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[EXAMINATION]

parking professional

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Light Up The Night With Solar-Powered LED's

Eneref Institute examines how Solar-powered LED offers security for fire station parking lot in Parkland, FL.

Today's advanced light fixtures make yesterday's decisions about how to illuminate parked cars seem as quaint as kicking the tires. That's why the cost of hiring a lighting professional is usually justified by their knowledge of energy-saving tricks. However the Eneref Institute (www.eneref.org), a research center that studies and reports on successful green building projects, found that well over 60 percent of retrofits in commercial facilities are specified by non-lighting professionals. And without a lighting professional's specification, energy efficiency is often sacrificed unnecessarily.

Of course the most effective method to reduce energy costs is to simply disconnect from the electrical grid altogether as Parkland, Florida's Fire Station number Forty-two discovered. Installing nearly 50 streetlights in an outdoor parking lot and adjacent walkway might ordinarily be a burdensome task, but with advancements in solar power street lights, the job of brightening up the firehouse parking area at night was not only easier than expected, but greener as well.

SolarOne Solutions is a Massachusetts-based high-technology company whose solar-powered LED streetlights have recently been installed in parking areas everywhere from Massachusetts Maritime Academy to as far away Masdar City in Abu Dhabi - and now in Parkland, Florida as well. What makes the SolarOne Solutions technology unique is an intelligent management system called SO-Bright® that can balance power to assure that the streetlights remain bright night after night, even when clouds block the sun during the day. That's not the case for some solar-powered lighting that needs a bright day to power the solar panels in order to remain well lit at night.

"We went through a lot of companies before we found SolarOne. They not only provided a product that is solar-powered but also aesthetically pleasing" said Jim Berkman, the Director of Public Works for city of Parkland.

It was the town's desire for free solar power that helped them decide to light up the parking area of the fire station with solar powered lights. But the town wanted to showcase the technology and therefore needed an assurance the system would be vertically failsafe.

The project went out to bid and was awarded to an architectural firm. The bid required not only energy-friendly specs, but also that the light fixtures meet the wind codes of South Florida in order to withstand the necessary level hurricane storms.

"SolarOne had that product and it met the wind code" said Jim Berkman.

Parkland installed a shoe box light fixture design. The spacing and uni-

Solar-powered LED street lights illuminate a parking lot in Parkland, FL.

formity of the advanced LED optics offered both higher quality lighting and a considerably reduced project costs because fewer light fixtures were able achieve superior lighting results. And the light was more uniform and natural looking. Each of the 41 fixtures offered 3,000 lumens of light and 11hrs of peak lighting during the night.

Berkman said that putting in a system where you don't have to run electrical conduits made the installation "very easy". The installers simply dug the holes, positioned the poles and tightened them.

"It was very easy and smooth" said Berkman

The paved parking lot accommodates 50 parking spots and services both the fire station and Parkland's Department of Public Works. The lot is well manicured and the 35 light poles were installed on the parking lot and 6 additional lights were installed along the foot path.

Pat Cristiano, President of PLA Electric, the company that installed the fixtures, reports that "it came together very well and was a pretty simple process."

"The equipment came from the factory and basically all we had to do is assemble and install it" said Cristiano.

The solar-powered streetlight system offers enormous benefits over a traditional system. The fixtures are immune to power outages and can stay on all night. The installation requires no trenching and no re-paving. Maintenance is substantially lower, as is the liability when compared to a higher voltage system. And the City of Parkland can boast about the offset of CO_2 emissions.

"The equipment is going to last longer than a regular standing light fixtures because it's LED, unlike a typical light bulb where you have a filament that you have to worry about burning out. They have got themselves a really good installation there" explained Cristiano.

Besides improving the appearance of the parking lot, the light helped curb petty theft. Prior to installing the lights, occasionally a few cars had been broken into. Although no vehicles were stolen, a number of personal items that had been left in the firemen's cars were taken. The fire station, which of course operates 24 hours per day, has no gate around the lot, so the cars were exposed at night while fire fighters were inside the building. The lights offer security for the cars and the fire station adding to the overall value which helped justify the costs.

However when the costs of an entirely new lighting system are beyond the budget a lighting designer can often find low-cost solutions to reduce energy costs by retrofitting the existing systems. The goal is to reduce energy use while still offering the necessary light levels to keep a parking area both safe and attractive. One of the best tricks that lighting designers use is to literally place, or point, the light where it's needed. This may seem obvious, but poorly designed fixtures don't always illuminate spaces effectively. Consider that a fluorescent lamp offers a fixed amount of light. If that light can be focused with a well-designed reflective material, the total number of fixtures can be reduced without any light loss.

A relatively inexpensive material from German manufacture, Alanod Aluminum, called Miro, is finding its way into many well-designed light fixtures because of its unique ability to control light direction. It's also highly reflective – another advantage over older materials. Unlike the Miro product, some reflective materials actually absorb so much of the light they are designed to reflect that the efficiency of the fixture can be reduced by as much as 20%. In other words, 20% of the energy is just wasted. And once you combine the enhanced reflective benefit of a better material with the directional control it can offer, lighting designers are reducing energy use in some spaces by as much as 75%, depending on what fixtures were replaced.

"But it's not just the Miro material", explains Jay Goodman, CEO of Westinghouse Lighting Solutions, and a strong advocate for the better technology, "it's the way in which you design the fixture and facet the reflector to maximize efficiency."