



Optimized Production

Since 2012, a manufacturing facility in New Jersey has operated on solar energy.

By Anne Vazquez

A reliable and efficient power supply is of paramount importance to all facilities, and this is especially true for manufacturing plants. At OPEX Corporation (OPEX) in Moorestown, NJ, the decision to install a vast solar photovoltaic (PV) energy system on-site at its global headquarters has delivered a reliable, efficient, and environmentally friendly source of power for this designer and manufacturer of high-speed mailroom automation, document imaging, and material handling equipment. Since April 2012, the company has derived 100% of the electrical energy needed to operate its 250,000 square foot manufacturing,

distribution, and administrative complex from a 2.77 megawatt (MW) solar array. As a result, OPEX is effectively a net-zero user of electrical power from traditional energy sources.

Planning began in 2009 when Dave Andrews, facilities manager at OPEX since 1995, began discussions with the company's President and CEO, Dave Stevens, on the possibility of a solar installation. "I had been reading about the technology and considered the value and implications of this type of project," says Andrews. "As we started learning more about it, the potential of putting solar into our operation began making good financial sense."

Dave Kammeyer, CFO, and James Liebler, OPEX's legal counsel, were soon brought into the discussion, and together they formed the team that spearheaded the solar project.

Two incentives were driving forces on the financial side: attractive rates of solar renewable energy credits (SRECs) and a 30% rebate offered by the federal government. In New Jersey, solar energy producers earn one SREC for every 1,000 kilowatt hours delivered by their system. Meanwhile, the 30% rebate (which is no longer available) made the project more attractive for OPEX.

The sustainability aspect of solar energy was also enticing for the company. "We valued the green aspect of this type of project, and that was certainly part of the consideration," explains Andrews. Before switching its facilities to operate on solar energy, OPEX had already undertaken a number of initiatives to reduce its energy consumption and embrace sustainability—a process that continues today.



Top: Founded in 1975, OPEX Corporation has consistently expanded its facilities to currently occupy 250,000 square feet in Moorestown, NJ. Middle: The company's 2.77 megawatt solar energy system includes two parking lot canopies. Bottom: In preparation for a 40th anniversary celebration, interior renovations and updates are also being performed.

"We were spending a lot of money on electricity, and were constantly battling to reduce those costs," says Andrews. The company's campus had consistently expanded since Andrews joined the company; meanwhile, energy prices continued to rise.

"In 1989, the company built a 50,000 square foot facility here in Moorestown," says Andrews, "and by the time I arrived in 1995, OPEX had purchased a 40,000 square foot adjacent building to accommodate our rapidly growing business. Several years later, we doubled the size of the original facility." After several other transactions, OPEX now occupies two adjacent buildings on 25 acres. Assembly is located in the 150,000 square foot building, while all other manufacturing operations are housed in the 100,000 square foot facility.

Stepping Up To Solar

Once the decision to pursue the solar project was made, OPEX began the search for an installer. In mid-2010, the company chose H2 Contracting, LLC. (H2) of Marlton, NJ as general contractor for the design and build of the project. H2, which provides construction management and general contracting with a focus on renewable energy and sustainability projects, investigated suitable technologies, and assembled costs and a phasing schedule.

Going into the project, OPEX annual energy consumption from the traditional grid was 2.589 million kilowatt hours (kWh), and the company's goal was to

install a solar array to cover 100% of the energy load of its facilities over the year. To meet these specifications, H2 designed the 2.77 MW installation consisting of 8,372 solar panels (each capable of producing up to 250 watts of electricity).

The panels cover the roofs of two buildings and two parking pavilions, along with a three acre solar field array. The parking canopies allow employees to park their cars under a protected overhang, plus each is outfitted with a charging station that employees can use to charge their electric vehicles at no cost.

Mark Heenan, LEED AP and President of H2, says, "The solar system installed at OPEX is not a typical design. Usually solar arrays are set up with all panels facing the same direction and with the same tilt. With the OPEX system, because we mounted the panels on multiple rooftops, canopies, and a field array, the 82,000 square feet of PV panels are situated in six different directions, and with various tilts to better capitalize on available sunlight and space. We then utilized inverter technology to optimize the flow of electricity."

The energy produced is used directly in the company's manufacturing and distribution operations, and administrative offices. At any time when energy consumption exceeds that which is produced by the solar installation, the company supplements by drawing energy from the grid. Conversely, when the solar panels are producing more energy than what is needed for the operation of the facilities,

PHOTOS: OPEX CORPORATION

A Chat With Dave Andrews



Dave Andrews
Facilities Manager
OPEX Corporation

How long have you worked for OPEX, and what are your responsibilities as facilities director there?

I have worked at OPEX since 1995. In my position, I am responsible for everything having to do with our facilities in Moorestown. This includes the planning, design, and management of our buildings. I handle renovations and retrofits as well as security and safety. My view is that my department is here to serve customers, which is everyone who works at OPEX.

What are you working on now at OPEX headquarters? We are in the process of doing numerous renovations in anticipation of the 40th anniversary celebration that we're having next year. We have employees from around the world who will be traveling here for a weekend celebration. ●



In order to maximize available sunlight and space, the solar panels at OPEX are situated in six different directions, at various tilts.

the surplus energy is put back into the grid. Over the course of 12 months, the solar energy system is designed to generate 100% of the electricity needed to run total operations.

The installation was designed for an operational 25 year lifespan. Notes Andrews, “We had the land, and we have a long-term investment in these buildings. We own these properties and do not intend to go anywhere. The conditions were right.”

Building On Successes

Charged with keeping facility operations efficient, Andrews has implemented numerous environmentally focused improvements on the OPEX campus. Lighting retrofits, roofing improvements, HVAC automation, and recycling initiatives have been among these.

The T12 fluorescent lighting was retrofitted with energy saving T8 lamps throughout all the facilities, and motion sensors were added in some areas. Currently, Andrews is considering the use of LEDs for parking lot lighting. “On the HVAC side, we’ve installed a computer-based programmable system to track and operate our 100 plus rooftop units,” explains Andrews. “When I began work-

ing here, there wasn’t really a centralized control system. I now manage the units from a computer, and it has saved us quite a bit of money.”

A recycling program put in place at OPEX resulted in diverting 26 tons of waste from landfill last year. The initiative began with cardboard and has grown to include paper, plastic, glass, and other

materials. All the scrap materials and oils used in manufacturing are also recycled. “In addition to those items, we also have programs in place to recycle batteries and electronics,” says Andrews. “I am always looking to improve those programs.”

Restroom renovations are also on Andrews’ project list; currently he is upgrading facility restrooms. This includes replacing existing fixtures with low flow models and replacing hand towels with hands free dryers. Installing the dryers will not only eliminate the need to purchase paper towels for the restrooms, notes Andrews, but it will not add to energy costs since the dryers will operate using solar power the majority of the time.

In 2004, when the company purchased its 150,000 square foot facility, set on 19 acres, the decision was made to create several sports fields on the land. “Our CEO wanted to put the fields there, and we let a local school and several organizations use those spaces,” explains Andrews.

The recreational fields are part of eight acres of open land on the OPEX campus, and the company had a well

Project Information

Name of Organization: OPEX Corporation. **Function of Facility:** Manufacturing plant, product assembly, engineering, world headquarters office. **Location:** Moorestown, NJ. **Square Footage:** 250,000. **Construction Timetable:** Solar energy project (Fall 2010 to April 2012); other renovations ongoing. **Facility Owner:** OPEX Corporation. **In-House Facility Manager:** Dave Andrews, facilities manager. **General Contractor:** H2 Contracting, LLC. (design and build of solar energy project).

Product Information

Furniture: Allsteel; HON; Teknion. **Carpet:** The Mohawk Group. **Ceilings:** USG. **Paint:** Behr; Benjamin Moore. **HVAC Management System:** Wattmaster Controls. **Security System Components:** Honeywell. **Fire System Components:** Digital Monitoring Products. **Lighting:** Leviton (motion sensors); Philips. **HVAC Equipment:** York. **Generators:** Generac. **Roofing:** Firestone Building Products; Sika Sarnafil. **Restrooms:** Excel Dryer. **Doors:** USA Wood Door, Inc. **Elevators:** Otis; Schindler. **Solar PV System:** Canadian Solar Modules; SatCon; Solaire Generation.





installed to meet irrigation needs for the spaces. “On a given night, there might be 35,000 gallons of water used to irrigate those fields,” says Andrews. “And it goes right back into the ground. That’s worked very well.”

Moving Forward

“The solar installation presented a learning curve for me, but the system performs very well for us,” says Andrews. “The installation year was quite busy. It was worked on throughout most of 2011, and it went live in April 2012. As far as our daily work on the system, I monitor its operation, and there is a website that shows me all of the system conditions. But there has not been a great deal of work required as far as maintaining it.”

As in many areas, New Jersey saw higher than average snowfall this past

The company’s full line of automated material handling systems is manufactured using 100% solar energy. Three shifts operate five days a week in the OPEX manufacturing operation.



winter. When asked about the impact on the solar energy installation, Andrews notes he did see a dip in energy production. “I was just looking at the electricity bills and noticed that last month [February 2014] was the first in a year we didn’t meet our energy production targets,” he says. “But when you average it out over 12 months, we are still way ahead of the game. The system designers took into consideration so many factors, including seasonal change and conditions.”

With facility improvements ongoing, Andrews and his staff will be busy preparing for the company’s 40th

anniversary celebration next year. Says Andrews, “We want to improve the efficiency of the buildings without compromising our work environment or detracting from the appearance of our facilities. We are prioritizing improvements and will be taking care of those throughout the coming year. 

This article was based on an interview with Andrews (www.opex.com) as well as project literature.

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