PROJECT PROFILE

Frito-Lay

SarnaProof

Project
Frito-Lay Distribution Facility
Los Angeles, California

Owner
Frito-Lay

Solar Electric Roofing Manufacturer
Solar Integrated Technologies
Los Angeles, California

Roofing Contractor
Southern California Roofing
Downey, California

Roofing Membrane
Sarnafast, mechanically attached, 60-mil EnergySmart Roof membrane

Project Size
67,000 sq. ft.

Completed
May 2003

The Need for Energy Efficiency

In 2000 and early 2001, the West Coast experienced one of the worst utility power meltdowns in history. Electrical blackouts, brownouts and record energy bills caused by flawed utility industry deregulation made business difficult for companies from California to the Pacific Northwest. Since then, many businesses have begun to see that energy efficiency is a necessity.

Some, like Frito-Lay, have been committed to protecting the environment and conserving natural resources – and have reaped the financial benefits of those actions – for years. For example, every Frito-Lay employee is encouraged to act as an environmental steward, and each manufacturing location has its own Green Team, a group of individuals dedicated to finding ways to help the company save money by saving energy and other resources.

So when Frito-Lay's Los Angeles, CA distribution warehouse needed a new roof, it was no surprise that management looked for a way to not only replace the existing built-up roof with a durable, long-lasting alternative, but also to find a way for the roof to make their facility more energy efficient.

Turning a Liability into an Asset

Frito-Lay found the solution in SR-2001, an integrated solar electric roofing system designed and patented by Solar Integrated Technologies (SIT). Comprised of Sarnafil's 60-mil single-ply thermoplastic EnergySmart Roof® membrane and flexible photovoltaic panels manufactured by Uni-Solar, the photovoltaic roofing system incorporates two industries' best components to create a roofing system that actually turns a roof into an energy-generating asset.

How does the solar roofing system work? On their state-of-the-art production line, SIT laminates 12 thin, lightweight, flexible photovoltaic modules onto Sarnafil's EnergySmart Roof membrane to form a 10-foot by 40-foot flexible solar roof panel. During the roof installation, the panels are hot-air welded onto a

new Sarnafil roof system. The electrical wiring is connected to inverters that convert the DC power generated by the solar panels into AC power that Frito-Lay can use to run computers, lights, air conditioners and other equipment.

Sarnafil's highly reflective white membrane plays an important part in the roof system's operation. "We use Sarnafil membrane in SR-2001 because of its proven performance history and its heat-welded seams," said Peter Chaitkin, account executive at SIT. "It provides the building owner with a durable roof that will last for decades."

The membrane's reflectivity allows the flexible photovoltaic panels to absorb more of the sun's rays in less-than-optimum conditions, such as cloudy days or early mornings and late afternoons, when the sun is not directly overhead. "The EnergySmart Roof membrane reflects the sun's rays, reduces heat absorption into the building, decreases cooling costs, and actually increases the productivity of the solar panels," says Chaitkin. The Frito-Lay roof is designed to generate 100 kilowatts or about 186,000 kilowatt hours of clean energy annually – enough electricity to power 28 homes.

Making It Pay

For Frito-Lay, the environmental benefits combined with the local utility's solar rebate program made the high quality SR-2001 roof system a clear-cut choice. "The LADWP (Los Angeles Department of Water and Power) was offering a substantial incentive to install solar photovoltaic roof systems," said Chris McKenna, electricity manager at Frito-Lay. "That made the project economical for us."

Installation Proves Easy

Frito-Lay's 67,000 square foot roof was the first SR-2001 installation, so roofing applicator, Southern California Roofing, took extra care to make sure the project went smoothly.

"First, we arranged the photovoltaic modules according to the customer's request for kilowatt power," said Chuck Point, project manager at Southern California Roofing. "Each SR-2001 panel generates approximately 1,500 watts. Since Frito-Lay wanted a 100 kilowatt system (100,000 watts), their design included 70 of the 10-foot by 40-foot solar panels."

Final connections of all rooftop electric wiring to inverters and then to the utility grid.

Adds Point, "The roof and solar installation went smoothly and quickly. We've been installing Sarnafil roof systems for over 20 years now. It's a superior single ply membrane that our workers are very experienced at installing."

Tracking the Results

Now that the system is fully operational, Frito-Lay can see exactly how much electricity the roof is generating using SIT's web-enabled energy management software. "The system works so well that during some periods of the day, we are producing more power than we need," said McKenna. "When that happens, the extra power gets fed back into the utility grid."

Workers from Southern California Roofing are installing the SR-2001 photovoltaic panels to the Sarnafil EnergySmart Roof membrane.

In addition, the energy management software allows Frito-Lay to analyze data, which will help them catch billing errors and manage electrical consumption more efficiently. Customized alarms and status indicators also allow for off-site power management.

Generating Energy and Good Will

"We are very happy with the results," said Matthew Ollivier, Frito-Lay's area planning manager. "We have an environmentally friendly roof that will last for years, help us keep our cooling costs down and generate electricity all at the same time."

Since the first installation of the SR-2001 integrated roof system, Frito-Lay has installed another system on its Sylmar, California distribution center roof, and anticipates additional installations in the future.

"The performance of the system has exceeded our expectations in terms of efficiency and power produced," adds McKenna. "We anticipate significant cost savings from reduced use of electricity with the new photovoltaic roof systems in place."

For more information on how you can have a cost-effective Sarnafil roofing or waterproofing system on your institutional, industrial or commercial building, contact Sarnafil today.
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