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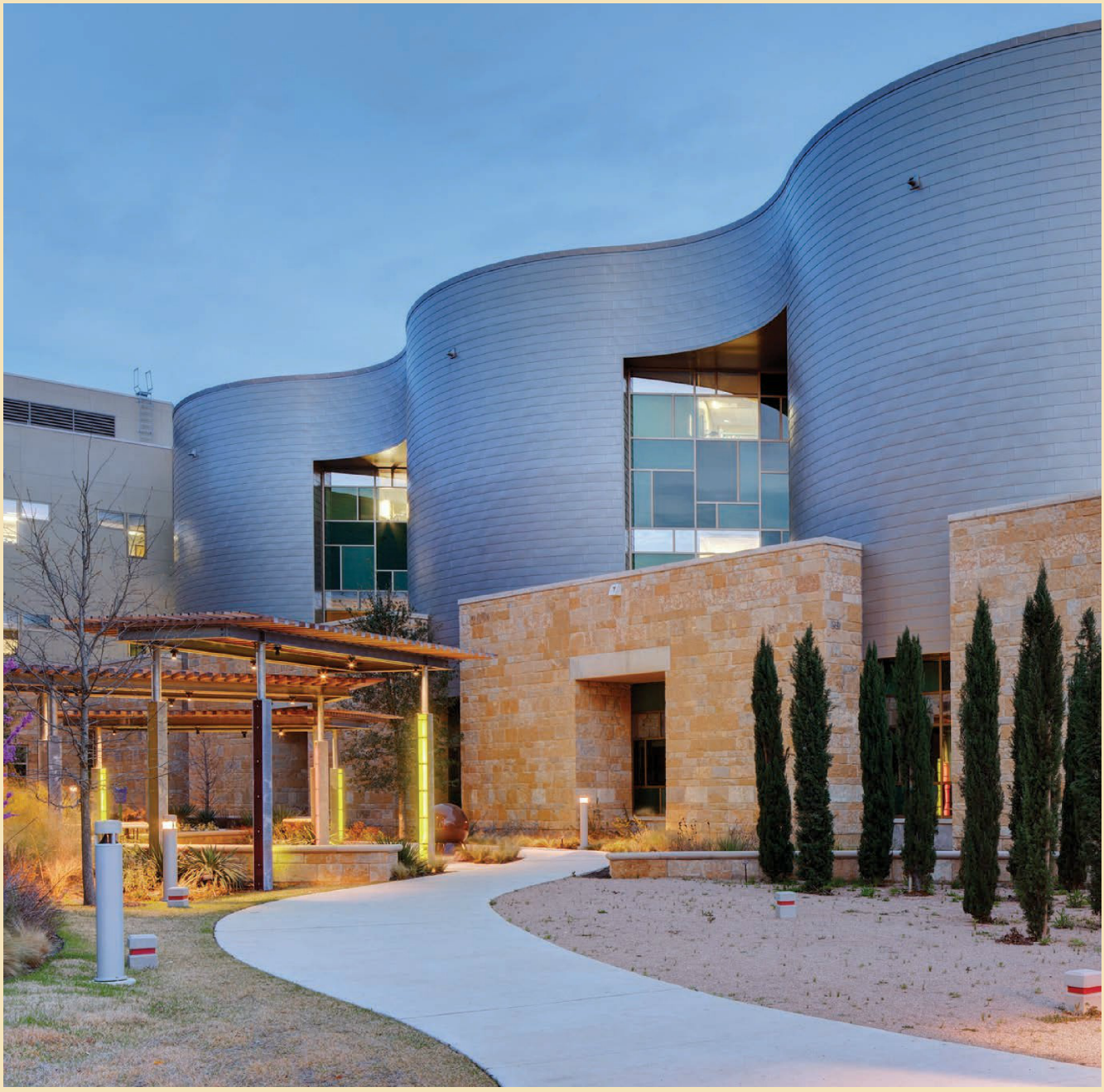

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LED Retrofits Light Up College Library

Terralux retrofit kits improve efficiency and lighting at Dartmouth College.

Dartmouth College, Hanover, NH, administrators recently initiated a campus-wide project to improve efficiency and make the college's operations more eco-friendly. One major focus was upgrading existing light fixtures to reduce energy use. The Baker-Berry Library was one of the buildings targeted.

The library doors first opened in 1928. Over the years, the library was expanded with additions to accommodate the growth of the college and the library collection. A new library was completed in 2002. The new facilities allowed the college to create new study spaces, office space, a media center, classrooms, a café, and to increase the library's collection capacity from one million to two million volumes.

The library has a modern, sleek design that is aesthetically appealing but created challenges for maintenance staff as they prepared to update lighting in the building. Sections of the ceiling in the library are constructed with perforated metal and other areas are solid sheet rock. This made it nearly impossible for the maintenance staff to install new light fixtures that were more energy efficient.

To install new fixtures, the maintenance staff had to locate a fixture that would identically match the current openings cut into the ceiling. Even then, wiring the new fixtures was difficult because access was extremely restricted. Ideally, a solution was needed that would leave the current fixtures in place and retrofit them to be more efficient.

Maintenance staff began by researching LED can-light fixtures. During the investigation, it was discovered that there were no 8-in. LED can-light fixtures on the market. Only 6-in. fixtures were available. Realizing replacing the fixtures already mounted in the library ceiling would not be possible, the maintenance crew began to consider other upgrade options.

LED retrofit kits were determined to be the best alternative to replacing the fixtures. Longmont, CO-based Terralux's LED DLR7-H downlight retrofit kit was chosen for the project.

"We selected Terralux for the LED retrofit project in Baker-Berry Library because its products could be installed so easily from below without needing access from above in the ceiling," said Sam Zucker, electrical-engineering designer at Dartmouth College. "Once the old bulbs and ballasts were removed, we simply installed the Terralux units in the existing reflectors, twisted together a few wires, and the installation was complete, each fixture only took a few minutes."

The retrofit kits are designed for fast installation and are rigorously tested to ensure long-term quality. The kit requires no rewiring or extra hardware. It connects directly to the mains, requiring no electronic driver, even in 277-V applications.

Kits are Energy Star certified and contain all accessories an installer needs, including mounting brackets, screws, wire nuts, and a UL 1598C Classified (LED retrofit kit) that allows any qualified electrician to retrofit any fixture on-site while keeping the UL listing on the fixture. In five minutes or less the DLR7-H LED retrofit kit can be permanently installed, transforming any existing fixture into a more energy-efficient unit.

Recessed downlights can be challenging to retrofit, as heat is a major concern for LEDs. The DLR7-H has LEDSense circuitry allowing installation in any fixtures, even sealed. The unique design of the engine transfers heat emitted from the LEDs to the metal fixture housing, providing further protection from the LEDSense circuitry. If the heat is too high, above 180 F, LEDSense will protect the LEDs and components by lowering the power until a safe temperature is reached, preserving the LED lifespan.

The kit can be set to be 120-V compatible with phase dimming or 100- to 277-V compatible with 0- to 10-V dimming. Available in five color temperatures–2,700 K, 3,000 K, 3,500 K, 4,000 K, and 5,000 K–color quality is improved even as energy is saved.

"Many modern buildings are designed with unique aesthetic features that make it problematic to upgrade lighting once it is installed. Electrical contractors simply cannot gain the access they need to replace a fixture with one that has up-to-date technology and is more energy efficient," said Terralux's Matthew Sallee. "But, more importantly, there is often no reason for a building to replace fixtures even if the job is simple. Too often fixtures and the raw materials they are constructed with are tossed into landfills when the light could have easily been upgraded with an LED retrofit kit."

To install the retrofit kits in the Baker-Berry library ceiling can lights, Zucker and his staff began by removing the fluorescent lamps and the ballast from each fixture. Two 26-W G24 base lamps powered each can light in the library. These were replaced with the DLH7 4-in., 16-W dual units. Some of the lights were also retrofit for dimming capabilities.

The improved lighting quality of the LEDs, versus the fluorescent lamps, was so great that the maintenance staff was able to remove 100 light fixtures from the library ceiling. This reduction, combined with the reduced energy draw of the LEDs, has resulted in a two-thirds reduction of energy consumption. CBP

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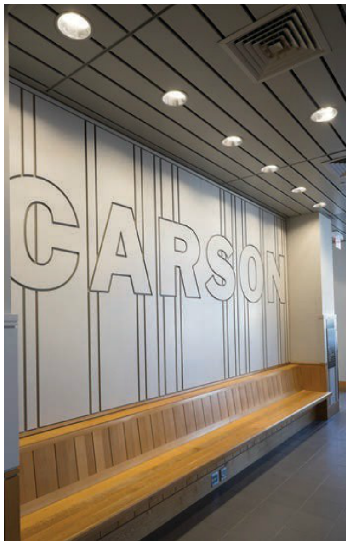
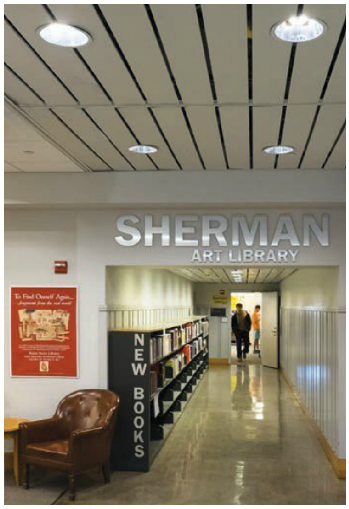
Want more information? The resources below are linked in our digital magazine at cbpmagazine.com/digital/oct2014.

Circle 5 on the Reader Service Card.

Download a spec sheet on the DLR7-H kit.



The DLR7-H retrofit has LEDSense circuitry, allowing installation in recessed downlights.



LEDs improved the lighting quality to the extent that fewer fixtures were needed to light the library.