




Times are Changing

MICHAEL JOUANEH



Amid the towering testimonials about energy waste and inefficiency that make up city skylines, some buildings are drawing the attention of building owners and facility managers because they perfectly reflect the zeitgeist of post-election America—prudent responsibility for all things environmental and fiscal.

Case in point: the new headquarters of The New York Times Company in Manhattan, an eco-friendly, 52-story Renzo Piano homage to day lighting design and other energy efficient approaches that save money for the company and enhance the workplace environment for building occupants. Piano designed the building in conjunction with two other architectural firms—FXFOWLE of New York and

Gensler, headquartered in San Francisco. SBLD Studio of New York provided the lighting design services and WSP Flack + Kurtz provided the electrical engineering.

The New York Times Building is a dazzling mix of open spaces and floor-to-ceiling glass walls that afford building occupants wide views of neighboring skyscrapers and conversely, allow outsiders to look in.



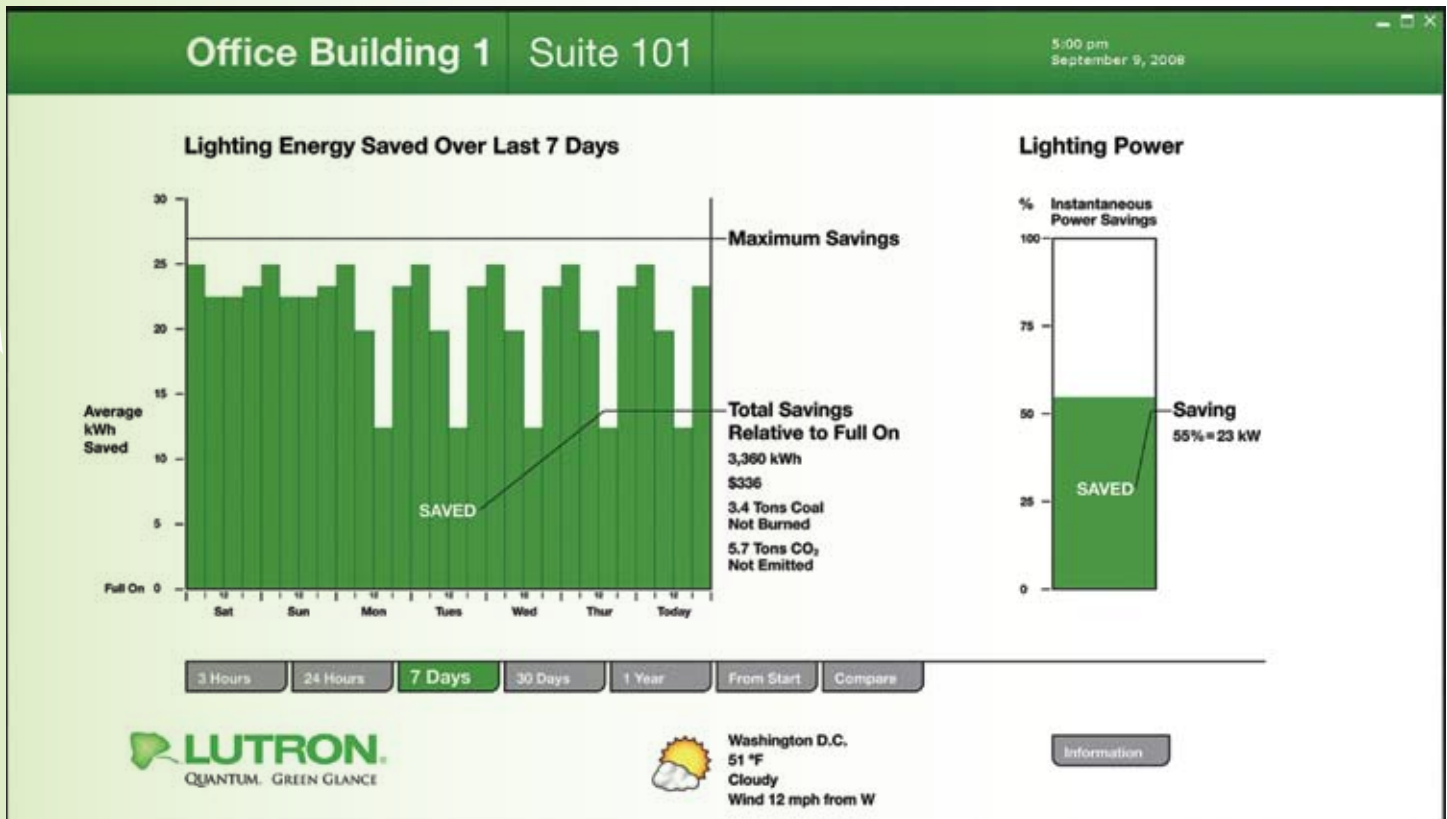
The Times Company did not just show up the day the building opened to begin enjoying its energy efficient benefits. The corporation proactively took control of the design process from the beginning stages and had the foresight to integrate into the structure's physiology an immune system against the largest source of energy consumption for commercial buildings: lighting.

How expensive is it?

According to the U.S. Energy Information Administration—the keeper of statistics and analysis for the U.S. Department of Energy (DOE), lighting accounts for more electricity usage in office buildings (about 40 percent) than any other source—even more than heating, ventilation and air conditioning (HVAC) or office equipment.

With the demand and costs of energy trending upward, the same agency projects that the consumption of electricity will climb about 45 percent by 2030.

A typical 50,000-square-foot commercial building spends about US\$45,000 each year on lighting energy alone. The Times Company was preparing to occupy more than 600,000 square feet of its new



building. Knowing that ineffective lighting control wasted money, the corporation took two crucial steps. It asked for an office tower that let in as much effective day light as possible, and sought out the most energy-efficient lighting control solution available. The corporation wanted a building with a built-in immune system that maintained a healthy stasis for lighting electricity usage.

“The whole building structure is designed for maximum light,” says David Thurm, senior vice president, The New York Times Company. “We desired an interior environment that allowed employees to be as comfortable as possible and in addition, we insisted that the building be as environmentally friendly as possible.”

The Times Company enlisted the help of the building technologies department at Lawrence Berkeley National Laboratory which led it to pursue a dynamic lighting system that would permit departments to set their own light levels and allow artificial light to be used as a supplement to day light.

Competing lighting control technologies and products were tested by the lab, ultimately influencing the company’s decision to select Quantum™ total light management, designed and manufactured by Lutron Electronics Co., Inc.

“We designed our building to use 1.28 watts per square foot of lighting power,” says Glenn Hughes, director of construction for The New York Times Company during the design, installation and commissioning of The New York Times Building. “With the new light management system, it’s using only 0.38—that’s 70 percent less. The energy savings is stunning.”

It is estimated that this 70 percent energy efficiency will generate an annual savings of more than US\$300,000 for the company. As for the environment, the reduced electricity consumption will prevent about 1,250 metric tons of CO₂ emissions each year (a figure based on the DOE’s calculations that, for each kilowatt hour saved, the emission of 1.9 pounds of CO₂ is averted).

Just the touch of a button

The New York Times Building’s lighting controls employ a wide number of strategies, including day light harvesting, light level tuning, scheduling and occupancy sensing. The system also features software to control, monitor and report on the lighting usage in the building.

More than 15,000 digitally addressable ballasts were installed for this project. They provide the communications core of a vast network that allows the lighting system to constantly, but imperceptibly, react to and adjust the amount of natural light pouring into the office space, and make thousands of other decisions throughout each day.

Lighting control systems with digitally addressable ballasts are easier to install and reconfigure because of their enhanced communication capability. They listen and talk to each other and to occupancy or day light sensors. Connect an occupancy or day light sensor to any of these ballasts and the sensors can control any of the other ballasts



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on the lighting network. Furthermore, when a company needs to adapt the lights because of space changes or changing company requirements, there is no need for rewiring. The electrician opening up the ceiling to get to the wiring is replaced by a facility manager achieving the desired results with the touch of a few keystrokes. For instance, using software, target light levels can easily be changed or sensors can easily be assigned to control different lights.

The New York Times Company's held three primary objectives for a light management system: maintain an energized workplace (thereby increasing productivity), substantially reduce its lighting electricity usage, and allow the company to easily adapt to the changing needs of the office space. With an advanced light management system, such goals are not in competition with each other but are integral in its design.

Managing a building's light creates a more comfortable work environment. For example, providing personal light level control by giving employees the ability to adjust the light levels to fit their own preferences for the task at hand, increases their comfort and productivity while saving energy. When there is enough light to read a paper document, but not too much light to cause glare on a computer screen, workers are more comfortable and more productive, according to many studies on the subject.

Money-saving opportunities with light management are easier to identify. Most buildings are over-lighted, often because natural light is abundant and because electric light levels are set to a higher level than appropriate for the people inside. In addition, unoccupied spaces tend to remain lit in most buildings. With an advanced lighting control system, the problem of over-lighting is eliminated. The controls automatically enable a building to use only the amount of electric light needed (though manual override is always available anywhere in the building).

Unmatched energy savings

The New York Times Building is a model of sustainability with a number of green features, including an efficient underfloor air distribution system, a double-skin curtain wall, an open-air garden, and an on-site

co-generation plant. The underfloor air system allows the company to air condition its space about 10 degrees warmer than a typical system. The system not only saves energy, but also guarantees a more regulated, comfortable temperature throughout the space.

The double-skin curtain wall, comprised of horizontal ceramic rods that act as a sunshade, effectively reduce the amount of heat entering the building. The ceramic rods also embellish the building with an additional aesthetic value by gently reflecting sunlight and color changes throughout the day.

The on-site cogeneration plant features clean-burning gas and supplies about 40 percent of the power for the Times Company's space. Additionally, the plant's

heat by-product is used to heat the space in the winter and cool it during other seasons.

With these and many other sustainable attributes, the 70 percent energy savings achieved by the lighting management system has garnered considerable attention. Hughes says that when he talks with other construction consultants, they are astonished at the lighting control's energy savings results.

Going for zero

"Lutron's lighting control system has delivered an over-the-top performance," Hughes maintains, saying the lighting control system has established an excellent baseline, positioning the new building to achieve even better energy savings as the system parameters are tweaked. According to Hughes, this is



the type of energy efficient system that supports the federal DOE's goal of constructing net-zero energy buildings by 2025.

Net-zero energy building or zero energy building is a general term applied to a building with a net energy consumption of zero in a 12-month period. Since buildings account for about 40 percent of the total energy used in the United States, net-zero buildings as a strategy to cut greenhouse gas emissions and conserve energy is gaining momentum.

Clearly, with the flow of cash and credit at a crawl and environmental priorities shifting with the transfer of power within the U.S., the necessity to design, construct and retrofit energy efficient buildings has taken on a new urgency. An energy savings of 70 percent isn't just a headline on a newspaper. That kind of number can be part of any building's record—making the occupants, the owners and the environment all healthier. **FMJ**



Michael Jouaneh is a marketing manager for Lutron Electronics Co., Inc. (www.lutron.com), with five years of experience in the lighting industry. Lutron, founded in the early 1960's, features a large roster of lighting and shading control products that contribute to green design. For more information about The New York Times Building project, visit www.lutron.com/nyt.

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