

## Project Overview

Glumac  
Shanghai, China

Corporate Office

6,450 sq. ft. renovation



Glumac Shanghai has set a new benchmark for green offices in Asia.

### Lutron Helps Glumac Engineer for Sustainability.

Glumac prides itself on being “Engineers for a Sustainable Future.” With nine offices located in the United States, their new office in Shanghai supports Glumac’s commitment to sustainable projects. This office is the first LEED v4 Platinum project (Commercial Interiors) in Asia, and achieved Living Building Challenge (LBC) certification.

LBC can be considered the most advanced green building standard in the world. In order to receive certification, a building project has to be net zero energy, net zero water, and carbon neutral among other things. Only a handful of projects around the world have been certified, including Seattle’s Bullitt Center.

The Glumac office space occupies the third floor of a 100-year-old building in a campus development named 753 Jia Chun Park and located in Changning District of Shanghai. The Park was built in 1912 as a vacation residence for the Rockefeller family. In 1964 the Chinese military took over the property and leased it to a private developer in 2011. The Glumac team recognized their unique opportunity to turn it into the greenest office space in Asia.

**An international team collaborated for over eight months to design and build this new office.**

- *Glumac Engineers*
- *Gensler Architects in Shanghai, Portland, and Seattle*
- *Shimizu – their Japanese construction partner*
- *GIGA – Shanghai-based green materials consultant*





Wireless ceiling-mount occupancy sensors...

...and tabletop LED task lighting.



Lutron Pico® wireless remote controls, occupancy sensors, and daylight sensors make installation quick and easy.

## Challenges

Challenges included achieving net zero energy and water and meeting other sustainability goals within a historic building to meet the rigid requirements of LBC. The project also involved managing the entire design and build process with a cross-cultural, geographically distanced team, and overcoming communication and construction hurdles throughout the project.

## Solutions

The 6,450-square-foot (600-square-meter) office space has a long, narrow profile with significant daylight from operable windows and dormers. Knowing that lighting alone can account for nearly 30% of total energy usage in an office environment, Glumac uses a Lutron Quantum® Total Light Management™ system to effectively manage both daylight and electric light.

To make best use of the abundant daylight penetrating into the office space, especially in the open office area, nine Radio Powr Savr™ wireless daylight sensors communicate with dimming modules to automatically adjust electric lights in response to available daylight. Lights closer to windows will be dimmed while those away from windows will remain at brighter level, maintaining a consistent level of illumination throughout the space. The wireless sensors also help reduce installation and commissioning time and cost.

The project team set a lofty lighting design goal of a maximum 0.2 watts/square-foot (2.5 watts/square-meter). 100 percent of the overhead lightings is LED, with Lutron EcoSystem™ digital LED drivers used to provide continuous, flicker-free daylight responsive dimming. To accommodate the potential for changes in office layout, digitally configured zones can be changed anytime without re-wiring. Pico wireless remote controls give users personal control of their overhead lighting to create the right light level for different tasks. Glumac has also provided task lighting for every employee to minimize demand for overhead lighting and further reduce energy use.



**Wireless daylight sensors enable daylight harvesting.**

Occupancy sensing can save up to 60%\* lighting energy and avoid energy waste in vacant spaces. Twelve Radio Powr Savr™ wireless occupancy sensors are installed throughout the new office space. Most of the sensors are ceiling-mounted, and work to turn lights off in vacant meeting rooms and private offices. There is also one hallway sensor to dim lights along the hallway to a minimum level when there is no traffic.

All the sensors are wireless and use patented Lutron technology that offers battery life of up to 10 years. Lutron XCT™ signal processing technology greatly enhances the performance of PIR sensors, enabling them to “see” even very fine motions, ensuring that building occupants are never left in the dark, even when they are reading, or are engaged in another quiet activity. All occupancy sensors have simple test modes to easily verify ideal locations during installation. The wireless protocol also ensures that the sensors can be easily relocated as necessary.

Because both LEED v4 and LBC certifications are based on the actual performance of energy-consuming equipment, Glumac emphasized the importance of tracking the energy usage in the office, and chose a system that could accurately provide the required data. The Quantum Total Light Management system empowers Glumac to control, monitor and report lighting energy usage in the office and allows simple integration with Building Management System (BMS) via BACnet, a capability that is already embedded in the Quantum processor.

Glumac office administrators can monitor the occupancy status and lighting intensity in each zone and make manual adjustments if necessary. Lutron Energi Savr Node™ modules are used to dim all the LED fixtures with Lutron digital LED drivers. These modules are linked to a Lutron 24/7, 365-day digital timeclock (including public holidays) to ensure that lights are turned off automatically after office hours. To accommodate ad hoc demand for lighting after regular office hours, the lighting control system does allow manual override.

**“We are using a Lutron light control system in our office in Portland, Oregon USA, and it has proven to be a reliable and energy efficient system. That’s why we chose Lutron again for our new office in Shanghai.”**

*Quinnie Li*

*Associate of  
Glumac Shanghai*

\* [www.lutron.com/TechnicalDocumentLibrary/Lutron\\_Energy\\_Savings\\_Claims.pdf](http://www.lutron.com/TechnicalDocumentLibrary/Lutron_Energy_Savings_Claims.pdf)



**A planted green wall improves indoor air quality and cabinets and pillars made of strawboard help meet sustainability goals.**

The Glumac office has an open floor plan seating 30 people, as well as three private offices and two glass enclosed conference rooms with movable partition walls. Glass walls are now very common in many commercial spaces; however, they are also a source of trouble for many electrical engineers because it is very difficult to hide the untidy wiring of wall controls. Lutron Pico® wireless controls can be wall-mounted, handheld or put on a pedestal as tabletop control. Glumac designers are especially pleased that the Pico wall controls can be attached to glass walls in the conference rooms without unsightly spoiling their aesthetically beautiful design.

#### **Glumac incorporates additional sustainability strategies including:**

- A rainwater collection system which supplies water for the whole building.
- Solar panels on the rooftop generate electricity that is tied into the building and the Park's campus grid.
- An indoor air monitoring system that allows employees to view indoor air quality on their smartphones, based on monitoring of oxygen, VOC, PM2.5, carbon monoxide and carbon dioxide levels and humidity.
- Five air purification systems and a planted green wall weed out the often-unbearable pollution outside the building.
- Composting toilets with a unit in a corridor closet next to the toilets heat all of the waste, making the compost more compact.
- Low-carbon and regionally sourced materials, such as the strawboard pillars assembled by Shimizu, are free of the toxins on the LBC-banned Red List.

## Results

This office renovation project showcases the state-of-the-art sustainability measures and technologies, but even more important to the Glumac engineers, the space help to improve the quality of life for Glumac Shanghai staff and other building tenants as well as the surrounding community.

Lutron, with its global presence and a strong local team, worked tirelessly to provide full support to the Glumac project team in different time zones across the globe, from start to finish. This flagship project has tremendous potential to help others leverage effective building systems to improve sustainability throughout Asia, and the world.

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