

CASE STUDY

Biotifx[®] ULTRA Improved Sludge and Pressing While Lowering Disposal Cost and Odors

SUMMARY

A municipal wastewater treatment plant (WWTP) was challenged with low percent solids after pressing along with odors. After being dosed with Biotifx[®] Ultra into the sludge storage tanks, this facility showed significant reduction in sludge yield, along with higher percent solids and reduced odors during pressing.

BACKGROUND

The municipal WWTP was located in the north-central United States with an average daily flow of ~250,000 gallons per day (GPD). This facility has two 24,400 gallon aerated sludge storage tanks for waste activated sludge (WAS). Historically, sludge enters the storage tanks at 0.5% solids then decanted to remove excess water. Typically, after 28 days sludge could no longer be decanted and averaged 1.86% solids being sent to a belt press. During pressing, the WWTP was challenged with poorly settled and inconsistent sludge being fed to the belt press, which resulted in poor sludge dewatering (10.8% solids), frequent press alarms, and odors.

OBJECTIVE

The case study objective was to assess if the use of Biotifx[®] Ultra could

1. Improve sludge decanting in storage tanks
2. Improve sludge digestion in storage tanks
3. Improve sludge dewatering consistency
4. Increase % solids of pressed sludge
5. Reduce the odors of the pressed sludge
6. Reduce the use of dewatering polymer during pressing



Figure 1. Sludge belt press

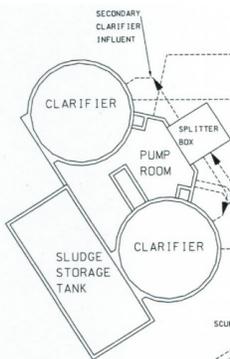


Figure 2. WWTP layout and dosing location of 1kg (5.5ppm) - Biotifx[®] Ultra once a week

MATERIALS AND METHODS

The Biotifx[®] Ultra treatment started in May and was continued for a period of 60 days. Biotifx[®] Ultra was dosed at the rate of ½ kg into each storage tank on a weekly basis (5.5 ppm based on 24,400 gallon tanks). Sludge volume and solids content was monitored entering and leaving the sludge storage tanks. Belt press was monitored for % solids of pressed sludge and alarm frequency. The plant manager conducted the odor surveys for baseline and treatment periods. Odor levels were ranked on a scale from 1-10, with 10 being the Highest and 1 being least. The odor survey was taken at the start, middle and end of the pressing cycle.



Figure 3. Two sludge holding tanks



Figure 4. Sludge belt press and dumpster

RESULTS

Decanting in sludge storage tanks was improved. Sludge concentration after decanting increased from 1.86% solids to 2.12%. Digestion of solids improved as well. After treatment, sludge digestion increased from 5% to 19% as calculated by the difference between solids loaded to the tank and solids out.

The percent solids of pressed sludge increased from 10.8% to 12.5% (**Table 1**). In the past, the operator would have to make multiple adjustments during the pressing cycle, with alarms going off during pressing due to the variation in sludge content and flow. The amount of alarms went from 2-3 per cycle to 0. This improved operating efficiency while running the press. There were no changes in the amount of polymer used during this treatment period, but will be assessed during future pressing cycles.

The combination of improvements resulted in a 25.8% reduction of the total weight of sludge to be disposed.

Solids Measurement	Before Treatment	After Treatment	% Improvement
Holding tank % solids after 28 days	1.86	2.12	12%
% Solids of pressed sludge	10.8	12.5	14%
Solids digested in holding tank	5.6%	19%	339%
Pressing alarms	2-3	0	200-300%

Table 1: Shows before and after results of sludge handling characteristics

The odor levels decreased several fold versus past pressing periods (**Table 2**). Odors were assessed at the beginning, middle and end of the press cycle.

Odor Levels	Beginning	Middle	End
Before Treatment	5	6	8-9
After Treatment	1<	1	2-3

Table 2: Odor characteristics on a scale of 1-10 (Least-Highest) during sludge belt pressing