

Wastewater Technology Successfully Implemented at Food Processor

Environmental conformance is a key component of sustainable development.

Situation

A Midwest food processor used multiple and parallel batch sedimentation reactors with a decanting treatment system to handle waste flows of 100,000 gallons per week. Significant manual attention and operation was required because the flows varied widely based on production schedules. Once sedimentation/decant was accomplished, the supernatant was discharged to city POTW and the collected solids were disposed of via landfill. Low solids levels of 1% were typically achieved, and FOG (fats, oils and grease) removal was virtually non-

existent, requiring the plant to incur surcharges for effluent discharge. The processor wanted to minimize total disposal costs, improve the finished effluent to remove POTW surcharges, reduce labor requirements and provide a means to handle the different plant waste streams without increasing their waste plant footprint.

Program

Nalco's Engineering Approach to solving customer problems includes Mechanical, Operational and Chemical components. In this case, Nalco combined a mechanical and chemical approach to assist this processor in improving the limitations of their existing wastewater system, reducing surcharges, and increasing solids capture. In combination with proprietary polymer technology, Nalco optimized solids recovery to reduce disposal costs with an innovative DAF design called GEM (Gas Energy System) from Clean Water Technologies. These recommendations improved the overall efficiency of the customer's waste stream.

(Continued on Reverse Side)



Figure 1 – Gem DAF Unit – Modular, compact and high efficiency

Initial screenings indicated that sludge concentration would be improved from less than 1% to over 27% in addition to a 25% improvement in resulting turbidity, TSS and COD of the plant effluent versus current batch treatment. Almost 100% removal of FOG was also achieved, which met city POTW limits and removed surcharges.

Clean Water Technology

Clean Water Technology provides a patented solution with its GEM system, a unique system for the removal of suspended solids, BOD/ COD, fats oils and greases. Systems have been used in applications such as water recovery, process pretreatment, membrane pretreatment and waste product recovery.

- The liquid-solids-gas mixing heads {"LSGM"} provide for homogeneous mixing of waste contaminants and treatment polymers which provides for more efficient and lower use of polymer chemicals.

- The LSGMs offer flexibility to change the mixing energy, tune the system to the specific wastewater stream, and obtain the best possible effluent
- The GEM system saturates 100% of the wastewater stream with dissolved air. It can control when the dissolved air is released from the water for more enhanced flotation of the contaminants resulting in a drier, high solids sludge.
- The GEM system does not rely on retention for separation of solids and water.
- The system's high efficiency results in a smaller plant footprint than convention waste water treatment systems, reducing the customer's need to provide plant space.
- The modular system allows for simple installation and possible expansion, as future needs change.

Benefits Achieved

Using Nalco polymer technology and the GEM system, the customer reported the following benefits:

- Consistently good quality effluent results regardless of waste stream quality and characteristics/ deviation
- Compliance with FOG discharge eliminating surcharges
- Speed of treatment reactions allowing for increased production
- Increased sludge capture translating to significant savings in haulage costs
- Operator involvement freeing labor for other productive purposes

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