



Education - New Construction

North Carolina State University

Raleigh, NC

In their quest to be a leader in sustainable practices, North Carolina State University is using Cree® LED lighting as the primary lighting source for Wolf Ridge at Centennial – its first residence hall planned for LEED certification.

- Reduced energy consumption vs. traditional fluorescent solution
- Significant savings on maintenance
- Dramatically improved light quality



UNIVERSITY'S SUSTAINABLE HOUSING COMPLEX MAKES THE GRADE WITH CREE LED LIGHTING

OPPORTUNITY

North Carolina State University's Campus Life department is in the housing business. The university considers on-campus living an investment in a student's success and strives to offer lodging options that are convenient, secure and hassle-free. In 2013, NCSU ushered in a new era of student housing with the opening of Wolf Ridge at Centennial – the university's first planned LEED-certified residence hall.

Environmental stewardship is important to NCSU, so it was essential to integrate sustainability features into the new Wolf Ridge complex. And for lighting, sustainability means an LED solution. NCSU only had to look to its own backyard for the technology and industry leader in LED lighting – Cree.

With Cree, NCSU has implemented a highly-efficient LED lighting solution that will yield a significant reduction in energy consumption and operating and maintenance costs. According to Dr. Barry Olson, Director of Business Administration for Campus Life, "Our students are pretty green. They're big into energy issues and they're pretty happy that we're doing everything we can to save energy. They are expecting us to do whatever the latest thing is, to be energy-efficient. So a product like this makes them happy." Designed for extended life, Cree® LED luminaires last much longer than conventional lighting, which equates to fewer replacements over time and less money spent on maintenance.

SOLUTION

As part of the new project, which when completed will encompass six buildings, NCSU installed 4,182 Cree LED luminaires. "As Facilities Manager, I've tried to steer us towards the biggest bang for the buck," says Pete Fraccaroli. "And that means the stairwells and hallways where lights burn 24/7."

The hallways and stairwells at Wolf Ridge are lit with Cree's CR22™ and CR24™ LED architectural troffers and the CR Series Light Engine. Powered by Cree TrueWhite® Technology, these fixtures put a lighter load on the operating budget while providing beautiful light and energy savings – all backed by Cree's industry-leading 10-year limited warranty.

Cree's CR Series of LED troffers also offer dimming functionality and are ideal for recessed applications. Fraccaroli says: "With the hallways, not only are they on all the time, but dimmability is a great feature. The sense of security is also improved. If we can enhance that stairwell, we want students to feel safe in those areas. We've been really happy with the Cree product."

For general illumination in the apartments, NCSU installed Cree's SL24™ LED Surface Linear luminaire. "We've gotten good feedback on the SL24 fixture. The look of it and the way we used it in those apartments, I think it turned out really well," says Dr. Tim Luckadoo, Vice Provost for Campus Life.

In addition to Wolf Ridge, NCSU has installed Cree LED lighting on several other projects, including upgrades to existing residence halls. In 2008, NCSU renovated Bragaw residence hall, replacing four T8 fluorescents with three Cree LR6™ LED downlights in each room, leading to energy reductions beyond what was initially anticipated. And they've been installing LEDs ever since, doing upfits in most of their other campus buildings. Wolf Village, when built in 2004, had installed CFL recessed cans in the bathrooms that took a long time to reach full illumination. According to Dr. Barry Olson: "By the time you were done with your shower, the light would finally be bright enough to see something." NCSU kept that in mind for Wolf Ridge, so in addition to installing Cree's CR6™ LED downlights in those bathrooms, they are replacing the CFL cans at Wolf Village with the CR6 downlights.

BENEFITS

Maintenance cost savings is one of the major benefits when making the switch to Cree LED lighting. "We look at a bulb replacement taking roughly 30 minutes of staff time, in some cases for two people," says Dr. Olson. "Then you have this caustic bulb that I have to treat through OSHA standards. But the bigger savings for us is what that staff member can be doing instead of changing bulbs."

Fraccaroli echoes that sentiment: "We know we're not going to have to go in and change any lights. It's not disruptive to students. When we have to go inside a suite, you're going into someone's living room, kitchen and bathroom. It's very invasive and uncomfortable sometimes if we need to change light bulbs, so that is a huge selling point for us."

There's also the issue of light quality. "The quality of light from the fluorescents is not very good because a student might have a four-tube fixture in the room, and as long as two of the bulbs are still burning, they won't call in a work order," says Fraccaroli. "They'll sit there all semester with a light that's not performing as it was designed."

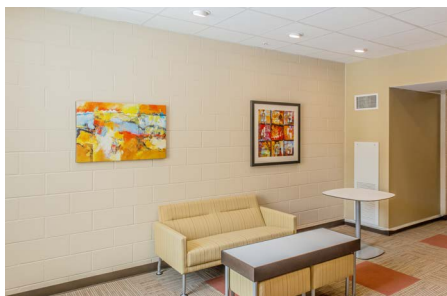
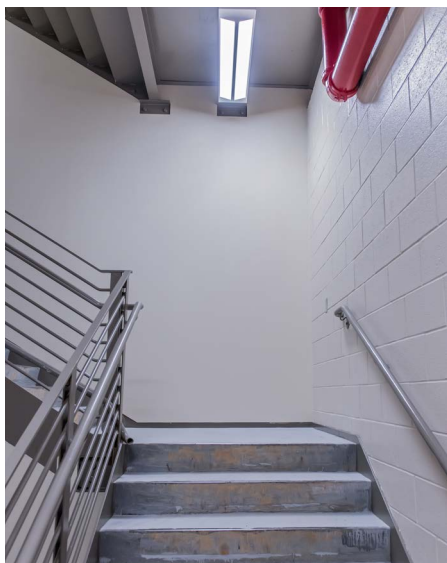
According to Dr. Olson: "With the Cree product in particular, we've seen a very consistent quality of lighting for our students. The students definitely appreciate the quality of the light. And they say it makes them feel safer, so we fall back on that. Our parking decks have Cree LED lighting as well. And in those applications, it very much allows you to make out the faces of people you are approaching as opposed to just a shadowy image. The security department has appreciated that."

Pete Fraccaroli sums it up: "It's a good, warm color that doesn't feel out of place when it's in a residential application. Our students, faculty and staff are all surprised to find out that the Cree LED fixtures look just like any other light in terms of the quality of light. They're impressed."



“ I like Cree's CR22 troffer in a recessed application. I think you guys have beautiful fixtures. And you put the CR22 and CR24 in a hallway—love 'em. ”

Dr. Tim Luckadoo, Vice Provost
of Campus Life, North Carolina
State University





“We’ve gotten good feedback, good quality of light. It sells us not only from the maintenance standpoint. We trust your product. We know we’re not going to have to go in there and change any lights.”

Pete Fraccaroli, *Facilities Manager, Campus Life, North Carolina State University*

IN THIS CASE STUDY

SL Series SURFACE LINEAR

- 80 CRI
- CCT: 3500K
- 2000 or 4000 lumens
- Utilizes Cree MicroMixing™ Technology
- 24" and 40" sizes



CR Series TROFFERS

- Minimum 90 CRI (Cree TrueWhite® Technology)
- 80+ CRI
- CCT: 3000K, 3500K, 4000K or 5000K
- 2000 to 5000 lumen options
- Step level to 50%, 0-10V dimming to 5% or Lutron EcoSystem® enabled to 5%



CR Series LIGHT ENGINE

- Minimum 90 CRI (Cree TrueWhite® Technology)
- 80+ CRI
- CCT: 3000K, 3500K, 4000K or 5000K
- 2000 to 5000 lumen options
- Step level to 50%, 0-10V dimming to 5% or Lutron EcoSystem® enabled to 5%



CR Series DOWNLIGHT

- Minimum 90 CRI
- CCT: 2700K, 3000K, 3500K or 4000K
- 575, 625 or 800 lumens
- Utilizes Cree TrueWhite® Technology
- 4" and 6" sizes
- Dimmable with Triac dimmers at 120V



LR Series DOWNLIGHT

- Minimum 90 CRI
- CCT: 2700K, 3000K, 3500K or 4000K
- 650 or 1000 lumens
- Utilizes Cree TrueWhite® Technology
- Dimmable with Triac dimmers at 120V



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: North Carolina State University

Cree Rep Agency: LiteSource LLC

Construction Manager: Barnhill/Balfour Beatty, A Joint Venture

Electrical Contractor: M.C. Dean, Inc.



Cree IS LED Lighting

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

© 2013 Cree, Inc. All rights reserved. For informational purposes only. Not a warranty or specification. See www.cree.com/lighting for warranty and specifications. Cree®, the Cree logo, Cree TrueWhite®, TrueWhite® and the Cree TrueWhite Technology logo are registered trademarks, and MicroMixing™, CR6™, CR22™, CR24™, SL24™ and LR6™ are trademarks of Cree, Inc. Lutron Ecosystem® is a registered trademark of Lutron Electronics Co., Inc. CAT/CCS-C079 12/2013