

# Thoroughbred Gas Detection



By Jonathan Breede

Gas detection & communication systems benefit Kentucky wastewater facility

Lexington, Ky., located in the heart of the state's Bluegrass region, is nicknamed the "Horse Capital of the World." A consolidated city-county with Fayette County, the Lexington-Fayette region stretches across 285 sq miles and is home to more than 700,000 people.

The Division of Water Quality is responsible for providing wastewater treatment and storm water management services to the citizens of the Lexington-Fayette urban area. Its sanitary sewer system includes 81 pump stations, 1,367 miles of sewer line and two large wastewater treatment plants: Town Branch and West Hickman.

As with any wastewater treatment facility, toxic gas detection—in particular, detection of hydrogen sulfide, methane and depletion of oxygen—is an important aspect of employee safety for the Lexington-Fayette facility.

Three years ago, Lexington-Fayette decided to upgrade its wastewater facilities, beginning with the Town Branch Wastewater Treatment Plant (WWTP). The Division of Water Quality replaced an existing mixture of gas detection products with Sierra Monitor 5100-XX-IT modules for detecting hydrogen sulfide, methane and oxygen deficiency—any of which could be hazardous or lethal to workers exposed.

As a result, the Lexington-Fayette wastewater treatment processes have become more streamlined and efficient; employees are receiving the toxic-gas alerts they need to remain safe; and tighter integration with the SCADA system promises further efficiencies through better analysis and management of plant operating data.

## Simplified Calibration & Improved Communications

Part of the Sentry IT smart detector line, the 5100-XX-IT modules are FM (Factory Mutual) approved for multiple parameters, including performance. The performance approval by FM, an independent nationally

recognized testing laboratory, allows the modules to be calibrated on a semi-annual basis, the longest time span in the industry. In addition, because a global calibration feature is part of the controller, the system calibration requires fewer steps than other companies' products. Together, the less-frequent and simpler calibration mean that Sentry IT customers such as Lexington-Fayette can cut operating costs as well as operators' time.

"The suggested calibration for our old gas detection systems was every 30 days, whereas it's every 180 days for most of the Sentry IT systems," said Dennis Freeman, computer controls specialist for the Division of Water Quality, Lexington-Fayette Urban County Government. "We foresee the less-frequent calibrations being a big time-saving factor over time. The systems are also very user-friendly and simple to calibrate."

At the Town Branch WWTP, Lexington-Fayette installed 95 to 100 sensors and nine controllers. Embedded in the system is Sierra Monitor FieldServer technology. The FieldServer protocol gateways and routers enable both local and remote connectivity, monitoring, and control of assets and facilities.

Using the FieldServer-powered systems, Lexington-Fayette wastewater plant employees now have two-way communications between gas sensors and the controller—enabling one-person, one-step calibration, even remotely. Because the FieldServer technology can convert among essentially any protocols used in the plants, the gas monitoring systems can communicate more easily with the plant's system-wide SCADA.

In addition, the Sentry IT systems' direct communication with SCADA systems provides plant operators with more timely information. For instance, Lexington-Fayette is using the systems to assist in its U.S. Environmental Protection Agency consent decree compliance. Tighter integration of the gas monitoring systems and SCADA makes it easier for plant managers to monitor and prevent weather-related events such as sanitary sewer overflows.

## Future-Proofing the Plants

"One of the things we like best about Sierra Monitor is that the company is still supporting gear that we've had in place here since the 1980s," Freeman said. "Plus, the new products are forward and backward compatible, so we don't have to worry about obsolescence—and we can upgrade buildings over time, as budgets and time allow."

Now that the Town Branch plant has been fully upgraded, Lexington-Fayette plans to upgrade its gas detection systems at the West Hickman WWTP with Sentry IT systems, followed by six selected pump stations in the urban area. Over time, the upgrades will extend to the 81 pump stations



Town Branch WWTP

located throughout the county.

"Between budget cuts and the natural attrition of employees in the wastewater management market nationwide, everyone is expected to do more with less all the time," Freeman said. "The products help us boost our efficiency so we can keep pace with our workloads."

By establishing automatic communications between the gas monitoring systems and the WWTPs' SCADA, Lexington-Fayette is generating lots of data that help streamline plant management.

"Beyond our satisfaction with the products themselves, we're also impressed by the excellent service we receive from the company," Freeman said. "Any



Controller for the plant's secondary digester complex

issues that come up, they're right on top of it. They've really gone the extra mile to help meet our needs."

In terms of visibility, Lexington-Fayette's WWTP is at the opposite end of the scale from the thoroughbred horses that populate this Bluegrass region of Kentucky. But the nearly three-quarters-of-a-million residents of the area should be proud that their wastewater treatment system—and the advanced toxic gas monitoring system ensuring the safety of its workers—is of "thoroughbred" quality, too. **wwd**

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