

Modernization of the lighting systems in schools, kindergartens, student hostels and cultural institutions in Smolyan Municipality by means of energy efficient luminaries

## MUNICIPALITY OF SMOLYAN, (BULGARIA)

*The project envisages overall reconstruction of the in-house lighting systems in municipal sites in the city of Smolyan. The savings from this project are easy to forecast and the additional benefits impart it social significance.*

### PARTNER

Smolyan municipality is situated in the south central part of Bulgaria, in the heart of the Rhodope Mountains. The municipal center Smolyan is 250 km away from the capital Sofia, and 100 km south from the second biggest city – Plovdiv. The area of the municipality is 879 km<sup>2</sup>, 67% of which is occupied by centuries-old coniferous forests. The city of Smolyan (800-1000 m a.s.l.) occupies the larger portion of the hollow formed by the spread of the river Cherna, known as the Smolyan Hollow. It is surrounded by green meadows and centuries-old forests. Along the two banks of the river, in west-east direction, are situated the three biggest city quarters – Smolyan, Raykovo and Ustovo. This mountainous city demonstrates a combination of modern building art with traditional Rhodopean architecture.



The proposal for energy efficiency reconstruction of the in-house lighting systems is of exclusive importance for Smolyan Municipality. It will ensure simultaneously healthy indoor environment for the learning process of the young generation and reduction of the costs for electricity consumption for lighting in schools and other municipal sites not only during the present, but also in a long-term perspective.

### CONTEXT

**Project duration: 2005 – 2007**

The implementation of the project for energy efficiency reconstruction of the in-house lighting systems in municipal school buildings, kindergartens, student hostels and cultural institutions in Smolyan Municipality aims at achieving the following important goals:

- Creation of a healthy environment, without any risks for the youngsters' health, and conditions of comfort allowing the evolvement of a comprehensive and effective learning process;

- Enhancement of the security of school yards and the areas adjacent to the school buildings;
- Realization of significant electricity savings through implementation of energy efficiency measures;
- Reduction of the indispensable current costs for maintenance and operation of the lighting systems through introduction of energy efficient luminaries with long warranty periods;
- Introduction of a lighting system complying with the regulatory framework in force in the Republic of Bulgaria.

The reasons and preconditions calling for launching of actions for achievement of the above objectives are based on the following undisputable facts valid for municipal schools in Smolyan Municipality:

- ❖ Inadequate degree of luminance in the classrooms and service premises in municipal schools;
- ❖ According to the regulatory acts currently in force in the Republic of Bulgaria, which are harmonized with the norm requirements in force in the European Union, certain minimum levels of luminance should be guaranteed in the premises of educational establishments;
- ❖ The existing in-house lighting systems in the municipal schools in Smolyan, although in operation to a higher or lesser degree, in practice is not capable of fulfilling their designation. Lighting in the classrooms, corridors, gyms and school yards is operated at considerably underset indicators. The existing system for artificial lighting in school buildings fails to fulfill its designation and hence presents a real risk for the pupils' health vis-a-vis the high intensity and big physical and intellectual load pupil's face.

In the elaboration of the project towards better lighting in the municipal schools is included establishing of lighting systems outside in the yards and around the school buildings.

## EXPERIENCE OF THE PARTNER

### Partnership process

The main objective is normalization of the luminance norm requirements, as well as reduction of budgetary costs after implementation of energy efficiency measures.

### Technical data

Besides their failing to perform their primary designation, the depreciated luminaries lead to increased electricity consumption. In addition to their high watt capacity, the operation of the old luminaries (fitted with fluorescent lamps of 36 W and 40 W and incandescent bulbs of 40 W, 60 W, 75 W and 100 W) was connected with significant electricity losses (about 35-38% of the rated capacity in the case of fluorescent lamps) as compared to the new models (T-5 : 14 W, 28 W and 36 W; T-8 : 36 W and 58 W). The starting devices of the new luminaries (T-5 and T-8) are electronic ones and do not consume electricity.

Installed outdoor luminaries are with 400 W halogen bulbs and 70 W HP Sodium bulbs. New installed capacity of outdoor lighting is 63.5 kW.

# COST AND BENEFITS

## Economic

The project was financed through a financial contract with Energy Service Company.

Money saved: 85 034 €/year

Payback Period: 5 years

## Environmental

Energy saved: 1 339 658 kWh/y

# EVALUATION AND OUTLOOK

Achieved results:

- Energy savings
- Cost savings
- Positive impact on the environment
- Improved indoor comfort in the buildings
- Upgrading of the knowledge and skills of municipal officers and experts involved in project implementation
- Development of a good practice and dissemination of information about the implemented activities and achieved results

## FURTHER INFORMATION

Contact person: Milena Pencheva

Position: Expert

Organisation: Municipality

Address: Bulgaria, blvd 12

Tel/fax: +359 301 67 677

e-mail: [pencheva\\_7@abv.bg](mailto:pencheva_7@abv.bg)

Prepared by: the Center for Energy Efficiency Eneffect - Bulgaria

[www.eu-greenlight.org](http://www.eu-greenlight.org)

*This GreenLight Good Practice Case Study was prepared under the New GreenLight project with a partial support of the European Commission. The sole responsibility for the content of this publication lies with the authors. The views expressed here do not necessarily reflect the views of the Commission. The European Commission is not responsible for any use that may be made of the information contained therein.*