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The Boston Red Sox play against the Minnesota Twins in front of more than 38,000 fans at historic Fenway Park.

High-Tech Home Run

Digital expert and project manager Tom Kreutner is filling MLB stadiums with all the latest gear, gadgets, and tools. He's on a mission to increase gameplay, enhance technology, and make bad calls a thing of the past.

By Zach Baliva

Technology is changing almost every aspect of Major League Baseball (MLB). Players use handheld devices to see multiple angles of each at-bat, applications guide fans to the best concessions, tracking systems call balls and strikes, stat cast sends real-time data to broadcasters, and high frame-rate video cameras track balls and athletes to 0.1-inch accuracy.

It takes a team with a deep bench to fill each stadium with the tools and devices necessary to enable MLB's digital revolution. Tom Kreutner and his team are leading the charge. The project director at MLB Advanced Media says he approaches his job with an athlete's mindset. "Just as an athlete trains in the off-season, we have to do the same to ensure success during the regular season," he explains. "We have to play hard year-round to win."

Kreutner—who supervised regional high school, collegiate, and professional sports installations for Daktronics and consulted for leading clients at Van Wagner Sports & Entertainment—remembers a time when there was an off-season, but emerging technologies, globalization, fan engagement, and other factors are changing the industry. Now, he and his colleagues spend the fall and winter making the upgrades that will improve their performance the following season.

MLB once used outside vendors (like Van Wagner) to complete these tasks, but having an internal team helps them control budgets and timelines, maintain consistency, and drive better results. Kreutner's group focuses on digital networks, broadcasting systems, and all tech components at 120 major and minor league

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stadiums. Members of Kreutner's team are in major cities throughout the nation and travel to manage everything from network servers to center field to pace of game clocks.

One project eliminates cheating and improves on-field performance. Players once had to leave the dugout, walk down the tunnel, and view replay footage in a dedicated video room. Kreutner's digital system has allowed MLB teams to close their video rooms and repurpose the space. Now, players access multiple camera angles streamed to tablets in the palms of their hands. Built-in technology eliminates sign stealing—an issue that originally led to video replay rooms being shut down at each ballpark—by censoring the catcher's signals, allowing players to get the information they need without missing any game action.

In recent years, Kreutner has helped MLB bring next-gen tracking and analytics to each MLB facility by installing the Hawk-Eye system. The system uses 12 synchronized high-resolution cameras to detect and follow every movement that happens on the field while measuring 18 points on each player's body 30 times per second.

Coaches and managers use the data to gauge mechanics, scout players, and develop analytics while broadcast teams can discuss everything from the size of a player's leadoff to the time a hitter takes to run from first to third.

Like those coaches and managers, Kreutner is using data to improve his team's performance. Collected data and new technology replaces the need for him to have a full-time employee dedicated to each of 120 ballparks. Instead, automated systems monitor servers, racks, and cooling systems and send alerts to the relevant internal teams at MLB when problems arise. Eaton's BladeUPS, a scalable and modular rackmount uninterruptible power supply system, has helped Kreutner improve business continuity while reducing risks associated with extended down times stemming from power outages.

This year, Kreutner's team has expanded the Hawk-Eye program to 10 Triple-A West ballparks. It will also implement and test an automated ball-strike system utilizing Hawkeye that uses optical cameras and algorithms to triangulate and monitor the strike zone, with a dedicated ball spin camera in the centerfield producing accurate results. The human umpire can only override the technology when an obvious error occurs.

If Hawkeye is viable at Triple-A parks, Kreutner hopes to build it out further soon. "These new pieces of technology help us speed up the pace of the game, reduce errors, and remove some of the controversy," he says.

As MLB considers major changes to its on-field product, leaders are also bringing changes to the fan experience. Kreutner and his colleagues are exploring everything from in-game technology improvements to facial recognition, which allows easier access into the ballpark in a seamless manner. "We want to welcome in a new generation of fans that rely on technology for everything they do, and there are a lot of exciting new developments coming down in the years ahead," the director explains.

Similar trends are happening in all major sports. Kreutner's counterparts in other leagues are using similar tools to monitor goal lines, review touch downs, and supervise officials. The measures have been implemented and embraced by FIFA, Serie A, NASCAR, NHL, the Olympic Games, and many others. Technology isn't just changing the way we play and watch sports—it's improving it. ■

Case Study

Big League Power Protection

When Major League Baseball needed a partner capable of powering and protecting the critical equipment inside the Jackie Robinson Training Complex, the team found a winner in Eaton's lineup of industry-leading power protection solutions

As a year-round hub for amateur development events, Major League Baseball's Jackie Robinson Training Complex hosts athletes of all ages for tournaments and multisport training. The 80-acre campus is based in Vero Beach, Florida, and includes not only numerous fields and a 6,500-seat stadium, but also an array of computing equipment that requires uninterrupted, clean power. This includes everything from servers, switches, and security cameras to unique applications that track pitch speed.

However, the prospect of backing up the training complex included one major curve ball. "Our equipment has a huge power draw, but we have extremely limited IT space," explains Tom Kreutner, project director for MLB. "One hundred percent uptime is essential, but we could not install a large three-phase UPS to support it."

While many vendors would have balked at the prospect, Eaton provided a winning solution in the BladeUPS: a space-saving, modular three-phase UPS capable of delivering up to 60 kW (N+1) in a single rack. Deploying a pair of 12kW units in each of the stadium's three IT rooms, the MLB gained an ideal player for its high-density environment. "The BladeUPS provides the most power in the smallest footprint," Kreutner confirms. "Nobody else in the industry can do that."

Finalized in March 2021, the Jackie Robinson Training Complex project also included two 6 kVA Eaton 9PX uninterruptible power systems (UPSs); 14 Eaton 5P UPSs with Gigabit Network Cards featuring built-in cybersecurity; and 20 managed rack power distribution units with attached network cards that enable remote management.

"With Eaton software, we get notifications and can log in to the stadium and see what's going on at any time, which is a real benefit," Kreutner notes. "We have been so impressed by the entire Eaton product line that we now have multiple projects occurring throughout our major and minor league stadiums. The support they provide is also second to none." ■