

Where Appleton™ Connected Lighting is Utilized in Plant Environments

Appleton Smart Lighting

Emerson's latest innovation in smart lighting for hazardous and industrial locations enables group lighting control of dimmable Appleton LED luminaires. When an electrical dimming connection is made from an Appleton Mercmaster™ Connect LED Luminaire to a bank of up to 10 of dimmable LED luminaires, the Mercmaster Connect's advanced capabilities — such as scheduling modes, motion sensing, or daylight harvesting — are enabled for the entire run. By utilizing different control schemes, optimizing the lighting output for a location is straightforward. Dimming modes and motion sensors provide the ability to reduce light levels when workers are not present or when light is not needed. Appleton Group Lighting Controls optimize lighting levels for each installation type to maximize product life, minimize energy consumption, minimize nighttime lighting usage, improve maintenance planning, and reduce the carbon footprint of the facility.

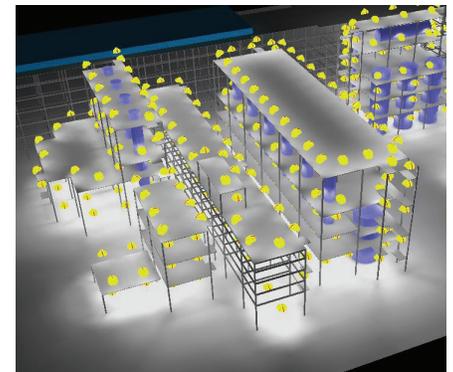


Application | Multi-level Outdoor Platforms

Multi-level outdoor platforms can be used for stairways, catwalks, loading platforms and gangways. These industrial stairs and work platforms are ideal for industrial and commercial access ways to inspect and maintain equipment, structures, and machinery. In multi-level outdoor platforms, the use of metal grating is prevalent. These installations benefit by light's inherent ability to shine through multiple levels. In outdoor locations, sunlight penetrates the lower levels of the structure though the open areas of the grating.

Challenges

When designing outdoor platform lighting layouts, one must consider the amount of natural light that will illuminate an area. Oftentimes, these structures are in harsh environments, making the need for high quality lighting essential. As facility operators are faced with higher operational costs and tighter budgets, energy efficiency has become a top priority.



Solution

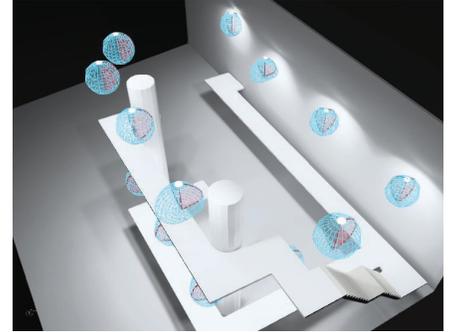
With the introduction of smart lighting for hazardous and industrial locations, lighting designers can now incorporate natural light as well as luminaires with dimming capabilities into their layouts. An Appleton Mercmaster Connect LED Luminaire with an integrated dimming controller and sensor module can be connected to a dimmable Appleton LED luminaire, like the Mercmaster Low Profile LED Series, allowing the connected luminaire to operate at minimal light output. Because the Mercmaster Connect LED Luminaire detects motion and ambient light levels and communicates across a WirelessHart® network to Emerson's Plantweb Insight™, it strengthens the network by creating additional communication paths between devices. This enables Emerson's Appleton Smart Lighting Solutions to be set to daylight harvesting mode, enabling the luminaire to detect available daylight to maintain reliable light levels. Facility operators can now capture valuable insight into energy usage and make real-time adjustments to lighting levels for improved efficiency, comfort, and safety.

Application | Walkways

Walkway lighting is a common application in almost every industry. They ensure employees can access different locations in the facility by routing them over or around hazardous obstacles without the need to shut down power on the main floor.

Challenges

Walkways must be illuminated evenly, sufficiently, and with adequate overhead clearance to ensure safe passage. Process areas that require monitoring of instrumentation need additional consideration. In typical installations, walkway luminaires are installed in a straight line by running electrical connections through conduit from one fixture to the next.



Solution

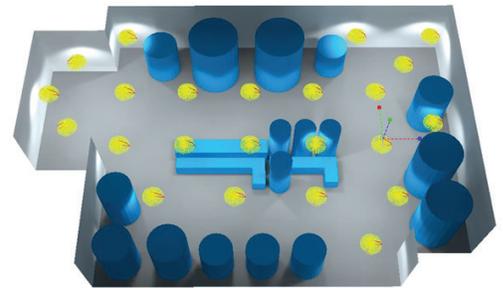
With the introduction of Emerson's Smart Lighting Solutions for hazardous and industrial locations, connected lighting's ability for motion sensing makes them ideal for use on walkways. By installing an Appleton Mercmaster Connect LED at the walkway entry point, the sensor will detect motion for smart illumination of the area and increase the lighting intensity of dimmable luminaires in the group. If no motion is detected, the Mercmaster Connect either will turn off or dim down lighting to a pre-set level of intensity. When monitored by the Plantweb Insight Connected Lighting Application, multiple strings of luminaires can be combined and controlled to turn on or off at the same time. In addition, Appleton emergency lighting like the Mercmaster Low Profile Emergency LED Luminaire should also be installed to ensure the safe egress of personnel through stairways and exits during power outages. During sunny days, the daylight harvesting mode of connected luminaires maintains consistent light levels throughout the day by adjusting the lighting output based on available light. Thus, leading to lighting energy savings of up to 45% from introducing Group Lighting Controls.

Application | Warehouses and Limited Use Facilities

Warehouses provide an essential role within the supply chain, storing inventory until it is ready to be shipped to a final destination. Limited use facilities are often accessible 24/7; however, they are only occupied by personnel for a short range of time throughout the year.

Challenges

Locations, such as warehouses, where key materials are held in reserve and are visited infrequently or on a weekly basis are often lit 24 hours a day. Limited use facilities with high levels of autonomous operations, like steam plants and water reclamation sites, are subject to high levels of lighting energy consumption and increased maintenance needs. These types of facilities are adopting connected lighting solutions, capturing valuable insights into minimizing energy usage and enabling plant operators to make real-time adjustments to lighting levels for improved efficiency, comfort, and safety.



Solution

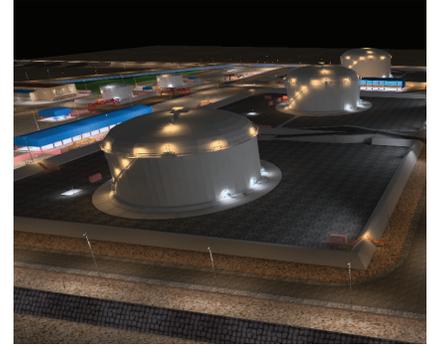
Facilities can reduce energy consumption and extend luminaire life by installing an Appleton Mercmaster Connect LED Luminaire, in conjunction with other Appleton dimmable LEDs. The motion sensors can be used to reduce lighting operation when no employees are present. The dimming output can be programmed using an Emerson TREX™ or AMS™ platform that puts this smart, connected technology in the hands of employees, enabling them to be more efficient and have an ever-increasing impact. A matrix of Appleton Smart Lighting Solutions should be installed on the perimeter and through the storage racks. The Appleton Mercmaster Connect LED Luminaire has an integrated occupancy sensor that detects personnel from up to 12 meters (40 feet) away and will turn on automatically and dim after personnel leave the area. For locations with poor motion sensor coverage, install the Appleton Wireless Motion Sensor to expand motion sensing coverage. Maintaining safe operations is critical, therefore all luminaires will automatically dim to 10% brightness when no personnel are detected. In warehouses with limited foot traffic and Group Lighting Controls installed, the facility can achieve lighting energy savings of up to 80%.

Application | Tank Farms

On a typical tank, luminaires are installed around the perimeter and up the stairways. In addition to providing basic safety for personnel, they are also in key locations where sufficient light is needed to check gauges, sensors and perform other types of inspections.

Challenges

Tank farms utilize photocontrol devices to provide automatic dusk-to-dawn lighting control. These devices are designed to turn on and off based on the amount of ambient light reaching the photocell or sensor. This means they can be affected by cloud cover, rain, or snow fall. Unfortunately, some photocells are poorly designed, limiting their reliability, often leaving luminaires operating in the wrong state.



Solution

To ensure that the lights are on when and where they need to be, Appleton dimmable LED luminaires can be connected to an Appleton Mercmaster Connect LED Luminaire and monitored by the Plantweb Insight Connected Lighting Application. When tank farm lighting is installed with Appleton Group Lighting Controls, Appleton Connected Lighting reports on the health of the integrated photocell, allowing operators to turn on or increase light levels when the when ambient light levels are dim.

Application | Exterior Facility Lighting

Facilities require exterior lighting solutions that properly illuminate the areas around buildings for entrances, loading docks, emergency exits and roof access points.

Challenges

An exterior facility lighting solution needs to illuminate a wide area or provide a focused beam to project light over a great distance. It should be manufactured to ensure longevity, withstand environmental conditions, and require minimal maintenance. Outdoor lighting installed on the exterior walls are typically installed in a linear design, most often on the same electrical circuit.



Solution

Utilizing Appleton Group Lighting Controls, a bank of flood lighting can be controlled with a single daylight sensor of an Appleton Mercmaster Connect LED Luminaire to minimize daylight usage. Inside the Plantweb Insight Connected Lighting Application, a lighting schedule can be created to turn on exterior lighting during evening hours and turn them off after sunrise.

Autonomous Operation with Remote monitoring and Sustainability Analytics

The combination of Emerson's Appleton Smart Lighting Solutions capabilities with their Plantweb Insight's Connected Lighting Application creates an end to end solution for optimizing, monitoring, and analyzing lighting performance to support autonomous operations. The Connected Lighting Application remotely monitors the state of the lighting system and alerts personnel to potential issues. Commission, monitor, and analyze energy and sustainability data of the entire system using the Connected Lighting Application. The Connected Lighting Application aggregates and reports energy and carbon reduction analysis across the facility for use in facility energy reporting and ESG (Environmental, Sustainability, and Governance) calculations.

Contact your local Appleton Sales Representative to schedule a design consultation. Our experts will walk through your facility, evaluate the system requirements, and set up a call with our applications team.

Emerson | Appleton Group
9377 West Higgins Road
Rosemont, IL 60018
+1 800 621 1506

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