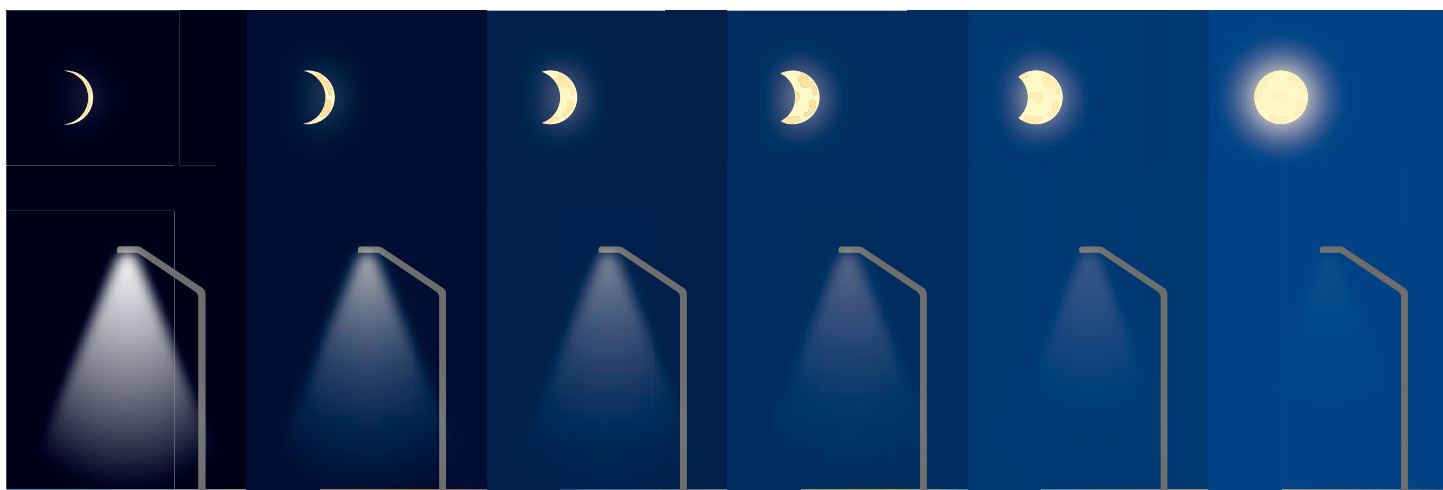


Что нужно учитывать при проектировании системы управления освещением

В каждом конкретном случае необходимо рассматривать различные типы и стратегии управления, чтобы обеспечить экономию энергии и затрат на системы уличного освещения.

В зависимости от типа системы управления различают три типа систем управления освещением:¹

- ▶ **Пассивное управление** (calendar control) – управление освещением осуществляется по заранее заданному расписанию.
- ▶ **Динамическое управление** (dynamic control) – управление освещением осуществляется в зависимости от фактических условий окружающей среды.
- ▶ **Активное управление** (active control) – управление освещением осуществляется в зависимости от фактических условий окружающей среды и с учетом дополнительных параметров.



Advantages of investing in a lighting control system

- ▶ Increase energy savings.
- ▶ Increase operational savings and better customer satisfaction.
- ▶ Achieve additional smart city applications.

ACTIVE CONTROL allows for significant energy savings, but it must be weighed against added complexity and cost.

DYNAMIC CONTROL is up to 34% more efficient than calendar control.

См. следующую страницу



Street lighting control strategies²

- ▶ **Astronomical timer** – using precise information about sunrise and sunset times for any given geographical position. Doesn't consider weather conditions.
- ▶ **Daylight harvesting** – using photo sensors to detect the ambient light and adjust the artificial lighting if the ambient light levels fall or increase beyond certain threshold values. Doesn't consider traffic.
- ▶ **Traffic detection** – using motion sensors to make lighting dynamic and responsive to human presence, e.g. traffic may be consistently low, especially late at night.
- ▶ **Dimming** – depending on traffic, weather, and ambient lighting conditions it may not be necessary to operate lamps at full power throughout the night. By combining proper astronomical timers, daylight harvesting, and traffic detection schemes with dimming, huge energy savings can be attained. In some projects, up to 85–90% savings were achieved.



Benefits of Dimming³

- ▶ **Less electricity consumption** (easy to reduce electricity costs by 25–60%, reduced environmental impacts associated with electricity production).
- ▶ **Less light pollution** (less sky glow, less glare, less intrusive light, less effect on nocturnal species).
- ▶ **Lower risk of overheating** (and thus premature failure) – LED lifetime may be extended even beyond normal manufacturer claims.
- ▶ **Increased security.**

Consumption of LED solutions compared to high pressure sodium (HPS) lamps⁴

TYPE OF LIGHTING SETUP	ENERGY CONSUMPTION COMPARED
HPS – before retrofit	100%
LED – after lamp changing	59%
LED – dimmed with luminous flux tuning	50%
LED – dimmed with dynamic control	36%

См. также:

1 LED Street Lighting Procurement & Design Guidelines, Ref. Ares (2017) 5874064 - 30/11/2017

2 <http://www.premiumlightpro.eu/> and <https://www.tvilight.com/>

3 https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

4 <https://doi.org/10.3390/su10113925>