Street Light Management Solution

Intelligent Lighting Management for Smarter Communities

Landis+Gyr's intelligent street lighting solution enables utilities to significantly reduce energy costs and extend lighting asset life with remote monitoring and control of both High Pressure Sodium (HPS) and LED luminaires. Smart lighting offers the ability to adjust and adapt lighting to provide optimal coverage and safety for traffic conditions. Using intelligent communications technologies, the system can also pave the way for other smart city applications, such as parking and traffic management, outage detection, air quality sensing, weather sensing, and more – all on a single, secure network.

Building Blocks for Intelligent Lighting

Operating as part of Landis+Gyr's Gridstream® Connect IoT platform, the street light management solution incorporates both hardware and software components. As part of Gridstream Connect, Landis+Gyr's street light controller and management software serve as a foundation for other smart city applications, while vastly improving energy and operational efficiencies.

The street light controller uses the Gridstream Connect network to provide utilities with smart lighting features. The controller incorporates Landis+Gyr's Network Node, a fully functional, small IoT radio module capable of communicating on Wi-SUN compliant RF Mesh IP networks, to connect with the broader smart grid network, and can also route messages from other area sensors and devices. The street light management software integrates with Landis+Gyr's Command Center to enable utilities to monitor lights, receive reports, and set alarms.

Illuminating Operational and Energy Efficiencies

Smart lighting solutions enable a variety of use cases that:

- Cut energy costs
- Extend asset life
- Reduce costly truck rolls
- Lower O&M expenses
- Minimize light-related safety issues
- Support distribution design and operation
- Add network capacity and resiliency

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Example use cases include:

AUTOMATE HEALTH MONITORING

Automated monitoring detects luminaire issues and malfunctions, regardless of luminaire type. Eliminating the need for manual inspections reduces O&M expense and minimizes potential utility liability that could arise from malfunctioning lights that constitute a risk to public safety.

USE FOR POWER QUALITY SENSING

The Landis+Gyr street light controller can function as a power quality sensor, providing information that the utility can use to support distribution design and operation. For example, using the controller to support volt/var optimization or to monitor the power factor on HPS lights.

MEASURE ACTUAL ENERGY USAGE

The street light controller measures the amount of energy consumed by the light, enabling utilities to design new lighting rates based on actual energy consumption, to fully cover their costs of service.

PROVIDE CONSTANT LUMEN OUTPUT

Landis+Gyr's street light management solution employs a dimming feature that uses the degradation constant for each vendor's luminaire to provide a constant lumen output over the life of the luminaire. This feature can save as much as 20 percent of energy use and cost over the life of the luminaire.

IMPLEMENT POWER-BASED DIMMING

The solution enables utilities to set a dimming schedule for luminaire assets based on vehicular and pedestrian traffic patterns. In addition, Landis+Gyr offers power-based dimming to ensure that the dimming command translates into an equal reduction in metered power and energy savings.

MANAGE LOAD SHEDDING

To minimize load spikes, the solution enables utilities to connect to street light assets in real time, turning them off, dimming them, or gradually ramping up the power level as needed to manage demand.

REMOTELY DISABLE AREA LIGHTS

Using the head-end software's on-demand functionality, Landis+Gyr's streetlight management solution allows remote disablement of an area light in real time. This eliminates the need for costly truck rolls each time a customer moves out or requires a seasonal disconnect.

PROVIDE AMI ROUTING SUPPORT

In addition to automating the light control, the street light controller can be set to support AMI routing, providing utilities with a cost-effective option to add filler routing support when and where needed. In addition, the controllers communicate with other endpoints on the network, adding resiliency.

MONITOR / LOCATE ASSETS

The head-end software associated with the streetlight controllers can be used to manage a wide variety of asset attributes. The built-in GPC chipset also provides location information upon auto-discovery.

PAIR WITH WATER AND GAS METERS

Since the street light controller uses the Landis+Gyr Network Node, it can be used to parent water and gas meters for utilities that don't have electric meters to pair with their water and gas meters.

Future Directions: Sensor-Based Use Cases

Landis+Gyr's sensor solutions will expand the portfolio of street light management applications to more fully support tomorrow's smart communities.

Example sensor-based use cases may include:

TRAFFIC SENSING	Enhance street safety by providing traffic data to optimize lighting schedules and inform traffic planning. Radar-based system provides vehicle and pedestrian traffic count and speed data to take advantage of scheduling features, significantly reducing street light energy usage.
DRIVER ALERT SENSING	Enhance street safety by alerting drivers to special traffic situations. For example, warning drivers that an emergency vehicle is approaching; alerting drivers that children are present around schools; alerting drivers who are traveling the wrong way on one-way streets and on and off ramps.
FREEZING TEMPERATURE SENSING	Enhance road safety by alerting traffic to freezing and icy road conditions. Provides a visual signal that, due to a sufficient drop in the outside ambient temperature, potentially hazardous freezing or icy road conditions may be present even though they may not be visible on the roadway.
ACOUSTIC MONITORING	Inform noise management and mitigation strategies with acoustic monitoring and profiling. Enables utilities to implement a low-cost acoustic profiling system across their communities, identifying excessive-noise problem areas to develop strategies of mitigation.
POLLUTION SENSING	Cost-effective city-wide pollution mapping and profiling. Enables utilities to implement a low-cost pollution sensing solution with built-in networking and utilities grid connection.

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Solution Specifications

Solution components:

- Street light controller with integrated Network Node
- Command Center 7.1 MR3 or later
- DA Gateway V1.3.7 or later
- Smart Community Center software

Key features:

- Luminaire health monitoring
- Metering capabilities
  - Accumulated energy (0.5-1.0% accuracy)
  - Instantaneous current
  - Voltage and power
  - Power factor
- Accumulated lamp-on-time
- GPS location – maps with street light location visualization
- Photo sensor for dawn and dusk controls
- Supercapacitor support for outage scenarios
- Constant lumen output – ramp up power over time to maintain light levels
- On-demand: on, off, dim
- Dimming schedule creation
- Asset management
- Alarm management

Smart Community Solutions for Today and Tomorrow

Landis+Gyr's Street Light Management Solution provides utilities with the significant benefits of both lighting automation and grid modernization programs. The solution can also serve as a foundation for Smart City initiatives, enabling utilities to increase customer satisfaction and offering opportunities to generate new revenue streams from business-to-business services, such as:

	DATA AS A SERVICE	Offer full connectivity service, including timely delivery of data from connected platform to third party
	NETWORK AS A SERVICE	Lease your network for connecting third-party head-end systems with their connected devices
	INFRASTRUCTURE AS A SERVICE	Enable third parties to participate with their own communications on your network infrastructure

Landis+Gyr supports utilities in their efforts to evolve and succeed in the new energy economy. Our commitment is to help utilities meet today's challenges, such as declining revenue and aging infrastructure, while addressing new industry drivers like integration of distributed energy resources and expanded services. In this way, Landis+Gyr's long history as a trusted energy partner to utilities will continue well into the future.

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