

An Ohio Mirror Manufacturer Committed to Sustainability Reduces Energy Use



Industry

Light Manufacturing

Building type

Plant & Office

Measures implemented

Air Compressor
Efficient Lighting
Occupancy Sensors

Total project cost

\$88,085

Projected annual energy savings

318,409 kWh

Incentives paid

\$ 24,761

Payback period without AEP Ohio incentive

3.6 years

Payback period with AEP Ohio incentive

2.6 years

Programs

Custom & Prescriptive



Replex Plastics

Project summary

Reducing waste is the “holy grail” for a company committed to sustainability. And that includes energy waste. Replex Plastics replaced an over-sized air compressor, installed occupancy sensors, and replaced inefficient lighting reducing overall energy use at the same time it was launching a new solar product line, and seeing its traditional business return from a two-year economic downturn.

Business challenge

In 2005, Replex Plastics purchased a manufacturing facility built in the early 1900s. It relocated its manufacturing operation there in 2006 using 72,000 square feet of 100,000 square feet under roof. After reducing natural gas consumption by over 90% from 150,000 to 10,000 ccf/year, President Mark Schuetz suspected that opportunities to reduce electricity waste existed but wasn't sure where to begin.

In 2007, a mechanical engineering intern from Ohio University

measured the amperage draw on every circuit in the building and found roughly 20% of the total power was being used by a 100 hp fixed speed air compressor that had been installed as a replacement unit just one year earlier. Though a no cost software modification made a small difference, more help was needed.

Knowing lighting efficiencies had improved in recent years, the next challenge was learning what opportunities for savings existed with newer technologies. “The hardest work is getting a census, an inventory of your lighting” said Mr. Schuetz. “We had a hodgepodge of different lamps with different color rendering and varying light levels”.

Retrofitting with more efficient lighting seemed to be the way to go.

Solution

Proving the adage that sometimes it's who you know, Mark Schuetz credited contractors Des Dugan of Air Technologies and Bob Murphy of



“AEP Ohio’s gridSMART incentives provided the nudge to go beyond simply replacing lighting.”

Mark Schuetz
President
Replex Plastics



Knox Electrical Construction with identifying the opportunities and helping Replex benefit from AEP Ohio’s gridSMART® incentives to get the results he was seeking.

Air Compressor: Air Technologies monitored the actual load on the air compressor around the clock for one week, and ran computer simulations of air demand and pump characteristics. They concluded that a 40 hp variable speed drive air compressor would be more than adequate to supply all the compressed air needs for Replex. With a variable speed drive modulating output when air demand is low, Replex estimates energy savings up to 75% while still meeting its needs.

Lighting: Knox Electrical Construction inventoried the plant’s existing “hodgepodge” of high intensity discharge lamps, T12s and others, measured light levels, and recommended retrofitting the plant to more efficient T5s and T8s. Knowing about gridSMART incentives for occupancy sensors, Knox Electrical Construction recommended controlling lighting with occupancy sensors by zones. “Before the sensors were installed, all the lights in the plant would be turned on at 5:30 am and stay on all day whether or not they were needed.” Using motion sensors and timers, lights now come on as you walk through the plant, stay on for a brief period, and automatically shut off shortly after an area is vacated. Even in mid-day, one-third to half of the lights may now be off in areas where there is no activity.

Key benefits

Energy savings are the obvious benefits, but right-sizing the air compressor, installing high efficiency lighting, and automating the lighting controls yielded many other benefits.

About AEP Ohio’s energy efficiency programs for businesses

AEP Ohio’s gridSMART® initiative provides incentives to help business customers purchase and install energy efficient equipment. Prescriptive incentives are available for common commercial and industrial measures including lighting, HVAC, motors and drives, refrigeration, and food preparation and storage equipment. Custom incentives are available for process improvements and other measures not covered through the prescriptive incentives.

For more information, visit gridSMARTOhio.com or call 1-877-607-0739.

The smaller 40 hp VSD air compressor is extremely quiet. Existing air drying capacity is expected to be more effective and the smaller compressor is a visual reinforcer of the company’s drive to reduce waste.

The new energy efficient lighting improved the quality of lighting dramatically. Color rendering, light uniformity and perceived light levels improved. “People feel better about their work space,” reports Schuetz. “At first people were worried about the changes. They worried that the occupancy sensors would fail and they might get stuck in the dark. That never happened. Now employees love it. Color rendition makes all the difference.”

The financial benefits go beyond the project’s energy cost savings. Replex credits improvements in lighting quality for better productivity, less scrap, and higher product quality. Improvements in the building’s energy utilization also improve its asset value.

Project lessons learned

When the new air compressor was installed, the existing air compressor was left on-line as a backup. During the first two months, the new compressor was intermittently shutting itself off due to a “converter alarm”. AEP Ohio determined the cause was a power quality issue between the facility’s power factor correction capacitors and the new compressor. Disconnecting half the PFC capacitors bank solved the problem with no capital cost and no impact on their bill.

Future plans for efficiency

Replex has cut the energy use of one thermoformer by half as it looks to process efficiency as a next step.



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Disclaimer: AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program.