



INTRODUCTION

Clean Water Technology, Inc., (CWT) the creator of the Gas Energy Mixing (GEM) System, the most advanced primary treatment system on the market. The GEM System provides superior reduction of total suspended solids (TSS), biological and chemical oxygen demand (BOD/COD), fats, oils and grease (FOG) and turbidity in a much efficient way within a smaller footprint.

CHALLENGE

A prominent Frozen Foods Company in Idaho was in need to reduce their overall wastewater treatment costs while increasing performance. Their DAF was only obtaining an average performance and producing watering sludge costing them a fortune. With no budget or space to put in a completely new system they were without a solution.

This frozen foods processing plant produces a stream which required a system adaptable to wildly changing streams due to their contaminant loading, composition, pH and chemical demand. It needed to be easy to operate, efficient and produce the driest and least amount of sludge by volume. They were in need of a solution.

This led them to CWT and the GEM System. After the client compared the cost and footprint challenges of upgrading their DAF to the cost of retrofitting their existing DAF using GEM technology, the savings were significantly outstanding.

COOPERATION

Upon receiving samples from the client at CWT's laboratory in Los Angeles, CA, CWT performed a treatability study. CWT's testing results demonstrated that the GEM System retrofit would meet and exceed all of their treatment needs.



DAF vs GEM from Frozen Foods, Idaho			
PARAMETER	DAF Results	GEM Results	% Red. Over DAF
TSS	297 mg/l	<60 mg/l*	+27% TSS Removal
COD	1,492 mg/l	1,000 mg/l*	+27% COD Removal
Sludge Solids	5.82%	>15.00%**	+8.48% Sludge by wt.
Decantable Sludge	NO	YES	Decantable Sludge
*Total GEM TSS Removal was 98.67%, total GEM COD reduction was 78.75%			
**Sludge Solids % by weight was > 28% after 2 hours of decanting.			

Total Removal rates of the GEM System on the client's waste streams all had one common theme: 100% Success.

SOLUTION

The facility decided to contract with CWT immediately for its DAF RETROFIT with the **GEM TECHNOLOGY**. Retrofitting their existing DAF they were able to handle double the capacity in terms of loadings, flow and perform in accordance with the regulation, while having the flexibility for future expansion with no capital expenditures.

The retrofit called for removal of the existing floc tubes, insertion of a bloom chamber (simply a partition in the DAF that allowed the flocs to "POP" to the top once the solids and liquids were separated) and the retrofit to the GEM Technology by adding one bank of Liquid Solid Gas Mixers (LSGM).

Using the existing flotation tank, throughput was calibrated upon the Client's needs. From the GEM conversion, the treated effluent is recycled into the plant – then it arrives again to the wastewater treatment plant. About 70% of the stream is reused and 30% is discharged to the river in accordance with local codes.

EXPANDIBILITY

The existing GEM Retrofit, as is, is expandable by simply changing the energy in the LSGM heads. This can be done by Client's operators on site with less than forty minutes of down time.

The GEM Technology prevailed over the many challenges presented where other technologies would have struggled. By retrofitting a DAF with the GEM Technology, the Client benefitted from:

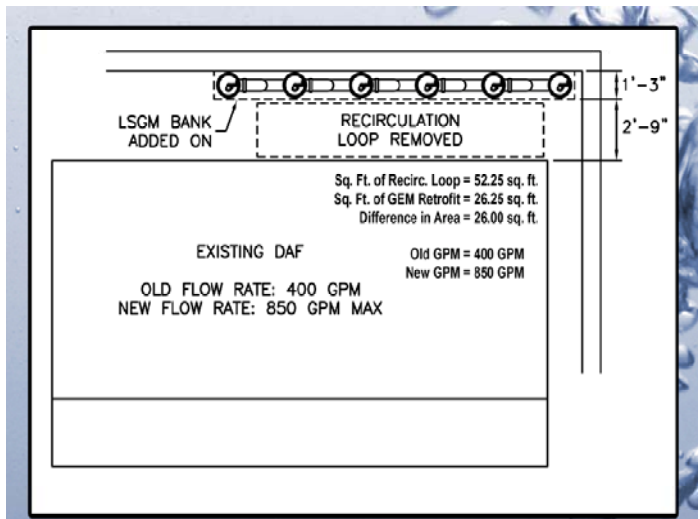
- Better Removal Rates of Contaminants
- Lower Surcharges, Eliminating Fines
- Easy Operation
- **Increased Contaminant Loading Capability**
- **Increased Removal Rates**
- Improved Site Logistics
- Reduced Sludge Hauling Costs due to Drier, Denser Sludge
- Decreased Use of Chemicals



Placement of GEM Technology Between Wall and DAF.



GEM Sludge - Floats Independently



ECONOMICS

In addition to meeting the regulatory requirements and reducing the surcharges and fines, the DAF to GEM Retrofit now performs more efficiently, achieves higher contaminant removal rates by removing TSS to trace amounts and reducing COD by half. Due to the absence of contaminants after the GEM Retrofit, some of the flow is being reused in the plant.