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More Companies Are Outfitting Warehouses With 'Smart' Lights

To reduce costs, firms are investing in LED lighting systems with the potential to cut energy bills deeply



Quality Bicycle Products is saving big with LED lights in its new distribution center. *PHOTO: TAYLOR ESHLEMAN*

Sydney - September 13, 2015 - In a drive to improve efficiency, some companies have concluded that their overhead lights are bringing them down.

Industrial lighting, which shines on everything from the aisles of warehouses to the parking lots at car dealerships, can be one of the biggest expenses a corporation has. Often based on technology that is decades old, some of these giant lights are electricity hogs and cash sponges. As a result, a growing group of businesses are experimenting with "smart" lighting systems that have the potential to cut energy bills deeply.

Quality Bicycle Products, a wholesaler of bicycle parts and products, is one of those businesses. Although most of the Bloomington, Minn.-based company's U.S. facilities are outfitted with traditional fluorescent tube lighting, the company went in a different direction in the warehouse at its new 122,000-square-foot distribution center in Lancaster, Pa., installing light emitting diode, or LED, technology from Boston-based Digital Lumens Inc.

Dave Smith, site manager for the Lancaster facility, which opened in January, says management wanted lights that would switch on and off automatically as workers moved around and that could adjust to the amount of daylight present at any given time. That's because most of the 80-85 workers in the peak summer season start at midday and work late. He estimates that weekly energy consumption at the warehouse is less than half that of the previous warehouse the company had in Middletown, Pa.

"The payoff for our investment was a year and a half," Mr. Smith says."

Fixing inefficiencies

The savings available to companies such as Quality Bicycle Products reflects the long-standing reliance of many warehouses on fluorescent tubes or metal-halide light fixtures, which cast light from the ceiling in a circular blob. Such fixtures are inefficient because the cast light must overlap to provide total coverage. And because warehouses typically feature narrow aisles, much of the light doesn't reach floor level where it's needed because it is wasted on top of stacked shelves.

Lighting companies, including Digital Lumens and Australia's Greener Earth Energy Ltd., which owns the Vivid Industrial digital-lighting business, have tried to address those inefficiencies by designing fixtures that cast light at certain angles to eliminate black spots. Their digital systems also are fitted with motion and daylight sensors that can measure how much light is needed to supplement natural light from doors or windows. Greener Earth Energy says its lights transmit more than 80 pieces of data a second, including information about when a fitting will need replacing.

A July report by the Energy Department found that LED lights made up just 2% of indoor lighting used by U.S. industries last year, but they accounted for 17% of the energy savings from all LED light installations in the U.S., mainly because factories and warehouses use higher-wattage fixtures than homeowners and keep them on longer.

"Investments in infrastructure like lights don't happen at the same pace as investment in smartphones or computers," says Tom Pincince, the president and chief executive of Digital Lumens.

Still, the company says that its systems can slash a facility's lighting costs more than 80% to less than a dollar a square meter from \$9 to \$10, meaning they could generate a return on investment within two years. As more businesses adopt the technology and reap the savings, the companies on the fence will follow, says Mr. Pincince. He sees the global market for smart industrial lighting increasing 25% to 30% this year.

"It's effectively having a laptop computer under each light," says Sam Marks, Greener Earth Energy's managing director.

Cost vs. benefits

Smart LED lighting systems are about two to three times as costly as traditional fixtures, though the companies that supply them say the price difference can narrow when the technology is used at scale, such as in large warehouses. Still, the industrial sector has been slow to adopt them.

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Heavy-Duty Savings

Industrial users have been slow to switch to LED lighting, but when they do the reduction in energy use is substantial (figures for 2014)

Lighting used mainly for...	LED installed share*	Energy savings, tril. BTUs*
RESIDENCES/HOTELS		
A-type	2.4%	17.6
Decorative	1.5%	2.3
Directional	5.8%	30
SHOPPING MALLS/OFFICES		
Small directional	21.8%	15.4
Linear fixture	1.3%	22.8
INDUSTRY*		
Low/high bay	2.2%	24.1
Building exterior	11.5%	5.5

*Factories, warehouses, big-box retail, container yards
 Source: Energy Department
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