BIOTIFX®
WASTEWATER TREATMENT

Biotifx® ULTRA Improved Sludge Digestion, Decanting, and Pressing While Lowering Disposal Cost and Odors

SUMMARY

A municipal wastewater treatment plant (WWTP) faced significant sludge inconsistencies during pressing and low percent solids after pressing, along with high disposal costs and odors. After the sludge storage tanks were dosed with Biotifx® ULTRA, this facility showed significant reduction in sludge, along with higher percent solids both after decanting and dewatering, lower disposal costs, and reduced odors during pressing.

BACKGROUND

The municipal WWTP was located in the north-central United States. This facility had an average daily flow of 250,000 gallons per day (GPD) and two 24,400-gallon aerated sludge storage tanks for waste-activated sludge (WAS) digestion and thickening. While the plant had been operating normally for years, poor sludge decanting and pressing, high odor levels, and steep disposal costs left this WWTP in search of improvements. If found, the plant would reduce its need to purchase new equipment to handle the volume of sludge it produced. An effective solution would also require less labor from its operators and improve the functionality of its existing system, leading to lower maintenance costs, lower odors, and higher percent solids during sludge thickening and pressing.

Figure 1. Dried sludge belt pressed and dumped out waste.

OBJECTIVES

The treatment objective was to assess if the use of Biotifx® ULTRA could:

- Improve sludge decanting in storage tanks.
- Improve sludge digestion in storage tanks.
- Improve sludge dewatering consistency.
- Increase percent solids of pressed sludge.
- Reduce the odors of the pressed sludge.

MATERIALS AND METHODS

The Biotifx® ULTRA treatment started in the spring and continued for a period of 60 days. Biotifx® ULTRA was dosed into each storage tank on a weekly basis (based on 24,400-gallon tanks). The volume and solids content of the sludge was monitored entering and leaving the sludge storage tanks. The facility's belt press was monitored for percent solids of pressed sludge and frequency of alarms due to changes and inconsistency in the sludge. The plant manager conducted odor surveys for baseline and treatment periods. Odor levels were ranked by the operator on a scale of 1–10, with 10 being the highest and 1 being the lowest. The odor survey was taken at the start, middle, and end of the pressing cycle.

Figure 2. Sludge production was high prior to being treated with Biotifx®.

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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 into the tank and solids taken out of the tank. The percent solids of pressed sludge also improved, increasing from 10.8% to 12.5%.

In the past, the plant's press operator had to make multiple adjustments during the pressing cycle, with alarms going off during pressing due to the variation in sludge content and flow. During this case study, the number of alarms went from two to three per cycle to zero. This improved operating efficiency while running the press.

Table 1: These improvements combined resulted in a 25.8% reduction of the total weight of sludge to be disposed.

SOLIDS MEASUREMENT	BEFORE TREATMENT	DURING TREATMENT	% IMPROVEMENT
Holding tank % solids after 28 days	1.86	2.12	13%
% solids of pressed sludge	10.8	12.5	15%
Solids digested in holding tank	5.6%	19%	339%
Pressing alarms	2-3	0	200-300%

Table 2: The plant's odor levels decreased greatly versus past pressing.

ODOR LEVELS	BEGINNING	MIDDLE	END
Before Treatment	5	6	8-9
After Treatment	1<	1	2-3

SIGNIFICANCE

Using Biotifx® ULTRA at this wastewater treatment plant improved the efficiency and effectiveness of the plant's sludge handling and disposal, all while treating only a small part of the system (sludge storage tanks). A sizeable portion of plant operating costs goes to sludge disposal and handling, so any reduction in total sludge weight at the end of the process is important. In this case, the WWTP saw a 25.8% reduction in total weight, meaning their cost savings were very significant. This was achieved with the help of Biotifx® ULTRA—a minimum investment that can yield impressive results.

Biotifx® ULTRA can also be used outside of sludge tanks as a solution for a variety of other problems in the wastewater treatment industry. This versatile product can help your customers fill their specific needs and improve their operations.

Interested in learning more about MDG's Biotifx® program? Explore our resources on our website or contact us today.