It can be substantial income, Hahn adds. The SREC program lasts for the first 15 years of operation. “If during that time, LPS had to decommission the solar installation for six months to replace a roof, they’d lose—at the current SREC rate—\$270,000 in SREC income or loan repayment.”

Installing the new white TPO roof along with the Solyndra installation minimizes that risk for the next 20 years.

SIGNIFICANT PERCENTAGE OF COSTS COVERED BY INCENTIVE LOAN

Another benefit of the SREC incentive for LPS is that it pays back the loan from the local utility, PSE&G, that typically provides 40-60% of the funding for a qualifying solar installation.

“Because the Solyndra panels require no roof penetrations or third party racking systems, we installed them about 40% faster than a similar number of crystalline panels.”

— Jamie Hahn, Managing Director, Solis Partners LLC

“Our goal with this project was to demonstrate LPS Industries’ commitment to conducting business in an environmentally responsible manner, but it had to make economic sense,” Robinson explains. “Solis has a strong understanding of local and federal incentives and worked with us and the local utility to ensure the lowest turn-key system cost for us. We expect a strong return on our investment.”

SOLAR COVERS 25% OF ENERGY NEEDS

LPS installed the largest Solyndra deployment in the U.S. to date. It consists of approximately 3,870 solar panels and is estimated to produce over 825,000 kWh of electricity a year.

“Our Solyndra installation is projected to provide 25% of our building’s annual electricity usage,” Robinson observes. “We were quite pleased to discover the payback period is shorter than we initially anticipated.”

That’s part of a bigger picture, Robinson adds. “A few years ago,

we joined the EPA’s Green Power partnership and replaced 25% of the fossil fuel-generated energy we used with wind-generated power,” she notes. “Now, by adding the solar power from our Solyndra installation, more than half the energy we use will be from renewable sources.”

PANELS INSTALLED IN JUST FOUR WEEKS

Once roof work was complete, deployment went quickly. “To lay over 3,800 panels took a crew of eight just four weeks,” Hahn says. “That’s because the Solyndra panels require no roof penetrations, attachments, or third-party ballasted racking systems. It’s simple to attach panels to their mounts. We installed them about 40% faster than a similar number of crystalline panels.”

Solis worked with Allied Building Products Corporation, which had also assisted with the re-roofing. Allied pre-ordered the Solyndra panels and stored them in a nearby warehouse.

Explains Hahn: “Allied delivered the panels we needed each day directly

to the rooftop early in the morning. We didn’t have to store the panels at the site, nor could we have, given the limited weight capacity of the roof and usable area on the ground. So Allied really helped streamline the logistics of the installation process.” Observes Robinson: “Installation went extremely smoothly. There was no disruption to our operations.”

THE RIPPLE EFFECT

Over a dozen media outlets did stories on LPS Industries’ new Solyndra installation. “Then out of the blue we got an email from a large, global pharmaceutical company on whose door we had been knocking for years, getting nothing,” Robinson mentions. “The email said ‘Congratulations on your new solar panel installation. I’m glad to see that you are an environmental friendly company. I will keep you in mind for future business.’”

It’s another sign, Robinson adds, of a brighter, more sustainable future.

* “White Roofs Catch On as Energy Cost Cutters” in *The New York Times*, July 29, 2009

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