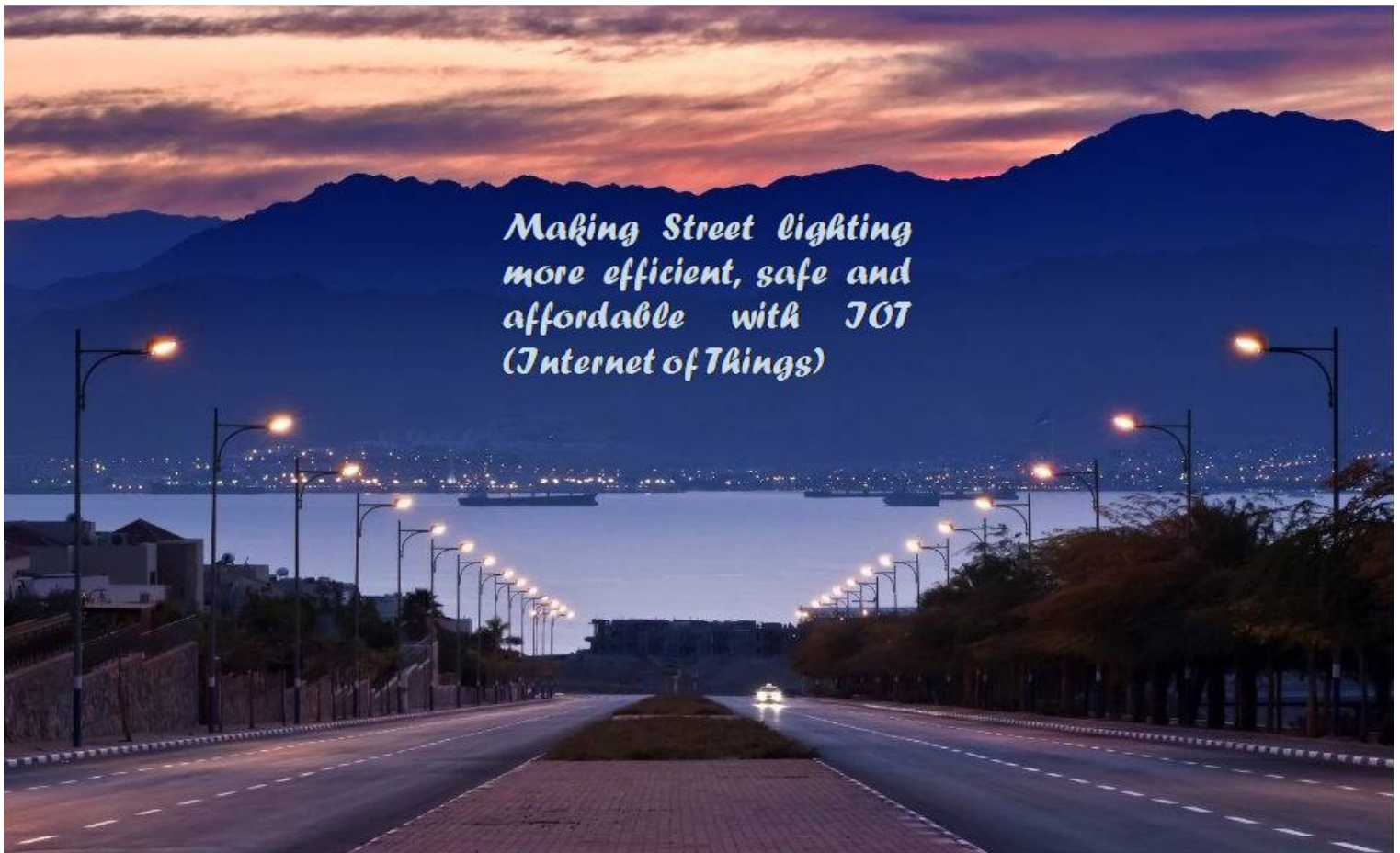


Smart Street Light

The future of energy saving



Street light is the supreme part of the deliberate asset base for cities, municipalities, and large enterprises. But it's a

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considered asset that costs money, especially in its energy usage and in maintenance. Smart Street light controls that make it easy and affordable for lighting owners to increase the efficiency, safety, and versatility of their municipal and commercial lighting systems.

Today's street lighting

According to a 2014 report by market researchers at Northeast Group, more than 280 million streetlights are currently in place globally, with this number expected to grow to nearly 340 million by 2025. The costs of these street lights are staggering. Each streetlight uses 600 to 1,000 kWh/yr of energy, which translates to \$70 to \$125 in annual electricity costs (assuming an average worldwide energy cost of \$0.12/kWh). In addition, each streetlight is responsible for generating 330 to 1,500 kg of CO₂ each year, contributing to global climate change.

It causes problems when they are not working properly at any given time. These are not very efficient and typically operate for up to 12 hours a day, at full intensity. Even using ambient light sensors for switching individual street lights, the energy costs of providing this Service is high. And lack of monitoring leads to unsafe situations like road accidents and many More due to faulty lights and it takes more than 20 days to recover the fault which

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leads to customer dissatisfaction as well as a safety risk for as long as the lamp is out.

Switching to smart street light Technology

To address these issues, we are moving to intelligent outdoor lighting systems, often referred to as smart street lighting. A smart street lighting infrastructure includes Internet Protocol (IP) connectivity via gateways, which enables remote management of individual lights. By monitoring environmental conditions, such as light, fault, pollution level and more this system can optimize energy consumption for each and every street light, for example the street lights will dimmed if it detects no traffic on the road. By means of monitoring each and every street light such as power failure, bulb damage and circuitry problems can be detected which will reduces maintenance costs. More than 50 percentage of energy and maintenance cost can save by adding some intelligence to lights.

Importance of Smart Street light

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Ritchie Technocrats Private Limited
www.ritchietech.com
curious@ritchietech.com

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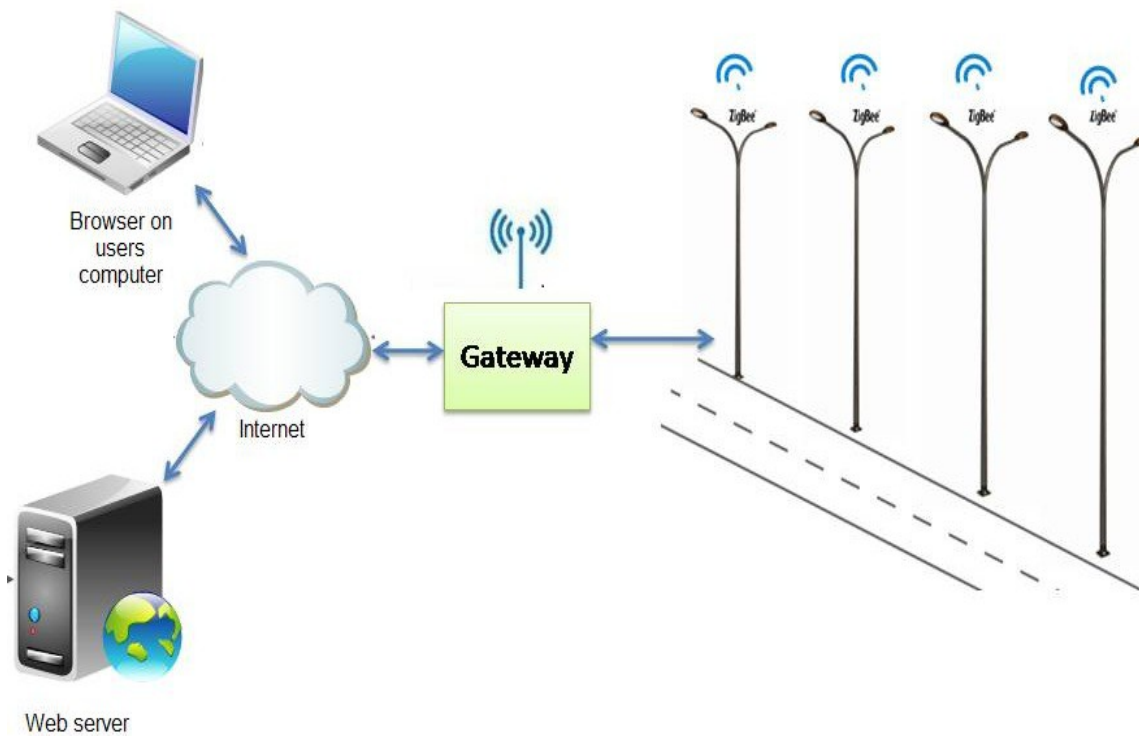
The smart street light plays a very important role in reducing power consumption, fault recovering, improve safety, increase citizen engagement and ensure economic control through smart lighting. Cities can increase operational efficiency, enhance public safety and accelerate environmental initiatives. This is intended to reduce man power with the help of intelligent system. So the saved power can be used in other cases.

How does Smart Street light works?

Smart Street light operates on a set of sensors that transmit data based upon the light level; The Master device (gateway) handles all street lights in its surrounding area through communication. It passes the message to monitor the status of all the slave devices such as switching ON/OFF at the right time. And based on acknowledgement detects status of each light.

Individual Street light works based on auto intensity control i.e. when it detects any object or activity in that particular area it automatically switches to 100% intensity otherwise it operates in low intensity level.

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Each street light monitors its functionality, and reports its fault, such as lamp failure, power supply failure with necessary location information. It helps in speedy recovery.

The technology behind the Smart street light concept can get so advanced that the acquired data can even be used to determine pollution in surrounding area, pre lamp life intimation, safety issues around the road with cameras.

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The benefits of deploying Smart Street light fall into three categories:

Energy savings: Typically, the largest benefit of Smart Street light is lower energy costs, which result from the following features:

» **Auto switching:** By switching lights ON OFF at the right time.

» **Intensity controlling:** By dynamically adapting lighting levels at each light point to the light output required by the lighting standard, at fixed time based on the activity in the area and Auto intensity control according to time and object detection to save energy consumption For example, dimming lights by 50% between 11PM and 12AM and 30% between 12AM to 5AM etc.

» **compact burn time:** With on/off scheduling capabilities, operators can easily modify street light operation to coincide with changing sunrise/sunset times, reducing lamp burn time.

Operational savings: The operational cost of street light can be reduced by remote monitoring, which results from the following features:

» **extended lifetime of Lamp:** reduced burning time leads to longer lifetime, so require replacement less often, which reduces hardware and installation costs.

» **Remote monitoring and management:** Street light management software gives operators visibility into street light operations by enabling remote real-time control and monitoring to check any situation remotely rather than sending crews onsite for finding the fault. And assigning tasks based on failure reports to designated teams and by monitoring the performance.

» **Automatic outage detection:** Management software provides instant outage notification, dramatically reducing the number of calls (and related costs) to the call center and cutting downtime up to 90 percent. With accurate outage information, operators can eliminate truck rolls due to false alarms, pinpoint nonworking lamps and quickly dispatch crews to specific lights

» **Proactive maintenance:** street light management software also provides predictive information, alerting operators to lamps

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approaching end-of-life, so replacements can be scheduled proactively. Utilities that periodically conduct manual surveys of their lights can eliminate.

Safety: Smart Street light helps in providing security, which result from the following features:

» **Ensures that it's never fully dark:** switch on the lights at right time and provides safety environment on roads and avoids accidents caused due to faulty lights.

» **cameras:** it helps in detection and intimation of road accidents, suspicious activity reporting, and women safety.

» **Environment monitoring:** by deploying different pollution sensors helps in pollution detection and intimation.

Advanced benefits:

Providing IP connectivity to street lights opens up a large number of opportunities for operators to use that connectivity for additional smart services. Examples include:

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- » Enabling sensors to manage traffic or parking, such as traffic light controls or smart parking services.
- » Providing access points for home automation services or smart metering connectivity.
- » providing display points for route directions.
- » providing moisture level monitoring of surrounding plants.

Conclusion

The smart Street lighting system integrate new technologies offering ease of maintenance and energy savings, this is a cost effective, practical, eco friendly and the safest way to save energy. And this system has scope in various other applications like for providing lighting in industries, campuses and parking lots of huge shopping malls. This can also be used for surveillance in corporate campuses and industries.