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Well-schooled in the language of lighting, National Grid set an aggressive—and ultra-specific—energy target for its new corporate headquarters

BY PAUL TARRICONE

GIVE 'EM WHAT THEY ASK FOR

There's nothing like a highly motivated client. Even better is when that motivation happens to align neatly with the services you offer. National Grid meet Atelier Ten. The former is an international electricity and gas company that wanted its new headquarters in Waltham, MA, to demonstrate leadership in sustainable design. The latter is an environmental and lighting design firm ready to prove that watt-crunching lighting techniques and top-notch visual appeal are not mutually exclusive.

The energy company's attention to its *own* energy use elevated Atelier Ten's place in the design-team pecking order, says firm associate Chad Groshart, who leads the New Haven, CT-based lighting team. "Usually when a client says, 'I want dark wood finishes,' and we tell them that will require more energy from the lighting, they don't care. They still want the dark finishes. This was one of the few times we had a client who considered ear-

Photo: Robert Benson

Watts were used more liberally in the lobby, where the owner required a "wow factor" to market other buildings on campus. Designers provided that sizzle–at a reasonable LPD–by using fluorescent cove lighting detailed into the wood ceiling and metal halide accents to "pop" the wood walls.

Highly reflective ceiling tiles were specified for the open-office area. Single-lamp linear fluorescent pendants (using high-output, 3,100-lumen super T8s) illuminate the ceiling tiles, while rows of angled ceiling tiles over the circulation zone bounce daylight, contributing to efficiency. The fluorescent pendants are supplemented by LED task lights with under-desk occupancy sensors.

ly on how the interior design would affect the lighting design. Usually, we're lower on the totem pole."

Atelier Ten, though, did discover that an educated customer like National Grid can also be the most demanding. Groshart describes a few unconventional meetings. "A client who comes to a kick-off meeting with a lighting power density target in mind was a new experience for us," he says. "They challenged us with .65 watts per sq ft. We were a little skeptical due to the AV requirements and specialized lighting in the lobby." Atelier Ten also had to be ready to explain the intricacies of the design concept. "It was the first time I walked into a meeting and the client had an AGI model of my design," recalls Groshart. "I thought, 'I better have my T's crossed and I's dotted.' "

The Atelier Ten design encompassed the 312,000-sq ft, three-story building and included the main lobby, open-plan and private offices, hallways, and the café and break area. Technically speaking, there were actually two clients on the project: the building owner, responsible for the core and shell, and National Grid, the leasee, responsible for fitting out the office space. "The owner had the lobby, cafeteria and gym; we grabbed that so the building could be unified in its design approach," says Groshart.

Working with the owner's architect (ADD Inc.) and

Photo: Robert Benson

National Grid's architect (Sasaki Associates), the lighting team reached deep into its tool kit, using a combination of natural light, fluorescent, ceramic metal halide and LEDs as sources, as well as custom fixtures, occupancy sensors and daylight-responsive dimming. The lighting came in at a lean .54 watts per sq ft, soundly beating ASHRAE/IESNA 90.1-2004 and even surpassing National Grid's suggested target. Completed in 2009, the project earned "double" LEED Platinum certification for both Core & Shell and Commercial Interiors–only the second single-tenant facility in the U.S. to do so. Atelier Ten also received a 2010 IES Illumination Award of Merit for the design.

Photo: Robert Benson

To lend some sparkle to the space, colored LED marker lights were embedded on the exterior walls of the private offices.

MORE THAN WATTS

The project, however, wasn't all about shrinking the LPD number. "The most important thing was visual quality for the user," says Groshart. With National Grid consolidating other locations and "bringing more people to headquarters, they needed enjoyable space with some sparkle and vertical brightness."

The open-office area–the largest piece of the project–is a prime example of where the energy and quality goals converged. "We insisted on a task-ambient scheme here," says Groshart. The open-office areas are arranged to prevent direct sunlight on the workstations, yet are illuminated by daylight from windows equipped with specially designed exterior shading devices. Daylight-responsive dimming took advantage of careful daylight design.

Highly reflective ceiling tiles were specified for the open-office area. Single-lamp linear fluorescent pendants (using high-output, 3,100-lumen super T8s) illuminate these ceiling tiles, creating visual interest and a lively sense of rhythm within the space. The single-lamp approach cut in half the number of lamps typically used in this type of application. Over the circualtion

The lounges combine CFL pendants with lensed fluorescent perimeter and undercabinet LED lighting to highlight blue-tiled walls along the counters.

Photo: Robert Benson

zone, rows of angular ceiling tiles bounce daylight, also contributing to efficiency.

The fluorescent pendants are supplemented by LED task lights that have under-desk occupancy sensors to save energy and provide personal control for workers.

From an LPD perspective, the "high-density [in terms of people] open-office area worked in our favor," says Groshart. "By using long rows of workstations with generous space in between, we were able to put just enough footcandles on the workstations and have the rest fall off into the aisles."

To lend "some sparkle to the space," says Groshart, LED marker lights were installed along the circulation routes. These colored tiles are embedded on the exterior walls of the private offices, which sit in the center of the floor plan. For their part, the private offices have lower ceilings than the open offices and are lighted with recessed volumetric luminaires. These spaces use dual-switched occupancy sensors which allow for turning on only one overhead lamp automatically.

BORROWED AND INVESTED

The watt-conscious design in the office area allowed Atelier Ten more freedom in other areas of the building. "We kept the LPD low here, so we could do special things elsewhere," says Groshart, adding that this *borrow-from-here-to-spend-there* approach is often the essence of lighting design in a code-driven world. "We asked the client, 'Where do you want to spend your watts?' as an interior designer would ask a client, 'Where do you want to spend your dollars?' " Using that information, Atelier Ten created color-coded charts of the National Grid building showing the LPDs in various areas of the facility.

One area where watts were used more liberally was the lobby. "National Grid wanted the building to contribute to its 'low-energy story,' but when we saw the rendering of the lobby, our initial response was that the design would use far too much energy," says Groshart. The building, however, was the first on this campus to be completed, and the owner hoped to use it as a showcase for other potential clients. As a result, the owner's need for "some wow factor" in the lobby overrode Na-

Three custom fixtures with long-life T8 fluorescent lamps grace the lobby.

Photo: Courtesy of Atelier Ten

tional Grid's concerns about energy use.

Atelier Ten was able to provide the "wow" at a reasonable LPD by using linear fluorescent cove lighting detailed into the wood ceiling and metal halide accents "to pop the wood walls," says Groshart. In addition, three large, 12-ft custom fixtures were fabricated early on to meet the project's fast-track schedule. The fixtures are lamped with T8 fluorescents expected to last more than 40,000 hours to minimize maintenance and mercury content.

Finally, Atelier Ten added more artistic flourishes in the lounges and café that break up the large swaths of office space. The lounges combine CFL pendants with lensed fluorescent perimeter and undercabinet LED lighting to highlight blue-tiled walls along the counters. The café also integrates CFL pendants into the geometric ceiling plane, creating an intimate and lively space. Here–and across the other areas of the building–it seems you can cut down on your watts and have your visual quality, too.

METRICS THAT MATTER

National Grid Headquarters

Watts per sq ft: .54 (surpasses requirements of ASHRAE/IESNA 90.1-2004)

Illuminance Levels: open-office desk = 40 fc; private office = 35 fc (plus task); lobby = 15 fc; café = 25 fc

Lamp Types: 6 plus two LED fixtures

Fixture Types: 25

LEED-certified Platinum for both Core & Shell and Commercial Interiors

About the Designers: Chad Groshart, IALD, LC, LEED AP, Member IES (2005), is Atelier Ten's lighting practice design leader. He is a voting member of the ASHRAE/IES 90.1 lighting subcommittee and holds a Masters in Architectural Lighting Design from Parson's the New School for Design in New York where he is also an adjunct instructor.

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