

Smart Street Lights-Not Only About Energy Savings

Street lights are becoming a whole lot smarter and the market is growing.



As much as half of a city's electricity bill is from simply powering streetlights which are not always needed. Europe pays over €10 billion each year only to power streetlights that burn when no-one needs really them. By adopting smart technology for street lights, utilities have the potential to save a great deal of money.

Pike Research predicts the smart street lighting market to grow steadily over the remainder of this decade. Shipments of smart street lighting systems, which were under 200 worldwide for 2012, will reach to over 1,100 in 2020. Shipments of communications nodes will grow from 550,000 this year to 4.8 million in 2020.

Not only about energy savings

Utilities are turning to LED bulbs for smarter street lighting since these allow for better dimming control than standard street lights and their electronics allow for easy integration of control nodes. The replacement of old bulbs with LED's is saving cities 40-70% on their street lighting energy bills.

While the installation of LED bulbs is certainly a smart decision, smart street lighting is more than that. Cities are now installing gadgets to take advantage of the fact that street lights already have power, are pervasive throughout the city; and located on a high vantage point. These gadget include:

- Communications modules to create a canopy network throughout the city
- Security cameras
- Sensors that dim the lights when there's no one around
- Software to strobe the lights to lead police and fire to emergency sites

Value of smart street lighting is catching on

A number of utilities are seeing the value in smart street lighting. One such utility is Florida Power and Light which has signed a contract with Silver Spring Networks, a networking platform and solutions provider for smart energy networks, to upgrade its network of 75,000 street lights across south Florida. The utility plans to deploy Silver Spring's wireless IPv6 mesh networking technology and management and control software to connect and control the street lights in the Miami-Dade County region. The utility expects the remote monitoring and control capabilities of the system to significantly improve street light restoration response times and enhance the quality of service to its street light customers. This project forms part of the utility's ongoing effort to modernize and network its electric delivery system which includes almost 500,000 street lights throughout the 35-county service area.

Silver Spring's smart street lighting solution has been selected for projects in cities such as Copenhagen and Paris. Copenhagen, one of the world's most sustainable cities, wants to deploy a citywide canopy network to connect more than 20,000 street lights. The city of Paris is aiming to adopt advanced street lighting technology and a traffic controls program in order to reduce its public lighting energy consumption by 30% over the next ten years.

A "dim" view

Another example is the Twilight system, designed by Twilight-a Dutch startup, which works by sensing movement-whether it's a cyclist, vehicle or pedestrian. Once movement has been detected, the lights respond instantly by shining brightest where they are most needed. Other lights further afield will remain dim. Instead of just one light, the system illuminates multiple lights all around a moving vehicle or pedestrian.

The sensors inside are also smart enough to know not to activate the lights when a bird flies by, or when wind moves tree branches. The system can even tell what type of object is approaching; since a car moves faster, the lights around it are a bigger diameter and start brightening farther down the block. Wireless sensing has come a long way since these sensors were not up to the challenge only five years ago. These systems have slashed energy usage by 50-60%.

Hundreds of these lighting systems have already been installed at train stations, parking lots, a castle in Germany, and even an entire town in the Netherlands.

Innovative street lighting ideas

Twilight is looking into programming custom lights for certain situations. For instance, a fire truck driving down the street will have the ability to turn the streetlights red as it passes to help alert other drivers. Street lamps will even be adapted to flash red to warn residents of extreme weather conditions. Using street illumination in yet another form, the Dutch city of Eindhoven has even installed illuminated pedestrian crossings, where sensor-equipped white stripes illuminate to alert pedestrians that it's safe to cross.

The Dutch artist Daan Roosegaarde, meanwhile, has created an innovative plan for highway illumination. His Smart Highway, currently in a pilot phase in the Netherlands, features giant snowflakes and flowers that, painted in illuminating paint onto the road surface, light up to tell drivers the outside temperature and provide interactive traffic directions. There's even a lane that automatically recharges electric cars.

The smart street lighting market is encouraging innovation on all levels and this will see cities become even smarter and more sustainable.