

Remote Monitoring System Watches Over Green Bay's Iconic Lambeau Field

Sensaphone SCADA 3000 monitors stadium sewer system

Green Bay City Stadium conjures up waves of childhood memories and dreams of championships past to its home city and the legion of Green Bay Packers fans. Erected in 1957, City Stadium earned a reputation as home to the most storied franchise in NFL history. When it was originally built, it was the first public stadium designed specifically for professional football. It was also the first professional stadium to feature a bowl-like seating arrangement that created natural sight lines.

In the years since it was constructed, City Stadium (now known as Lambeau Field) has hosted numerous historic football events, including three league championships, and played a significant role in the development of the Green Bay Packers football legend.

Today, Lambeau Field has a seating capacity of 72,601, more than double its original size. It includes a Packers Hall of Fame and the Lambeau Field Atrium for special events, both of which transformed the facility from a football stadium to a destination.

The Challenge - Handling the Overflow

The Lambeau Field sewer storage system operates as an overflow basin that uses pumps and mixers to control the flow of sewage after every football game. With 72,000-plus fans packed into the stadium, it's easy to understand why the system needs to be monitored closely. "The city sewer system can't handle the sheer volume of sewage generated during a game," said Roy Campbell of the City of Green Bay's Public Works Department.

Campbell, the man responsible for making sure the system functions properly, said each game generates an average of 156,335 gallons of sewage, which is directed to the system's two surge tanks, the first of which is 863 square feet with a capacity of 116,194 gallons. The second is 2,722 square feet and can hold 366,490 gallons. In one recent year the system processed 1.56 million gallons of raw sewage. The system works by employing four pumps and six mixers to stir the sewage and suspend any solids to help speed up the drainage.

"In the past, the system would need a lot of relays and control logic," Campbell said. "Now, not only are the controls based on timers but they are also activated by level sensors. The level of sewage has to reach a certain point before the mixers are turned on."

The system works by collecting the sewage as the game progresses and stores it in the two basins located beneath the stadium complex. The material flows into the smaller basin, which filters most of the solids before letting the liquid flow into the second, larger basin. The day after an event, both basins are mixed. Gradually, the material is pumped from the second basin back in to the first to ensure proper mixing. The mixing typically takes a minimum of three hours before any pumping into the municipal system. The pumps direct the sewage into the city's 8-inch gravity sewer main where it is sent to the treatment plant. The process takes up to 16 hours to clear the tanks, which are then rinsed clean.

The Solution - Remote Monitoring

With such a historic backstory, it's no wonder every attempt imaginable is made to maintain the facility. The underground sewer storage system employs a Sensaphone SCADA 3000 – the most-advanced system in the Sensaphone industrial line. This system offered Lanbeau Field an advanced, comprehensive solution to manage and monitor their mixers and pumps and automatically alert facility management of any problems via phone, pager, fax, or e-mail.

The Benefits – Alerts Save Time and Money

Each one of the Lambeau Field mixers and pumps is operated remotely using the SCADA 3000 system, with activities tracked and monitored through the system's data logging capabilities. "We use that information for troubleshooting purposes," Campbell said. "If anything fails, we know when and what the levels were at the time. It's also designed to automatically activate a backup should a failure occur."

With the new system in place, Campbell said he is able to remotely monitor the site activity, even issuing control commands – turning a pump or mixer on or off – when required. Much of that monitoring can be done from his office across town, or even from home.

"The monitoring system enables us to save many hours of labor by sensing failures and implementing backup procedures to make sure the process is completed without operator intervention," Campbell said.

"Reviewing the data log sequence can help pinpoint time and conditions of the failure. Knowing when it happened and what the levels were at the time can explain why it happened. It could be a bad backup float or that levels weren't high enough. The point is we're able to identify the trouble quickly and address it."

With the SCADA 3000 monitoring the system and serving as logic controller, it is able to balance operating time across all of the pumps and mixers. "Time-based pre-mixing ensures a more complete pumped-down process and saves hours of tank cleaning labor," Campbell said. It also balances the wear and tear on each of the pumps and mixers and that adequate levels are maintained to use the pumps and mixers.

Sensaphone - A Problem Free Approach

Campbell a long-time Lambeau Field staff member and supervisor has experienced no problems with the Sensaphone system. There was one instance where the Sensaphone system helped the city avoid a potential headache when it alerted Campbell to a problem that was eventually traced to the city sewer system.

"We were experiencing grease issues that were clogging parts of the system downstream," he said. "I noticed that the surge tanks were filling up when there was no game, which is exactly how it was designed to work, but it meant there was a problem downstream from the stadium. I had to contact the city, which sent someone to check the sewer lines and clear the clog. Had it gone undetected, it could have caused some significant problems."

Another potential problem was avoided when the system started pumping too early. Typically, the pumps are activated the day after a game, but only after the sewage had been mixed properly. "In this case, it started pumping while the game was still going on," Campbell said. "By alerting me to the problem, I was able to find out what happened, make adjustments, and prevent it from happening again. The basins were installed to prevent overburdening the system. The last thing you'd want to do is start the pumps too early, which would overflow the system."

Sensaphone designs and builds active remote monitoring and early detection products for a wide range of markets that quickly and effectively provide alerts to problems at remote locations. Over 400,000 Sensaphone systems are in use today around the world with superior customer satisfaction.

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Call us toll free at 877-373-2700 or email us at sales@sensaphone.com.
901 Tryens Road - Aston, PA 19014

