

Warren Water Recovery Facility drives efficiency with innovative sampler system

Automatic water samplers provide high accuracy in composite sample application

Benefits at a glance

- Accurate composite sampling with automatic controls and custom settings
- Reduced manpower with easy cleaning and maintenance
- Less time spent checking, maintaining and controlling samplers every night
- Predictive maintenance that reduced time in fixing process errors



City of Warren Wastewater Treatment Plant

Summary: The Water Recovery Facility in Warren, Michigan serves more industrial manufacturing companies in one compressed area than almost anywhere else in the state of Michigan. Treating this much water requires an efficient team and technological innovations to provide the city with clean water every day. The facility team has won several awards from the State of Michigan Water Environment Association (MWEA) for their methods to preserve water resources in Michigan and the Great Lakes and for premier utility management performance.

At the helm of the plant is Division Head Bryan Clor, who places a distinct emphasis on innovation and energy efficiency. Most recently, Clor and his team retrofitted their composite sampler system with Endress+Hauser's fully automatic Liquistation CSF34 water samplers to improve their efficiency and overall water sampling process.

Challenge: The plant's composite sampler system monitors the quality of the entire plant from seven sample points. They draw samples for ammonia, carbon, phosphorus and



Flow through attachment for pulling sample process out of the line and into Endress+Hauser sampler.

“We truly loved our old samplers and were worried about adapting to a new technology. We looked at multiple different models and chose the one that we felt best fit our needs. We wanted to choose a model that would last for another 20 years. We had a limited footprint to use and had heard horror stories of how other plants had struggled in the past with a similar conversion.”

Andrew Hayman, Lab Director



City of Warren samplers were built on tracks to allow the technicians and lab personnel ease of access to the process line and the back of the sampler.

oxygen content in the water which are then tested in the lab. Most facilities spread samplers throughout the plant, but the City of Warren team designed a specific room to house all the samplers in one place, right next to the lab for easy accessibility and maintenance. Bringing all the access points to one room makes it easier for staff to monitor, maintain and clean them as often as needed throughout the day. Instead of walking across a huge plant, they can grab samples from down the hall. The samplers also share a single drain that recycles to the head of the plant and a single air circulation system for greater efficiency.

However, the current samplers were over 20 years old and were discontinued by the manufacturer. This made it impossible to get replacement parts or service for malfunctions. Between consistent clogging and overflowing sewage and an open basin design that allowed the smell and fumes to fill the room – it was a battle to keep the samplers clean inside and out. Over time, mechanical and electronic parts had to be swapped between units making it an unsustainable process.

Solution: The City of Warren Water Recovery Facility has been supported by Brian Gallagher with Forberg Smith, Endress+Hauser’s local representative, for several years. Brian took time to fully understand the specific needs and city requirements to provide a complete solution for the team.

Gallagher recommended the use of Endress+Hauser’s fully automatic water sampler, the CSF34. Liquistation CSF34 samplers automatically take water samples for analysis. These samplers have a fail-safe cooling system, menu-guided sample programming and tool-free maintenance which saves the maintenance team valuable time.

In fact, 95% of the maintenance tasks can now be completed by the lab staff “next door”, freeing up the maintenance team to service other parts of the plant. The fully customizable settings also allow quick and automatic changes depending on their needs.

The Water Recovery Facility team is constantly looking for ways to improve their process, and installation was no different. During installation, Andrew Hayman, the Water Recovery Facility Lab Director, and their team realized they could improve accessibility to the samplers. Instead of simply installing them on top of the existing concrete platform, a metal track system was built to easily slide the samplers in and out. This design allows operators to access the back of the units and other vital equipment quickly, without plumbing getting in the way.

“Endress+Hauser was the only company that offered everything we needed. The pump we use, the cooling for



Andrew Hayman (Lab Director for the City of Warren Wastewater Recovery Facility) located in the sampler room. Process from across the plant is diverted here for ease of testing and sample analysis.

duration. They had the only samplers that met the complete needs of our plant and our permit,” said Andrew Hayman, Lab Director. “We’ve also had a solid relationship with Brian Gallagher for several years and he has consistently proven to be reliable.”

Results: Since the implementation of the ten Endress+Hauser samplers, the team has experienced noticeable improvements. Not the most critical, but perhaps the most noticeable, is the quality of air in the sample room. The easy-to-clean-and-maintain samplers have diminished not only the sewage overflow but also the foul smell that previously permeated the room.

Even more importantly, the samplers allow the team to conduct accurate monitoring of all permit-monitored sample points as well as non-permit points. Their team chooses to monitor more sample points than is actually required by permit. The extra data helps them solve problems as they’re happening which prevents overtime and shutdowns. In the end, this conserves energy, saves money, reduces man-hours and optimizes the treatment process for the city.

As Bryan Clor and his team push the plant to new levels of efficiency and sustainability, this is one more improvement to help achieve their goals.

“So, with all the challenges I highlighted earlier we were so pleased with the final results. The sample room odors were less. The problems we faced with high-flow conditions in our old samplers were removed. In the end we received a better overall process. We could not be happier with the end results.”

Bryan Clor, Division Head



City of Warren

The City of Warren's Water Recovery Facility has treated residents' wastewater and produced quality effluent water for the state since 1957. Since then, the plant has undergone numerous upgrades and was recently awarded the 2020 Premier Utility Management Performance Award in the state of Michigan. The Division Head of the City of Warren Treatment plant, Bryan Clor, also just received the Public Utility Professional of the Year Award.



Bryan Clor, from City of Warren, receiving award from State of Michigan representatives.



The 2020 Premier Utility Management Performance Award in the state of Michigan.

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