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ENGINEER OF LIGHT.

WHITE PAPER

Achieving Greater Efficiency through Daylight Harvesting & Controls

Daylighting – or the reliance on natural light as a building's primary source of illumination – increases occupant comfort and productivity while reducing operating costs.

Builders and architects can achieve optimum daylighting with careful consideration of a building's location and orientation, and also through its design, selection of materials, or placement of windows and skylights.

Daylight harvesting is a strategy in which automated controls either turns off altogether or dims artificial lighting automatically, in response to varying levels of natural light.

With daylight harvesting, builders, architects and lighting specialists can maximize lighting efficiency and minimize ongoing energy costs. The old ON/OFF, "one-illumination-level-fits-all" approach to interior lighting is becoming obsolete.

By automatically "harvesting" the varying daylight levels via automated electric lighting reductions, significant energy savings can be achieved.

Energy savings lead to increased demand for the use of controls.

Factors including the amount of lighting space, task characteristics, control system and, of course, type of available daylight, make energy savings difficult to estimate for each daylight harvesting application. However, the energy savings potential of this strategy has prompted impressive demand for daylight harvesting controls in recent years.

Another measure of the concept's popularity is the rapid growth in industry standards. Today, the International Energy Conservation Code (IECC) 2009, ASHRAE/IES 90.1-2010, ASHRAE 189.1 and Title 24-2008 all address daylight harvesting.

Perhaps most significant to daylight harvesting's growth is its recognition by LEED, the internationally recognized green building certification system. The U.S. Green Building Council is promoting the practice in LEED projects by awarding energy points to those who implement daylight harvesting.

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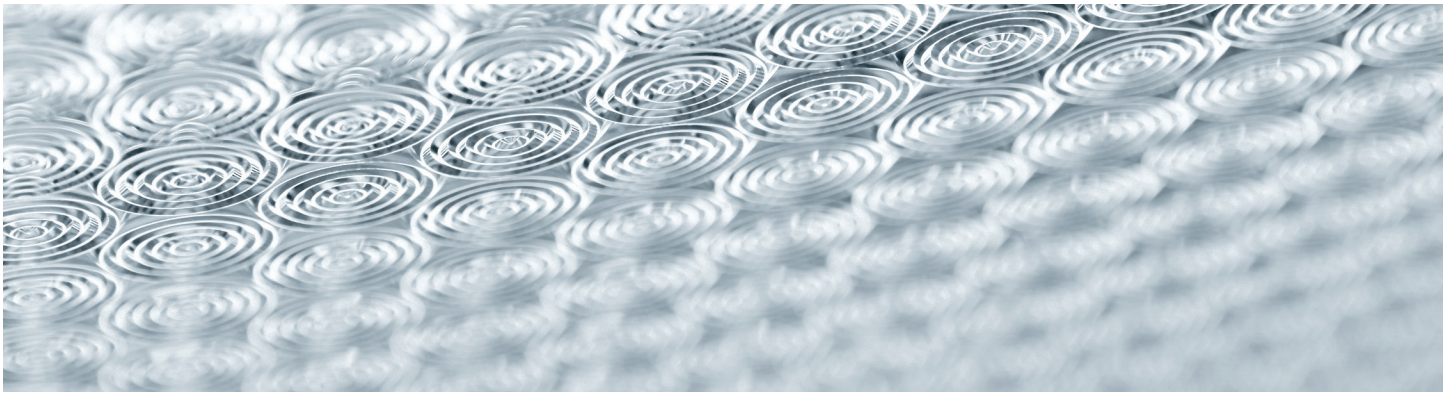

Tiered control solutions for daylight harvesting.

Today's daylight harvesting solutions are offered at varying levels of control capabilities, ranging from simple to sophisticated.

At daylight harvesting's most basic application, wall box-, ceiling- or wall-mounted occupancy sensors not only switch off overhead lights, but also prevent lights from being switched (via an integrated light level feature) if ambient light reaches a preset level determined to be sufficient for the area. Typically, ON/OFF switches allow users to override the sensors to increase illumination.

A more energy-efficient daylight harvesting solution follows the same basic scheme, but employs a dimmer instead of an ON/OFF switch. Fluorescent dimmer ballasts add cost. However, the manual dimming capability allows building owners/managers to offset costs with increased energy savings.

The third and more optimal daylighting solution automatically dims fixtures. The system integrates a photocell to measure ambient light and automatically adjusts illumination to preset limits. An occupancy sensor turns off lighting when the area becomes unoccupied. Such systems are usually networked with multiple lighting fixtures.

A simpler solution – exclusively from Waldmann.

For all their advantages in terms of energy efficiency, the solutions described above offer two significant drawbacks. All must be hardwired, requiring greater labor costs at installation, as well as adding a great deal of complexity.

What's more, all are relatively inflexible. If a building's owner or tenant wishes to reconfigure a room's dimensions, they must rewire the application and thereby revisit the installation challenges and expenses.

Alternately, if the user seeks to repurpose a space, for example, from meetings to storage, the daylighting solution installation costs are much less readily recoverable.

Waldmann's PULSE provides the ideal solution. Unlike other controls, which are located within the breaker box, PULSE controls are internal to the lighting fixture, as are its presence and ambient light sensors.

PULSE activates the fixture only if a person's presence is detected, and then illuminates via dimmer only to a preset brightness level if ambient light is not sufficient.

Once the room becomes vacant again, PULSE automatically switches off the fixture. Room-oriented, the solution offers an extremely large detection range.

PULSE's biggest advantage? Portability with freestanding luminaires.

The benefits of PULSE are best demonstrated when the controls are integrated with Waldmann's TYCOON luminaires, which offer freestanding fixture options. In fact, the advantages to America's first freestanding daylight harvesting solution are considerable.

With internal controls, for example, the labor costs associated with connecting lighting elements are eliminated. What's more, the PULSE-controlled TYCOON luminaires are fully portable. If rooms are repurposed or layouts reconfigured, the freestanding fixtures may be readily moved time and again, with plug-in-anywhere simplicity.

More efficiency? PULSE for pendant fixtures.

PULSE control systems also integrate with Waldmann ATARO luminaires, which are offered as pendants. Equipped with AMBIO – a new and exclusive glare-free technology designed by Waldmann – the ATARO generates up to 92% efficiency compared to the 70% efficiency of most others pendants.

As a result, fewer ATARO pendants are needed to illuminate a space. What's more, wattage requirements are reduced.

PULSE: A solution proven in countless applications.

While new to the U.S., PULSE controls are today bringing great efficiencies to buildings throughout Europe. With it, the advantages of a comprehensive light management system are no longer reserved for offices with integrated building management systems.

In every application, occupant comfort with PULSE is assured. Due to gradual increases or decreases in the brightness level (dimming), ON and OFF processes are barely perceived by the user.

Of course, PULSE minimizes energy consumption through its daylight and occupant sensing and dimming functions. What's more, PULSE maximizes the service life of lamps by ensuring shorter operating times.

How can you benefit from daylight harvesting? Contact Waldmann.

For more information on daylight harvesting and the unique PULSE, TYCOON and ATARO solutions offered by Waldmann, contact us at:

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