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MODERNISATION OF STREET LIGHTING IN THE MUNICIPALITY OF TRZEBIELINO

Sector: Energy efficient lighting

Timeframe: 2012

Location: Trzebielino, Poland



Photo: Philips Lighting Poland

PROJECT BACKGROUND

Trzebielino (approx. 3 800 inhabitants) is located in the central-western part of the Pomorskie Voivodeship. It is the first municipality in Poland where 100% of street lights are LEDs. The decision to modernise the street lighting was caused by significant amounts of money paid for electricity, dissatisfaction of citizens and low level of safety resulting from turning off the lights during the night hours (between 1:00 a.m. and 5:00 a.m.). The important contributors were also the high costs of lighting maintenance, its low quality and foreseen rise of electricity price. The modernisation project implemented in Trzebielino was a result of good cooperation of two companies - Energa Oświetlenie Sp. z o.o. and Philips Lighting Poland - which in June 2011 went into strategic alliance aiming at implementation of energy-saving lighting technologies in municipalities and industry.

PROJECT DESCRIPTION

In August 2012 Energa Oświetlenie Sp. z o.o. modernised 354 luminaires installed at the area of Trzebielino. 218 of them were replaced with new Selenium Led luminaires produced by Philips company. New lamps have the capacity of 55 W and 73 W. In case of remaining 136 luminaires, after the thorough inspection it was decided to replace

existing lights with another energy efficient LED lamps. Over half of the old luminaires were ineffective and obsolete mercury luminaires with the capacity of 250 W and 125 W. New luminaires were equipped with Dynadimmer controllers, pre-programmed devices changing light brightness, which allow for further 30% of energy consumption reduction. The newest LED technology generates artificial light in a much more efficient way, giving better lighting with lower costs.

FINANCING SCHEME

Modernisation of street lighting in Trzebielino was conducted using an ESCO scheme, which consists in financing investments from the financial savings achieved as a result of new solution implementation. ESCO also often means third-party financing (TPF) and can be described as an optimum combination of two important components, essential for successful implementation of a modernisation project: guaranteeing necessary financial resources and ensuring professional support and technical service. By deciding on the cooperation within the ESCO scheme, the municipality received a service of complex modernisation and maintenance of street lighting provided by Energa Oświetlenie Sp. z o.o. The final investment cost came to 296 000 PLN and didn't put additional burden on municipal budget as it will be repaid from the energy savings over

a 4-year period. The payment for the modernisation works is done in a form of higher exploitation and maintenance costs paid to the operator of the lighting system. The monthly cost concerning modernisation of one luminaire comes to 17,42 PLN.

PROJECT RESULTS

New street lighting is not only energy efficient and environmentally friendly, but also more comfortable for the citizens than the yellow sodium light. White light generated by LED lamps makes the areas around seen as brighter and looking more natural.

After the lighting modernisation also the citizens' sense of security increased as the municipality gave up turning off the lights during the night, which was necessary before due to the high expenditures on energy. Still, LED technology that was used makes it possible to reduce light brightness during late night hours which has generated further savings. Moreover, the places that were considered before by the citizens as dark even with the lights on, now are considered as well lit. Another important benefit of LED lights is their long lifecycle. Local authorities do not expect any major problems with the street lighting system for at least next 15 years.

In 2011 street lighting consumed approx. 162 000 kWh of energy (with the lights off between 1:00 a.m. and 5:00 a.m.). In 2013, after the modernisation, it consumed approx. 120 000 kWh (with the lights on whole night). In 2011 the municipality paid for lighting over 111 000 PLN per year, while after the modernisation this amount was reduced to 59 500 PLN, which means that the energy costs were reduced by 46,7%. In 2011 the expenditures for electricity constituted 61,7% of the municipality's total operational costs, while in 2013 this share was lowered to 44,26% of total operational costs.

Before the replacement of old street lamps with LED ones energy intensity of one light point came to 0,16 kW. Now it is 0,07 kW. Also the average cost of electricity consumption per one luminaire was

reduced by more than half - from 264 PLN per year to 118 PLN per year. Capacity demand, on the other hand, was decreased from 56 kW to 29 kW. Thanks to the financial savings achieved as a result of lighting modernisation, the municipality is installing additional light points. In 2013 their total number increased by 31 new luminaires.

For its pioneer investment the municipality of Trzebielino, who is the first municipality in Poland with LED-only street lighting, received special certificate of "100% LED municipality". The certificate is granted by the companies Energa Oświetlenie Sp. z o.o and Philips Lighting Poland to these self-governments, who decided to increase their energy efficiency by installing energy efficient LED lighting.



Photo: Philips Lighting Poland

MORE INFORMATION

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