



Government - Upgrade

NASA

Washington, D.C.

Piedmont Office Realty Trust has undertaken a renovation of the National Aeronautics and Space Administration's (NASA's) 600,000-square-foot headquarters building, including the installation of energy-efficient Cree® CR22™ LED troffers with embedded Lutron® dimming technology and a Lutron Quantum® lighting control system. This new system is not only bringing significant cost savings but is helping NASA meet its "green plan" objectives.

- When completed, \$904,042 in total savings
- Total annual energy cost savings of \$112,351
- 52.4 percent annual lighting energy savings



NASA GREEN INITIATIVE GETS A BOOST FROM CREE

OPPORTUNITY

When NASA began renovations for its 600,000-square-foot, 10-story headquarters building in southwest Washington, D.C., it had a plan in place — known as the “green plan” — which stipulated strategies to maximize the potential for energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality and resource stewardship.

A primary objective was to achieve LEED Silver certification, and doing so required securing energy efficiencies wherever possible. The new lighting system would be critical to this initiative.

Fluorescent T8 fixtures had previously been used in the headquarters building, and the property owner and manager, Piedmont Office Realty Trust, was considering replacing them with more efficient T5 2x2 fixtures.

In a parallel effort, Able Engineering’s Senior Chief Engineer supporting NASA, Tony Roberts, had investigated what Cree could bring to the table. He had placed a sample Cree fixture in another NASA facility, and NASA was impressed with the results.

“We originally considered replacing the existing T8 fluorescent tubes with T5 fluorescents, but after testing Cree’s CR22™ LED troffer, we knew it was the best solution for this installation,” said Roberts. “No other manufacturer offered the combination of performance, pricing and efficacy we desired. We continue to be impressed by the improved lighting quality and significant savings the CR22 troffers provide.”

SOLUTION

In comparing the Cree® CR22 LED troffer with the T5, Piedmont Office Realty Trust determined that the CR22 luminaire would not only provide a better quality of lighting but also help achieve the desired energy and cost savings — with almost no toxic mercury in the fixtures. One concern with keeping a fluorescent lighting system was the increasing cost of fluorescent tubes. “Fluorescents have gone up probably 50 percent in the past eight to 10 months,” Roberts says, “and that figures to just get worse rather than better.”

Cree was the clear choice.

Each of the fixtures is also equipped with embedded Lutron dimming technology and the system is controlled by a Lutron Quantum® lighting control system. Cree worked closely with Lutron® to fine-tune timing and programming, enabling maximum control and flexibility as the building needs change.

Renovations are now complete on three floors of the building; the entire project will cover all 10 floors, some 600,000 square feet, with completion expected in the summer of 2014. The Cree CR22 troffers, some 6,500 fixtures, will be installed in total.

BENEFITS

Roberts says the reviews of the new lighting system are very positive. “Since we got the levels adjusted the way we wanted them,” he says, “what I continuously hear is that it’s a nice even light throughout.”

On the recently completed ninth floor, the lights outside the elevators are set to 20 percent of maximum output. Those down the corridors are at 30 percent, while the lights adjacent to them are at 50 percent. But, says Roberts, “You can’t physically see the difference. You can put a light meter underneath and then see the difference, but you can’t see it with the naked eye.”

Nowhere on the ninth floor — which is about 56,000 square feet — are the lights set at more than 80 percent of their capacity, with the majority operating at between 50 and 60 percent. The ability to fine-tune light levels individually in each fixture, and ultimately to achieve the perfect lighting environment, is the result of an ideal marriage between the fixtures and digital control technology.

Piedmont also wanted to reduce the fixture count; they’ve done so by about 10 percent, and expect greater reductions on other floors. “With the savings from the reduction in the fixture count and the reduced energy consumption per fixture,” says Dan Dillon, Piedmont Office Realty Trust’s Regional Manager, “we should realize pretty significant savings.”

These are positive developments in NASA’s green plan, and in attaining that LEED Silver certification. Moreover, NASA and Piedmont Office Realty Trust are anticipating significantly lower maintenance savings with the Cree solution: no more incessant lightbulb changing. “That’s another big potential savings,” Dillon says.

And, speaking to the reliability of the CR22 troffer, Roberts says, “It’s an amazing fixture. We’ve put in about 1,300 of them, and they are performing beautifully. I think that’s just excellent.”

The government is increasingly moving to LEDs, Dillon says, and this installation has served as something of a showcase to other agencies of the advantages to be gained. “The system has been very well accepted by the NASA staff,” he says, “and we’re really very pleased as well.”



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Tony Roberts, Senior Chief Engineer, Able Engineering, supporting NASA





BEFORE



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Tony Roberts, *Senior Chief Engineer, Able Engineering, supporting NASA*

IN THIS CASE STUDY

CR Series

TROFFERS

- 2000 to 5000 lumen options
- CCT: 3000K, 3500K, 4000K or 5000K
- Up to 130 LPW
- 80+ CRI (High Definition)
- Minimum 90 CRI (Cree TrueWhite® Technology)
- Up to 100,000 hour lifetime



Cree TrueWhite® Technology begins with the highest performing commercially available LEDs. Cree TrueWhite® Technology mixes the light from red and unsaturated yellow LEDs to create beautiful, warm, white light. This patented approach enables color management to preserve high color consistency over the life of the product. Cree TrueWhite® Technology also enables a CRI of at least 90 while maintaining high luminous efficacy – a no compromise solution.

PARTICIPANTS

End User: NASA

Property Managers: Piedmont Office Realty Trust

Engineering Agency: Setty & Associates

Architectural Firm: VOA Associates

Lighting Distributor: Maurice Electrical Supply

Cree Rep Agency: Chesapeake Lighting



Cree IS LED Lighting

Learn more at: www.cree.com/lighting | info@cree.com | 800.236.6800

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