LIGHTING

Public Space Lighting – a costly problem for local governments

Financing lighting of streets, squares and roads located in the commune is one of the basic duties of local government units in the scope of their own tasks performed for the benefit of the local community. As the statistics and reports from numerous audits of the Supreme Audit Office show, the costs of fulfilling this obligation constitute a significant part of the budgets of local governments. Depending on the size and specificity of a given town, these expenses may reach even several percent of their budget.

How to make the most of the technological revolution in LED lighting?

Changing old types of discharge lamps to modern LED luminaires is first of all a big saving, but also opening the way for further developmental changes in lighting technology. The change of lamp type alone leads to savings in electricity consumption of about 40%. The use of semiconductor technology opens up the possibility of lossless and smooth regulation of light intensity as well as diagnostics and control of lamps. This allows the construction of networks and lighting systems using intelligent methods and algorithms of lighting intensity control and planning and optimization of maintenance work. Thanks to this it is possible to generate more than **70% savings in lighting costs**.

Following the reduction of electricity consumption, the reduction of CO_2 emissions of course follows – which in terms of ecology and living comfort of the residents gives additional, non-economic benefits.

Conclusion: When planning the modernization of lighting systems to achieve impressive savings and new functionalities previously unavailable, one should not only think about replacing luminaires. The key is building complex, modern lighting control systems.

WHY DON'T WE SAVE IF SOLUTIONS ARE AVAILABLE AT ARM'S LENGTH?

Metropolis Lighting – is an open public lighting management system

It is a comprehensive solution, built with the use of components from leading luminaire manufacturers and an integrated central management and monitoring system for urban lighting. It includes adaptive management of street and park LED lighting using both wireless transmission (GSM/LTE/Lora/ZIGBEE etc.) and PLC technology. The system enables the management of individual luminaires, creating groups of luminaires and scenarios dedicated for them, using both motion sensors and autonomous mode of operation (adjustment of light intensity based on data from ambient light intensity sensors).

The system architecture provides the possibility of integration with existing subsystems, as well as openness to future extensions with the use of a wide range of luminaires from various manufacturers.
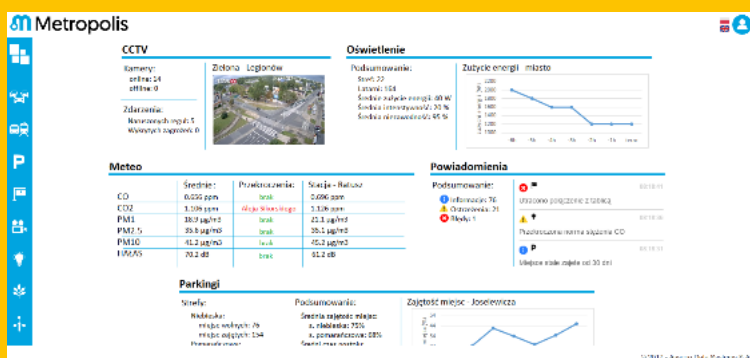
Functionality of the intelligent lighting module:

- effective monitoring of the functioning of modern lighting zones;
- remote management of elements of a modern lighting zone;
- measurable financial benefits related to the operation of modern lighting zones in the city;
- field to be extended by additional sensors – e.g. cameras, weather stations, pollution measurement;
- lighting data analytics enables optimizing budgets and improving cities' living comfort.

Basic functions of the intelligent lighting control system for streets, squares and parks:

- control of individual street lamps; switching lamps on and off and limiting their power, possibility of automatic modification of the expected level of lighting depending on road conditions; possibility of independent control of different lamps of the same network, e.g. in the area of pedestrian crossings;
- settlement of electricity consumption and working time of individual lamps and groups of lamps and additional devices powered from the same installation, e.g. Christmas lighting;
- control of the electrical parameters of each lamp separately (voltage, current, power factor, active power, reactive power, etc.);
- control of the proper operation of the lantern; in case of failure, the system can notify the operator and service crews about the necessity of intervention, e.g. by sending an SMS message;
- detection of unauthorized opening of the lamp housing with notification to the relevant services;
- possibility of measuring the temperature of electronic devices in the lamp.

Metropolis Platform also provides an analytical and reporting area for the lighting segment, enabling the presentation and analysis of key indicators related to power consumption, light intensity, infrastructure reliability.

Extensive reporting of current parameters and historical data facilitates control optimization and helps to save energy.

The Data Management System monitors information related to:

- maintenance intervals for individual luminaires and their warranty inspections;
- measurements from individual counters of lighting time with additional parameters such as the date of washing of the luminaires;
- individual sensors of diffuser and reflectors' contamination.

FROM A LIGHTING CONTROL SYSTEM TO A SMART CITY – THE FUTURE IS BUILT TODAY!

The Metropolis platform lighting subsystem, thanks to the applied standards of data exchange, open architecture and a dense network of lighting columns, is an excellent base for the development of further innovative functionalities, such as:

- noise measurement and generation of current noise maps and automatic detection of hazards (sound of glass breakage, squeal of tyres, screams, sound of vehicle collisions, etc.);
- measurement of environmental parameters and generation of current pollution maps together with anticipation of ice and fog occurrence, which in combination with an extensive reporting system facilitates optimal disposal for road maintenance services;
- installation of cameras enabling monitoring, e.g. availability of parking spaces, traffic volume, detection of dangerous events;
- public Internet access (WiFi);
- possibility of interaction with users of mobile applications (routes and tourist attractions, city games) – precisely selected, gentle light impulses to indicate the precise location of the destination and alarm after the detection of dangerous events.