

Success Stories

Award Winning Plant City WWTP Stays on Track with ChemScan



Customer Profile

Plant City, Florida is located midway between Brandon and Lakeland on Florida's west coast, in northeast Hillsborough County. Plant City has 39,000 residents and operates water, wastewater and solid waste utilities.

Featured Product

ChemScan UV-4100 Process Analyzer with Sample Sequence Controller

Overview

The Plant City Water Reclamation Facility uses about half of its 10 MGD average treatment capacity, but 14% of the flow into the facility is from industrial sources. The plant was upgraded for Total Nitrogen and Total Phosphorous removal and very stringent Water Reuse standards during the 2004 to 2008 period. During that same period, the plant installed dual ChemScan Process Analyzer Systems to help operate the plant and maintain compliance with strict nutrient limits.

Challenge

Some of the significant industrial users can send CBOD loads in excess of 35,000 mg/l into the treatment plant. "Our industrial loading is very diverse and includes metal treating, fiberboard construction material, food processing and dairy operations which definitely affects the operation of our plant," said Pat Murphy who is the Chief Plant Operator. Prior to 2008, the plant was using mainly grab samples but could not do them frequently enough to adequately control the aeration system or maintain a compliant process. This was particularly challenging with a variable industrial load coming into the plant on weekdays and much less of an industrial load on weekends. "When operators do not have current, accurate information, they are operating blindly," Murphy noted.

Solution

Two ChemScan UV-4100 Process Analyzers configured for nutrient analysis were installed to take the guesswork out of managing the process. The analyzers were set up to do a separate analysis of Ammonia, Nitrate, Nitrite and Phosphorous at two sample locations from each of three aeration basins. An external Sample Sequence Controller, also designed and furnished by ChemScan, manages the sample flow from each sample location. The system is designed for continuous operation, so that a new sample line is flushing while analysis is being performed on samples from the prior sample line. Each parameter at each sample location has its own calibration and sends a dedicated signal showing analysis results to the plant SCADA system, where this data is used to control aeration rates, recirculation rates and chemical feed. "This helps avoid operational problems by making process control adjustments," according to Murphy.

"Not all components in the waste stream will affect micro-organisms the same way," Murphy explained. Although the plant operates with an average DO of 0.7 mg/l, "increases in PO₄ and NH₃ generally occur prior to seeing a drop in DO," he noted.

"Our analyzers are the heart of the plant and our staff can operate them with minimal training," said Murphy. The analyzers "eliminated potential operator errors by having the data streaming into the control center," he added. "We needed a process that was operator friendly, durable, and long lasting. The on-line analyzers have been the key to making this a reality," according to Murphy. The ChemScan system has been in operation since 2008. "Plant City has been extremely happy with ChemScan.

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In fact, the units were on-line for 8 years before we requested a full maintenance and re-calibration visit, which is remarkable," he said.

The facility has won numerous awards at the Florida Water Resources Conference's, including the Florida Water Environment Association's (FWEA) Earle B. Phelps award, given annually to recognize the wastewater treatment facility which has maintained the highest removal of major pollution causing constituents prior to discharging the treated effluent to the receiving water. In fact, since installing ChemScan, the plant has won the 1st place Phelps award five times and has been either runner up or received honorable mention another four times. ChemScan was an acknowledged part of this success.



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