

world water

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Global partnerships, integrated solutions

Pretreatment system clears FOG in lift station

Anue Water Technologies' patented EnviroPrep (EP) well-washing and pretreatment system eliminated fat, oil, and grease (FOG) buildup in a large wastewater lift station in only 2 hours. Tonya Chandler of Anue reports.

The warm, sunny climate, sandy beaches, and beautiful scenery of Florida, United States (US), attract millions of tourists each year in addition to its 21 million residents. To meet the demand for wastewater services, municipal utilities work behind the scenes to maintain water quality, but warm weather creates interesting challenges from unlikely sources such as fat, oil, and grease (FOG) buildup.

FOG in wastewater can come from a variety of sources. Meat fats, cooking oils, dairy products, and other oil- or fat-containing substances disposed of down a home's drain all end up in the collection system. Restaurants and other industries can also contribute to FOG in a system.

FOG is nothing new in any wastewater, but the problems it causes in wet wells can get progressively worse over time. FOG reduces usable volume in a lift station, shortens pump life, and can cause force main backups. When FOG enters a lift station, it coats equipment, settles to the bottom of the wet well, or floats and forms crust on the top.

The cleaning of wet wells can also cause logistical and financial challenges, as it often requires confined space entry and the use of vacuum trucks. Additionally, this cleaning can be very time-consuming and is quite an odorous undertaking.

Utility solves FOG buildup

A large regional wastewater system in Florida was continuously engaged in a repetitive battle with FOG that blanketed the equipment and walls on the inside of its lift stations. Some of these lift stations would accumulate a mat of FOG up to 1.3-meter (4-feet) thick, creating a major problem for the maintenance supervisor. Consequently, the relentless need for vacuum and water truck services placed a burden on the utility's

maintenance budget. Additionally, dry weather spills and overheating force mains exacerbated the problem and drove the utility to look for new solutions.

The supervisor first decided to purchase an electromechanical system positioned at the bottom of the well. The system received wastewater and pushed it out the other side under pressure. This mechanical system promised to break up the FOG and relieve the facilities from much of their costly maintenance problems. After deploying the new system, the utility discovered that the product delivered results in some instances, but it also produced a myriad of new maintenance issues and added labor costs to fix and maintain the system. The system only traded one problem for another problem, as mechanical breakdown was a frequent occurrence.

A few months later, the supervisor purchased Anue Water Technologies' patented EnviroPrep (EP) Series well-washing and pretreatment system. Unlike other systems, the EP system works from above the water line of a wet well, using recycled wastewater via a tapped discharge from the force main or a dedicated pump. Its mechanical action keeps the wells free of crusting and buildup while keeping the FOG from settling in the lift station. The unit's mechanical action also adds dissolved oxygen to the system, helping to reduce odor-causing bacteria.

Unlike the problematic system, the EP system completely eliminated FOG buildup from the equipment and walls – and, in only 2 hours, it kept what was in the wastewater suspended. The existing buildup of biomass was able to be moved up and out of the lift station every time the resident pump engaged. Spills were non-existent, and confined space entry became unnecessary.

With the new system, vacuum trucks were rarely necessary to maintain the systems, offering a big relief to maintenance. The system operators were no longer required to pull up the pumps due to FOG issues. With the EP system, expenses were eliminated for the cost of a boom truck and two men operating for approximately 2 hours on each occasion.

The EP-1100 continues to deliver outstanding results that are lowering the utility's maintenance budget up to 20 percent annually by allowing the reallocation of resources to more productive tasks. The utility now operates 15 EP-1300s and plans to invest in more of this solution because the EP-1300 Series is exponentially increasing productivity for a fraction of the cost.



Anue's continuous improvement initiatives have led to product improvements to the design and operation of the EnviroPrep series. Recent updates include improved



Top: The Enviroprep (EP) system head cascades water in a unique way to eliminate FOG biomass in 2 hours. Above (l-r): Anue FORCe® and Phantom® systems

bearing performance, a more lightweight and durable design, and an “E-savr” feature that allows a user to vary the frequency and duration of the EP’s duty cycle for the planned operational schedule of the day. This feature enables gearing operation to match high- and low-flow periods that may occur in the system.

Anue Water Technologies offers additional products that address other difficult issues including odor, corrosion, and hydrogen sulfide abatement. When the EP series is used in combination with Anue’s Phantom or FORSe oxygen and ozone injection technologies, there are incremental performance improvements for municipal force main and lift station management.

For example, Phantom and FORSe systems use ozone and oxygen to eliminate odor-causing bacteria and eliminate hydrogen sulfides in lift stations and force mains. Anue’s Phantom series addresses wet wall odors by coupling ozone technology with a patented process that uses recycled wastewater as a host to the ozone used to disinfect the vapor spaces of the wet well. The FORSe 2 series offers a direct injection of oxygen into the force main, using a patented distribution process, to eliminate the source of the odors. The FORSe 5 series brings these processes together for an optimized system that eliminates odor and corrosion. Anue’s digital telemetry is used to remotely control and monitor both Phantom and FORSe systems.

Author’s Note



Anue Water Technologies’ Vice President of Sales and Marketing Tonya Chandler is based in Tucker, Georgia, United States. For more information and a complete list of references, contact the author at info@anuewater.com.



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Left: Wastewater technician monitors and controls FORSe and Phantom systems using remote digital telemetry. Photo by Anue



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