



Doumen District, Zhuhai, China

Intelligent LED Street Light Retrofit is Latest to Claim “Smart City, Green City” Title in China

The Doumen District in Guangdong province, People’s Republic of China, embarked on a district-wide lighting retrofit of its nearly 9,000 streetlights on the main road. By utilizing highly efficient LED lights with a LonWorks-based dynamic dimming and control system, the city benefits from the new system with an average of 71% energy reduction and multiple smart city applications such as environmental detection and road monitoring applications.

The Challenge

Prior to the installation of the new system, the Doumen District, Zhuhai, China, sought to remedy many of the existing system’s shortcomings. In the old streetlight network, streetlights were not networked and managed by any system, creating many maintenance issues such as cable theft, power leakage, and simple oversights such as leaving the lights on. Commissioning was a difficult and resource-consuming process as several other

lights such as traffic and alley lights were powered by the street light cabinet which would make it difficult to upgrade to a new system.

Meanwhile, the old network consumed a large amount of energy everyday which put added pressure on the local government whose city is selected as one of the pilot cities for “Smart City, Green City” project in China.

The Solution

The Doumen District selected the Guangdong Rongwen Energy Science and Technology group to manage and maintain the retrofit of the 8900 streetlights as well as the integration of the poles, cables, cabinets and Internet of Things (IOT) smart control system provided by Rongwen, Echelon and Streetlight.Vision.

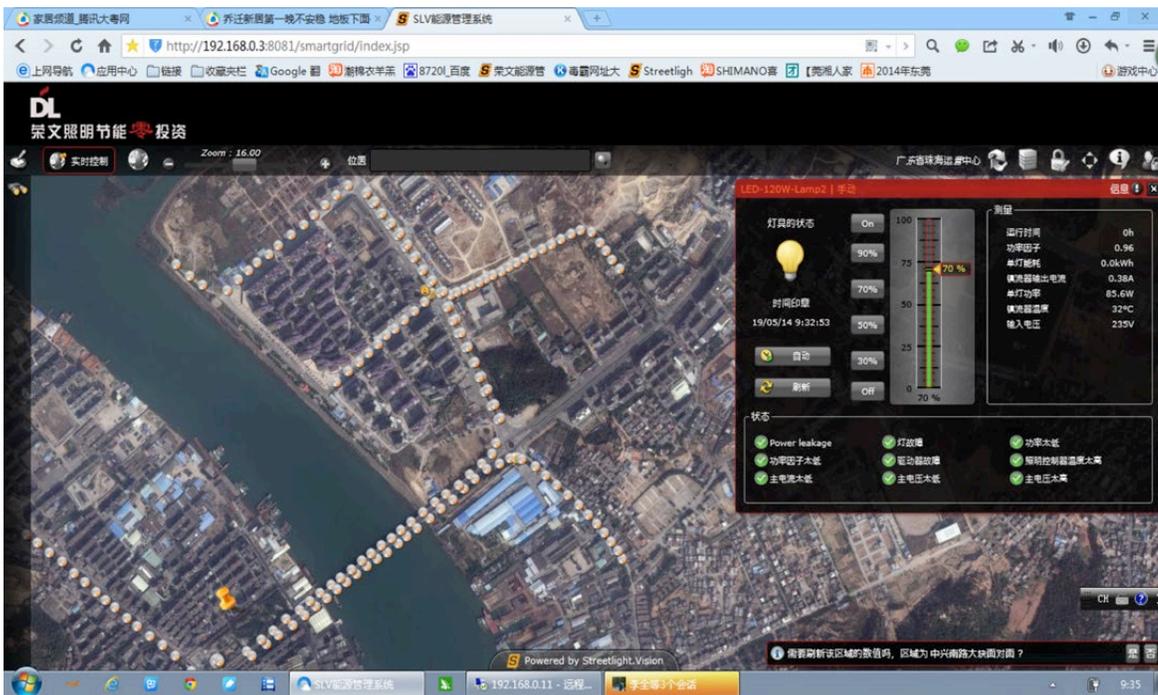
The retrofit began with replacing the old high wattage HPS streetlights with low wattage LED streetlights featuring LonWorks-based control system. Each streetlight has a LonWorks node which provides a unique ID for each streetlight for management and maintenance process. In order to achieve maximum energy

savings, comprehensive and multi-featured center management software powered by Streetlight.Vision carries out on-demand lighting, real-time control and alarms.

“Each lamp has its own ID number, and single lamp monitoring and control can be done through computers and various mobile terminals. We use low wattage Rongwen LED streetlights to replace the old high pressure sodium luminaries, saving up to 40-50% of energy and maintaining the luminance at 28-35 Lux. On top of the energy-savings from the LED luminaries, we also deploy streetlight management software to achieve at least 30% energy-savings by dimming streetlights according to the lighting demands in real-life scenarios.” said general manager of Guangdong Rongwen Zhuhai Branch, Naifu Liang.



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Using an Energy Performance Contract model to fund the retrofit, Rongwen provides turnkey services, including project designing, project financing, LED products procurement, construction, streetlights and alley lights installation and commissioning, personnel training, energy-saving monitoring, and verification. The purchaser pays the contractor 90% of the energy-saving bills every month within the 10-year contract term.

The Results

The results of the lighting retrofit have kept the district and local government on track for becoming a “Smart City, Green City” in China. Without the need of manually wiring power lines, resources are maximized as all communication can be done through the existing power lines. Remote monitoring and management capabilities allow for faster project implementation with minor environmental effects. The district has seen a 20% reduction in installation costs and 30% decrease in maintenance costs.

By using LONWORKS integrated intelligent LED streetlight, the luminance is 30% higher than the required standard of the Lighting Design of Urban Road. Using a COB LED solution generates a low color temperature (2900K) to create a better lighting environment and penetration as well as better uniformity.

Qi Li, Vice Director of Streetlight Management Office Doumen District said: “With the overall energy savings of 71%, this LED

project will help Doumen government save nearly 400 million KWH of electricity and reduce 3,773 tons of CO2 emission every year. In the past, when the cable was stolen, we wouldn’t know unless our patrol team found streetlights were not on at night. But with the management system, we’re informed with the latest streetlight status by mobile text messages or emails right away. This is something we never dreamed of before.”

Using LonWorks Power Line technology and the streetlight management software powered by Streetlight.Vision enables Zhuhai Doumen District’s streetlights to be more controllable, sensitive and reliable while features such as real-time control, failure analysis, alarm reporting, and energy management makes streetlight maintenance much easier and more efficient.

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