

Chasing Away the Dark: Chase Field, home of the Arizona Diamondbacks, updated its lighting and security lighting systems with central lighting inverters and 1,500-W metal halide fixtures.

With Chase Field's retractable roof—not to mention its desert location—rain delays aren't much of a concern for the Arizona Diamondbacks. While a power outage is just as unlikely to disrupt the game, stadium operators now have a system in place to provide emergency illumination—just in case.



Stadium officials upgraded Chase Field's lighting system—including the security lighting—after they learned that replacement parts for the stadium's restrike HID fixtures would no longer be produced. If the lights were to go out, a capacity crowd of 49,033 would suddenly find itself in the dark for up to 15 minutes. In the remote event of a power outage, the stadium operations team wanted to ensure that it could quickly shift from normal source illumination to emergency back-up generation in five seconds or less.



Engineers evaluated a number of alternatives (including a UPS system and a fly wheel system) before selecting a central lighting inverter system (from Dual-Lite a Hubbell Lighting, Inc. brand) to be used in the new emergency 1,500-W metal halide HID fixtures specified. "In addition to being cost effective, the central light inverter system enabled us to standardize our sports lighting," says Marshall Cheever, assistant director of engineering at Chase Field. "We were able to dispose of many obsolete fixtures, and most importantly, we would not go dark."

To illuminate the playing field and intentionally provide overthrow lighting into the stands for safety, the engineering team standardized on 1,500-W metal halide fixtures (from Sports Liter Solutions, a Hubbell Lighting, Inc. brand). There are seven banks of fixtures (totaling 87) in each of the four corners of the stadium, and 180 fixtures in each of the two main outfield banks of lighting. Of these, 80 are emergency fixtures: 60 in the corner banks (15 fixtures in each of the four corners), plus 20 within the two main banks (10 fixtures in each bank). Together, these 80 fixtures provide sufficient illumination to allow spectators to exit the ballpark safely during an emergency.

Three, 3-phase, 20 KVA central lighting inverters supply the emergency power for these fixtures. Strategically positioned near electrical panels, two of the inverters are located on the facility's mechanical level, while the third is on the stadium's upper concourse. The central lighting inverters constantly monitor the incoming power supply to the connected loads. As long as normal utility-supplied power is available, the central lighting inverter remains in standby mode with batteries fully charged, ready to respond to an emergency. If the utility line is disturbed or interrupted, the central lighting inverters would automatically supply emergency "inverted" power (derived from DC batteries and converted to AC power) to all connected loads.



Since the central lighting inverters supply the exact same power to the load as the utility does, there is no drop in the electrical current needed to operate the load. Every load connected to the inverters is maintained at its required power level. This is especially important at Chase Field because of its use of high-intensity discharge lamps; a very minor power interruption can cause fixtures to "wink out." Due to the nature of HID lamps, they must cool down before they can re-strike an arc, and that process takes up to 15 minutes. With the inverter system now in place, that process is expected to take milliseconds.