

Twists and Turns Toward LEDs

An about-face by the client paved the way for LED site lighting at a new Volkswagen manufacturing plant

BY PAUL TARRICONE

Photo courtesy of SSOE

At a plant befitting the product, the 2012 *Motor Trend* magazine Car of the Year is being built and put through its paces at a manufacturing facility that has earned its own best-in-class rating. The Volkswagen Chattanooga, TN, facility—home of the award-winning Passat—was certified as a LEED Platinum project in late 2011. It is reportedly the first and only automotive manufacturing plant in the world to earn Platinum status.

The \$1 billion-plus plant racked up 52 out of a possible 69 LEED points on its way to Platinum. Sustainable design features include:

- **Certification of the paint shop facility.** Previous assembly

plants have excluded their paint shop in the LEED certification process due to the complexity of the manufacturing process and the challenge of getting them certified. VW's paint shop will save more than 50 million gallons of water a year.

- **Recycling.** Nearly 78 percent (4,602 tons) of construction and demolition waste was salvaged or recycled.
- **Water conservation.** Low-flow water closets and urinals result in a 58 percent reduction in potable water used for sewage conveyance. Additionally, the plant harvests rainwater from its roof that is collected for use in the sanitary waste system.

VOLKSWAGEN PLANT



Photos: LSI Industries

After high-pressure sodium was rejected at the 11th hour, two separate LED luminaires were selected for the roadway and test track (top) and parking area (bottom).



Photo courtesy of SSOE

A pedestrian bridge stands out in Volkswagen blue provided by luminaires (top right) that uplight

Together, these strategies save 1.7 million gallons of potable water each year. Low-flow showers, lavatory and kitchen faucets further decrease potable water usage.

- **Energy-saving materials.** A white, reflective roofing material was installed on 100 percent of the roof area of the building, which reflects heat, lowering cooling costs and saving energy.
- **Commuter incentives.** Measures to promote environmentally friendly commutes include the provision of bike racks for visitors and employees, showers and lockers for employee use, and preferred parking for those driving low-emitting and fuel-efficient vehicles and for those who carpool to the site.

Lighting—and lots of it—also chipped in to the LEED effort, earning points for exterior lighting on 4 miles of intra-campus roadway; a ½-mile test track for the Passat; parking areas; and a 650-ft pedestrian bridge adorned in light that matches Volkswagen's signature blue corporate color.

TAKING A DETOUR

LEDs were the dominant exterior light source, but the design team from SSOE Group, Toledo, OH (which was responsible for architecture/engineering and construction management for the entire facil-

ity), took a circuitous route to the technology. "We might need more than an hour" interview to talk about how LEDs were ultimately selected, quips Aaron Albright, SSOE lighting designer. While Albright championed LEDs from the outset, Volkswagen was more comfortable with high-pressure sodium, which was the roadway standard at many of its other manufacturing plants. "They didn't want to be a case study or guinea pig," he says. Albright, however, objected to HPS due to the orange/yellow light color and the way the automobiles would be rendered under it. "How will people know which car to get from the lot?" he asked the client, who responded that it would rely on scanners/readers to match the inventory codes.

With the project seemingly destined for HPS—"we had already done the layout for the roadway," says Albright—SSOE got a call "out of the blue from someone at Volkswagen who said, 'what about LED?'" Longevity and maintenance had become the critical factors for the client. The LED luminaires are projected to last 15 years, not to mention providing a 55 percent energy savings. "When they saw they wouldn't need a maintenance person out there, they took a leap of faith," adds Albright. At that point, the roadway lighting was redesigned using LEDs, and the rest of the exterior lighting followed suit.



Photo: Lumenpulse

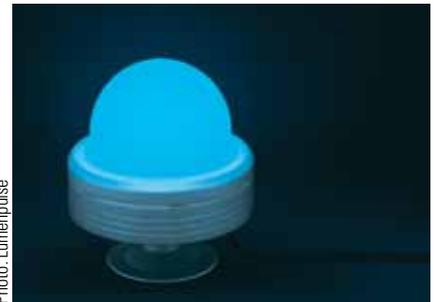


Photo: Lumenpulse

the anchor supports between the arches, and dome-like fixtures (bottom right) mounted to the arches, themselves.

The LEDs produce a lower maximum/minimum ratio than HPS or metal halide, providing a softer and wider distribution of light. The same shoe-box style luminaire from LSI Industries was used for both the roadways and the test track, with poles spaced at intervals of approximately 130 ft on both the roadways and track. All told, 220 luminaires were used across the 4 miles of roadway and on the ½-mile track. Another 150 LED area lights (also from LSI) were installed in the parking area.

COLOR CODED

Complementing the roadway lighting is LED architectural lighting on a pedestrian bridge—one of the focal points of the campus. The bridge was originally envisioned as much more elaborate and ornate than the finished product, and was to include lighted handrails and an exterior walkway to go with the enclosed bridge. Budget restrictions, however, led to the more streamlined structure.

Albright's proposal was to bathe the bridge in blue. "I asked, 'do you want something white or something with Volkswagen blue?' It was like you could hear their eyebrows raise when talking on the phone." The footbridge is fronted by a series of "McDonalds-like arches," as Albright describes them, lighted blue to match the com-

pany's corporate color. Two RGB LED luminaire types from Lumenpulse were selected. A total of 72 Lumendome fixtures are mounted directly onto the arches, while 16 Lumenbeam luminaires are mounted at ground level and uplight the anchor supports between each arch. Dimming and color changing to commemorate special events or holidays is possible, although the base color is VW blue.

After all, when you're LEED Platinum, why not lead with your true colors? ■

METRICS THAT MATTER

Volkswagen Manufacturing Plant

Complies with ASHRAE/IESNA-90.1-2004

Illuminance Levels: roadway areas = 1 fc

Fixture Types: 4

Total Number of Fixtures: 458 (roadway, track, parking area, bridge)

LEED Platinum registered

THE DESIGNER



Aaron Albright, LC, Member IES (2008), is a lighting designer at SSOE Group, an international EPCM firm with 26 offices in the U.S., China, India and Brazil, and also sits on the Board of Managers for the IES Toledo Section.