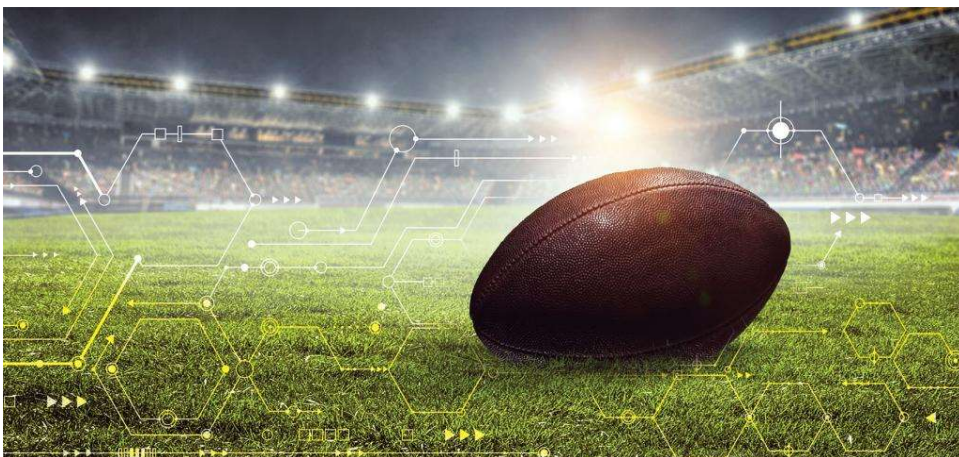


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The Goal Is Integration: Stadiums upgrade for intelligence



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As Fans crowd back into stadiums, facilities are upgrading to accommodate some new realities. The COVID-19 pandemic has forced many companies to adopt new digital technology. Stadiums and arenas are no different as their operators seek to enhance experiences while remaining mindful of safety and efficiency.

The driver for stadium upgrades is the audience—they expect more than just live action that ends when the game is over. So, some smart stadiums are connecting performers, players and audience members with the outside world while automating facility operations.

Some analysts and vendors say the need for a single, stadium-wide solution that will provide benefits now and in the future shouldn't get lost in the rush for technology. Many distinct systems offer individual solutions, but they are less likely to stand the test of time.

Dave Fagotti, senior sales representative at Schneider Electric, Boston, said that one of the biggest trends underway in stadiums and arenas is the installation of a "single pane of glass" that integrates across otherwise disparate systems. Fagotti said facility managers need a one-stop-shop solution that compiles data and insights from multiple sources in a single place. Schneider Electric's solution is the EcoStruxure systems, which are designed to communicate across multiple product lines with everything from elevators, irrigation and fire alarms to lighting control, touch-screen signage and mass notification systems.

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Schneider Electric installed its integrated system at T-Mobile Arena (TMA) in Las Vegas. The EcoStruxure Building Operation platform uses various other technology solutions, including Schneider's Building Management Solution (BMS), Square D medium-voltage switchgear and low-voltage electrical distribution, in addition to Continuum Access Control, Square D variable-frequency drive and Building Advisor Analytics.

"Together, these tools have enabled greater connectivity, sustainability and efficiency in the TMA," Fagotti said.

This integrated system enables TMA facilities personnel to manage its cooling, power and electrical distribution, energy management and environmental controls, as well as the stadium's security access control and video surveillance. The arena's BMS systems provide a one-click deployment of specialized sequences of operations tailored to events that range from bull riding, hockey, ultimate fighting, boxing and other sporting events, to concerts and music festivals, since each has different facility requirements and guidelines.

"It's important that managers have direct access to data about their site to enable real-time business decisions," Fagotti said. "That means understanding, for instance, how energy is being used, and where energy consumption can be reduced."

The platform also includes where traffic control can be optimized and where content can be captured and shared with fans. An example is the FedExForum stadium in Memphis, Tenn., which has also deployed Schneider Electric's technology to reduce energy consumption and maintain customer and employee comfort.

But it's not just about facility energy consumption and conditions, it's also providing the information and convenience to a digitally savvy audience. Companies are seeing growing demand for mobile app technology that enables attendees to digitally participate in the full stadium experience.

With the pandemic still posing challenges worldwide, stadiums are also using technology to manage occupancy. Thermal-imaging cameras are used to check attendees' temperatures. Venues are leveraging Wi-Fi to determine location information and looking at integrating smart devices and internet of things (IoT) to complement their deployment. These devices include forward-looking infrared cameras to identify elevated temperatures and applications to look at air quality, critical asset tracking, panic buttons and geofencing.

Contractors take on new roles

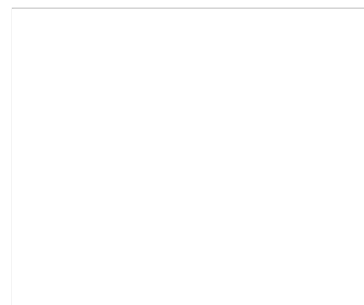
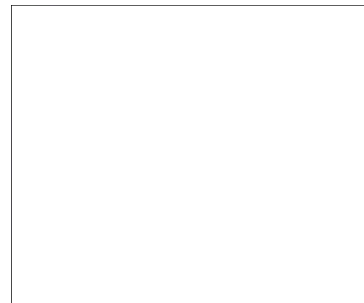
Electrical contractors' role amidst this change is also evolving, with contractors often finding opportunity in low-voltage, telecom, wireless systems and integration.

"During the installation and commissioning process, sometimes it is necessary for an electrical contractor to step into an integrator role and coordinate across all the systems and subcontractors," Fagotti said. "At minimum, the electrical contractors are required to spend more time collaborating with the other subcontractors to ensure the installation provided will work seamlessly in the integration."

Relationships between contractor and customer can go on long after installation. During system operation, ECs continue to be critical partners with the facility management team. As the installer or commissioning lead for the project, they are intimately familiar with the system and how it operates. This knowledge creates value for the ongoing facility operation and maintenance.

Telecommunications network provider CommScope, Hickory, N.C., partners with stadiums, campuses and large public venues to provide connectivity for the digital-hungry public. CommScope worked with the Las Vegas Raiders to bring integrated cabling infrastructure that included 227 miles of fiber and 284 miles of Category 6A copper cabling to the stadium. Today the 65,000-seat venue features 2,400 multimedia screens, 40,000 square feet of HDR 4K-capable video boards and 1,700 Wi-Fi 6 access points—making it a sports venue with some of the greatest connectivity available.

CommScope's strategy is to offer a unique combination of products and services, so its solutions include a portfolio of Wi-Fi, switching and distributed antenna systems (DAS), along with copper, fiber and services to enable transformation end to end, said Thierry Chau,



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CommScope's senior director of entertainment venues. CommScope's solutions offer Systemax copper and fiber structured cabling and a family of in-building DAS, mounting hardware and accessories that enhance wireless coverage.

The 5G future

CommScope's solutions in large public venues focus on the notion that 5G will be a foundation in the future, Chau said. Fan expectations and experiences have drastically evolved in recent years. Attendees expect to stay connected by instantly sharing their experience with friends and family on social media and online, ordering concessions on apps, and having phone and text conversations using their connected devices.

Therefore, stadium operators are seeking new ways to connect to consumers through enhanced concession ordering, mobile access to player stats and betting, social sharing and even determining which bathroom line is the shortest. In the meantime, large public venue owners and managers must comply with public health and safety standards by controlling congestion and tracking fan movement.

One technology serving player stats leverages IoT-based data collection to enhance the fan experience. This year, Zebra Technologies, Lincolnshire, Ill., completed its seventh season of real-time-location tracking of the movement of players and footballs during NFL practices and games, and the system's functionality keeps improving.

At the heart of the system are the sensors installed at stadiums to capture location data from tags worn by players or attached to equipment. The IoT data then offers the NFL's NextGen Stats metrics—for teams and fans—such as player speed, distance traveled, orientation and acceleration. During the 2020 NFL season alone, Zebra tagged 2,880 players and officials while the technology tracked performance.

"As we look to the future and we see the continued return to large public venues, technology can help visitors feel more confident when frequenting these spaces by monitoring visitor temperatures and movements," Chau said.

He argues that COVID-19 monitoring and compliance will require an ecosystem of technology manufacturers working together to develop solutions for venues of all types. He predicts that stadiums of the future will incorporate devices such as infrared temperature sensors, contactless payment systems and cameras, improved network connectivity and software applications, and location and analytics systems to help visitors stay safe.

In large public venues specifically, wireless and wired connectivity will be essential "for providing a channel through which protocol implementation and monitoring information can flow," Chau said.

Ultimately, he said, networks must be flexible enough to reach any portion of a venue, robust enough to deliver high performance with low latency and reliable enough to virtually eliminate downtime.

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