

Case Study: Thailand Shopping Mall

75,000 Red LEDs Wrap 7-Story Mall Facade in Dynamic Color with Future Lighting Solutions

A massive exterior lighting installation built with 75,000 LUXEON LEDs raises the visibility of the largest shopping center in upper Bangkok



Shopping center developers everywhere strive for strategies to distinguish their properties. In Thailand, that effort led the country's largest retail developer to embellish the facade of a seven-story Bangkok shopping complex that opened in November 2008 with 75,000 red LUXEON® Rebel LEDs arranged to form a bold pattern-changing geometric design. Thailand's Lumitron Lighting International engineered and manufactured the lighting installation for the upscale mall, backed by proof of concept and engineering services from LUXEON supplier and LED application development specialist Future Lighting Solutions. Today, the lights of CentralPlaza ChaengWattana blink like a beacon on the local skyline while also meeting the need for low power consumption, long bulb life, and durability in Thailand's extreme heat and wind.



Different computer-generated light patterns create a dynamic light show that draws the eye

SEEING RED

With 300 stores spanning 160,000 square meters, CentralPlaza on ChaengWattana Road is the largest shopping center in upper Bangkok. The all-red exterior lighting treatment designed by the mall's architects was inspired by the red logo of Thailand's family-owned Central Group conglomerate, the parent company of both shopping center developer Central Pattana and the Central Department Store that anchors the complex.



“Our ability to win this contract stems directly from the combination of LUXEON Rebel LED performance and the engineering assistance we received from Future Lighting Solutions. We were able to conclusively show that we had a better solution.”

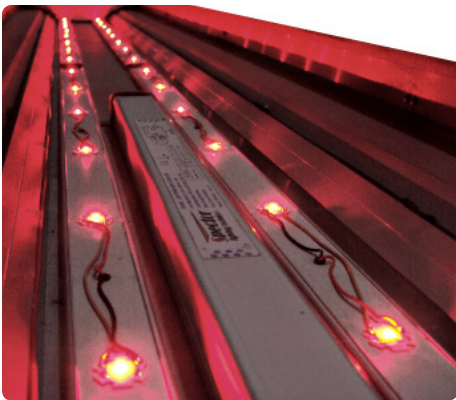
Arwin Saengaroon, General Manager, Lumitron Lighting International



Electricity costs are estimated at just \$2,900 per year, meeting the developer's demand for low energy use

The design called for a giant grid of red lights running the full width of the facade in parallel arrays angling and intersecting at strategic points. The electrified bands of color would trim the street-side mall face and part of the building's side as well as the attached 16-story office tower, decorating as well as uniting the two building segments. The challenge was to come up with an energy-efficient means of executing the plan that also minimized bulb replacement to enable low maintenance.

“Central Pattana was concerned about power consumption, bulb lifetime, temperature and vibration resistance, and a variety of other issues that would directly impact their operating costs over the long term,” said Arwin Saengaroon, Lumitron's General Manager. “In our early discussions, we convinced them that LEDs were the only practical answer.” The developers then incorporated LEDs as a requirement in their bidding documents and received three bids offering competing LED products and engineering schemes.



One of 3,000 light boxes built for the project, using 875 different types of assemblies consisting of 2 to 32 LEDs

LED LEARNING CURVE

While Lumitron is an established Thai lighting supplier, the company had no LED experience when the CentralPlaza opportunity came up in 2007. Seeing the project as a foot in the solid-state lighting door, they approached Future Lighting Solutions' Bangkok office for a crash course in LED application development as well as assistance in engineering the solution. Future's services ranged from selecting the LEDs, drivers and drive current to calculating the number of LEDs required, planning for heat dissipation, and providing wiring guidance. Future engineers also built multiple proof-of-concept light boxes to test different designs, plus a prototype of Lumitron's preferred design to show the actual brightness, color and light distribution of their proposed solution.

That prototype – used by Lumitron during their bid presentation – proved to be a key factor in winning the job, along with LUXEON Rebel benefits ranging from higher flux, higher efficacy and longer useful life than the competing





The installation's LUXEON LEDs will last at least 10 years even with Thailand's extreme heat and wind, minimizing maintenance costs for bulb replacement

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LEDs to competitive pricing and a five-year product and service warranty. Also contributing to Lumitron's successful bid was the firm's vision of fully leveraging the capabilities of solid-state lighting by programming the lights to generate different design sequences, creating a dynamic light show that would significantly raise the building's visibility.

"LEDs were clearly the right choice for this project from every perspective, from low maintenance to energy savings and ability to survive Thailand's climate including monsoons, but it was a matter of which LED product and which engineering design," said Chin Le Yan, Senior Technical Solution Manager, Future Lighting Solutions. "Lumitron was able to demonstrate that our design using LUXEON Rebel LEDs could deliver superior performance, both on paper in Philips Lumileds' data sheet and in the lighting assembly itself. Seeing is believing."

3,000 LIGHT BOXES

With the contract in hand, Lumitron went to work building the 3,000 light boxes required to bring the architect's design to life. The job involved 875 different types of assemblies ranging in length from 1" to 2.4 meters and in LED count from 2 to 32. Future supplied 75,000 red LUXEON Rebel LEDs along with drivers and other components. Future engineers also assisted in the production process in a project manager capacity, providing services such as quality-controlling raw materials, advising Lumitron on LED mounting and wiring methods, and recommending a subcontractor for the electronics assembly.

The completed project not only created a distinctive look for the building but also fulfilled the developer's mandate that operating and maintenance costs be kept to a minimum. Because of LUXEON's low power consumption, the total electricity bill for running the lights eight hours a day is expected to be only \$2,900 per year. And because LUXEON LEDs are rated at 60,000 hours of useful life, the LEDs themselves are expected to last for 10 years or more before needing replacement.

Most significantly, the LUXEON-powered lighting installation with the red Central Group branding makes the shopping complex instantly identifiable and visible to Bangkok shoppers for miles around. More than just putting a pretty face on the building, the lighting draws the eye to CentralPlaza ChaengWattana. That in turn helps draw traffic and drive sales. By any measure, that's a shopping center success.

