LLLC
Luminaire-Level Lighting Controls

Primary Control Strategies

Why LLLCs?

Luminaire-Level Lighting Controls (LLLCs) offer a simple and effective way to improve occupant comfort, meet code requirements, and manage energy use. LLLCs are individually programmable luminaires that contain embedded sensors and compact control components, offering building owners easy-to-manage lighting systems.

Primary Control Strategies

Unlike traditional centralized lighting control systems, LLLCs enable granular, fixture-level adjustments, allowing for greater flexibility in managing energy while enhancing occupant comfort. They provide consistent and adaptive lighting levels while allowing for customizable settings. They not only affect light output but how the lights operate as conditions change throughout the day. The following are the most important control strategies that should be implemented with LLLCs.

Occupancy / Motion Sensing

Automatically turn lights on or adjust lighting levels when occupancy or motion is detected. The sensors also dim or turn off when space is unoccupied. This feature is ideal for areas with intermittent occupancy such as offices, conferences rooms, restrooms, and hallways to eliminate wasted energy.

Daylight Harvesting

Using integrated sensors, the lighting system continually monitors and adjusts to available natural daylight in a workspace by automatically reducing the luminaires' light output when enough daylight is present. This control strategy reduces energy consumption while maintaining comfortable brightness levels and reducing glare in areas with ample windows or skylights like offices, classrooms, and lobbies.

High-End Trim

Limits the maximum luminaire output at time of installation to a level below the full capacity based on workspace lighting needs. Spaces are often designed to provide more lighting than necessary. This is ideal in over-lit workspaces and improves visual comfort, manages energy use, and extends the fixture's lifespan by reducing overall wear on components.

Task and Comfort Lighting

Provides adjustable lighting levels to accommodate different tasks and occupant preferences. By reducing glare and harsh lighting, this control improves comfort, minimizes eye strain, and creates a better working environment.

Demand Response & Load Shedding

Temporary reduces lighting power by 20–30% in response to a signal without manual intervention. This can be used to manage peak demand events, without noticeable impact on tenants, helping businesses manage their energy bills and support grid stability.

Myth: Lighting controls are inconstant.

Reality: With LLLCs, each luminaire incorporates a sensor, so it instantly responds to occupancy and daylight levels. Smooth-dimming technology creates seamless transitions in brightness, eliminates abrupt changes, and enhances the overall lighting experience.

To learn more, email **info@mnLLLC.org** or visit **www.mnLLLC.org**.

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