



Reduced Chemicals in Meat Processing Wastewater System

A meat processor in Iowa supplies high quality processed meat products, globally. Market demand led to their extensive expansion. Presently the company has four state-of-the-art processing facilities. The newest is located in Utah.

This location, in Iowa, became the first turkey processing plant in the United States to achieve ISO-14001 certification for their commitment to the environment. Their mission statement establishes their commitment to the environment and conserving natural resources. Being a truly sustainable company, they partnered with Clean Water Technology for wastewater treatment.

Challenge

Flow rates varied from 400 gpm to over 600 gpm at peak production times and clean-in-place (CIP) shifts. Therefore, the wastewater treatment system needed to adjust and be flexible.

A second challenge was the limited space available for equalization tanks (EQ).



Industry

Meat & Poultry

Key Benefits

1. Chemical usage reduced 35% - 45%.
2. System easily handles varying flow and load rates.
3. Cost savings in labor, biological treatment and sludge hauling.

PARAMETER	INFLUENT	EFFLUENT	PERCENT REDUCTION
TSS/ ppm	3,000	11	99.6%
COD / ppm	4,500	1,750	61.1%
FOG / NTU	2,500	16	99.3%

Solution

A Dual GEM[®] System 300/750 consisting of a single flotation tank with two influent banks of Liquid Solid Gas Mixing (LSGM) heads was provided. The dual bank system is optimal for variable flows. In this plant, the first bank of LSGM heads are in constant use, while the second bank activates only when a level sensor measures higher flows.



Since equalization is also an issue at this plant, a system that could handle load variances was needed. Real-time adjustment to total suspended solids (TSS), fats-oils-grease (FOG) and chemical or biological oxygen demand (COD/BOD) loads was required. The LSGM technology is based on a treatment principle that reacts with chemical adjustments in seconds, rather than minutes or hours. This allows maximum TSS, FOG, and COD/BOD, reduction rates even when equalization is inadequate.

Another important factor in the solution was the correct usage of a chemical regime. Instead of using 100% cationic polyacrylamide, a cationic polyamine coagulant is also used. The coagulant is more economical and minimized chemical costs.

Conclusion

Better results with more efficient chemical use is possible because of the design of the LSGM heads in the GEM[®] System. Multiple injection points for chemicals allow the GEM System to uncoil chemical strands to a maximum point without shearing. This results in more contaminant capture and less chemicals needed.

Chemical savings of 35% - 45% over other technologies were realized.

Energy costs were also lowered by employing the second set of LSGM heads only when needed.

The customer avoided municipal surcharges by reducing TSS, FOG and COD/BOD to below discharge limits.

To further clean the effluent, the need for biological treatment after the GEM System was reduced to a fraction of previous costs.

The dual design of the primary wastewater treatment GEM System, allows for growth of production for the company. It can comfortably double in flows and loads without changing the footprint of the system.

Sludge costs have also decreased due to the driver sludge that requires less storage and transportation.



Contact us today to begin a conversation!