The Problem

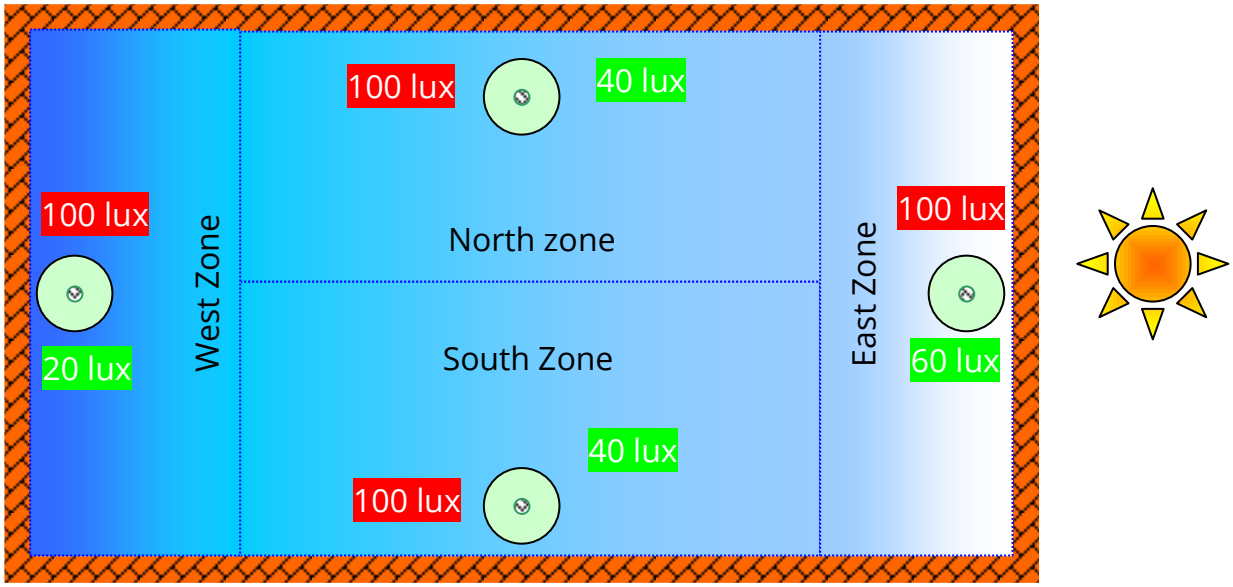
Occupancy sensor controlled lighting, which turns lights ON and OFF in response to occupancy can provide significant saving of electrical energy used for lighting. When the daylight harvesting is combined with occupancy sensing, it can lead to even more savings. Daylight harvesting is a means of saving energy used for lighting in response to ambient lighting available at a place. Occupancy sensors have finite coverage area. In order to provide more area coverage with a common trigger, it is necessary to cascade multiple occupancy sensors together. When the sensors are cascaded, all the lights connected to each of the sensor are turned ON when any one of the sensors detects occupancy and turned OFF when none of the sensors detects occupancy. This is a very useful feature in places like big meeting rooms or big work area with multiple entrances. Problem with this system is that the daylight harvesting can not be very effective if different sensors receive different amount of ambient light. For example, the sensor close to the window can receive more light than the one far from the window. Since the sensors are configured to provide minimum required light for the entire area, it is inevitable that some areas receives more light than necessary which will result in less optimal savings.

The Solution

It would be great if the sensors can respond to occupancy trigger from any sensor but provide minimum required lighting for the coverage area it is responsible while maximizing savings from daylight harvesting. Lantern Dimmable and cascade sensors are equipped with a special feature to address this situation. These sensors are designed to provide to different artificial lighting for each of its coverage area in response to the available ambient light while at the same time responding to occupancy trigger to any one of the sensor.

Description

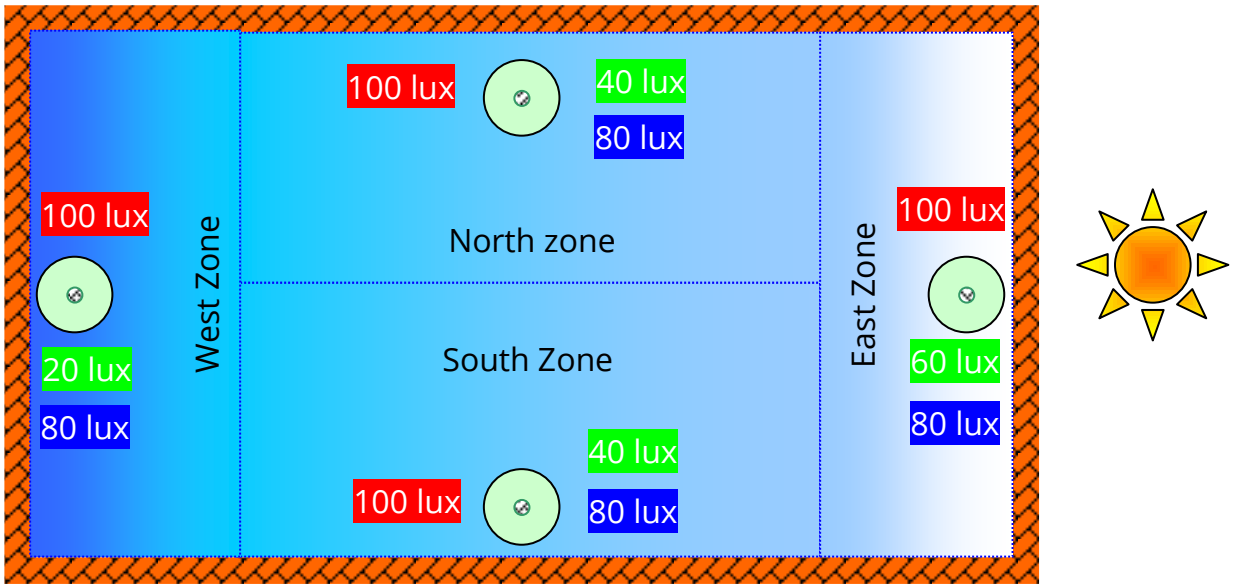
Imagine there is an office space with 100lux light requirement as shown in the figure below with entrance in each of the four sides. The space is divided into four different zones based on the



amount of ambient light it receives: East zone where the sun is shining and hence receives maximum amount of ambient light; West zone that is furthest of the four from the sun and hence

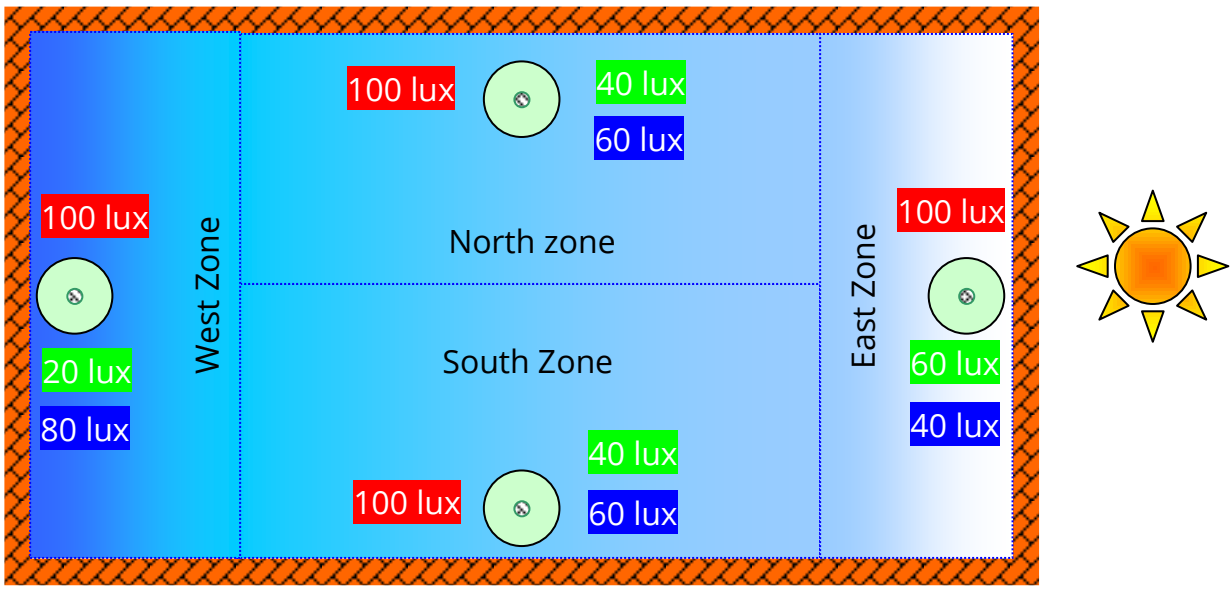
receives the least amount of ambient light. North and south zones are neither too far nor too close and hence receives ambient light that is less than the east zone but more than the west zone. Even in these zones, the amount of ambient light received goes down as we go from east to west. For the sake of simplicity, let us ignore this for now. Let us assume that, east zone receives about 60 lux from ambient light while that for south and north zone is about 40 lux and 20 lux for west zone.

Let us assume that there is an ambient light harvesting occupancy sensor placed in each of these



zones and are connected to dimmable luminaries. With conventional sensors, each of these zones will receive, about 80 lux from artificial light in order to meet the minimum light requirement for the west zone. As a result, there is 20 lux extra lighting in the south and north zones while 40 lux extra light in the east zone. So there is a potential for additional energy savings.

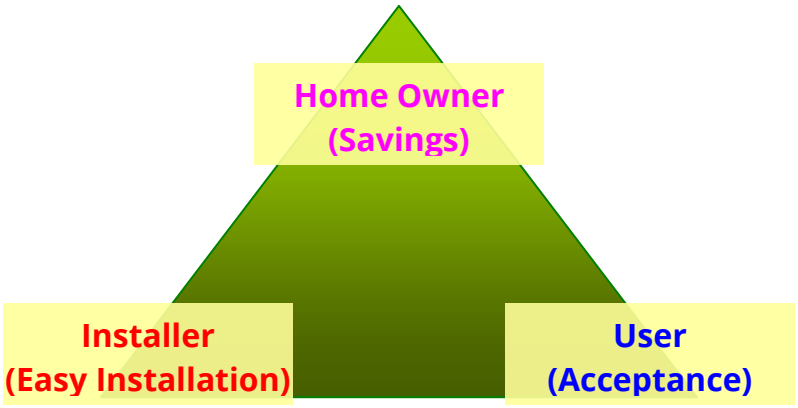
With Lantern dimmable cascade sensors, west zone will receive 80 lux from artificial light, while the north and south zone will receive 60 lux from artificial light and east zone will receive 40 lux from



the artificial light. So there is a potential for more savings while using Lantern Lighting controls than other lighting controls.

Features and Benefits

Lantern lighting controls are designed to provide optimal saving while not compromising good user experience. Lantern sensors are loaded with features by keeping home owners, installers and users in mind. These features make the Lantern sensors more acceptable to the users while reducing the hassle of the installer and maximizing the savings for home owner.



Where To Find More Details?

1. Lantern occupancy (cascade) sensor datasheet -
2. Lantern cascade sensor application note – LAN-??
3. Lantern Website – www.lanternlite.com

Have Questions?

Please write to us: mailto:support@lanternlite.com?subject=Documentation