THERMAL PROCESS SYSTEMS

ThermAer™ Applications Report

East Wenatchee, Washington

THERMAER

2nd Generation ATAD Provides Increased Capacity With No Odors

East Wenatchee, WA – The ThermAer process offers an increase in solids handling capacity without the need to add a single tank onsite.

Douglas County Sewer District #1 WWTP is located in scenic East Wenatchee, along the northern banks of the Columbia River in Central Washington. Douglas County is home to many orchards and small wineries. According to a recent census, it is one of the fasting growing communities in the state.

In 1997, Douglas County, WA, installed a 1st generation ATAD consisting of 3 small reactors. The process functioned as an efficient digester, but had drawbacks. The most important issue was the odor. On some days the offensive odors (mostly mercaptans) could be detected more than 3 miles downwind. In addition, the digesters were not able to operate at design capacity.

The ATAD process was attractive to the facility, as it offered a small footprint, high solids destruction and produced Class A biosolids. The Douglas County WWTP is on a small parcel of land wedged between the main town thoroughfare and the Columbia River.

Thermal Process Systems, the manufacturer of the ThermAer, a 2nd generation ATAD, was contacted by the facility. The operators and district commissioners wanted to fully understand the improvements offered by ThermAer technology and confirm that offensive odors would be eliminated and provide them with increased capacity and solids handling.

The city contacted Thermal Process Systems to upgrade their digester to the ThermAer Process; a second generation ATAD. ThermAer uses constant observation of the Oxidation Reduction Potential (ORP) and matches the oxygen supply with the real time oxygen demand. Higher oxygen levels are required after a feed event to provide superior mass reduction and minimize the formation of mercaptans and other sulfur compounds. Jet aeration provides mixing and control of the oxygen feed to the reactor.

During the facility's due diligence, they contacted several ThermAer installations and their neighbors. They inquired about odor concerns, operational complexity, system performance and TPS support. Feedback from these sources convinced the district that the ThermAer was the right choice for their plant. The district retained the engineering firm of Hammond Collier Wade Livingstone to study alternatives such as conventional digestion and odor control. The engineer consulted with Mr. Robert Bowker, P.E., an odor specialist. After studying the alternatives, ThermAer was selected as the preferred technology.

"The plant is a lot easier to operate...when it comes to odors there is no comparison – there are no longer offensive odors on-site. We have heard a great sense of appreciation from the community regarding the efforts we have taken to eliminate the odor."

Mike Barnett, Chief Operator
Douglas County Sewer District No. 1

Due to limited space on-site, existing infrastructure was employed to accommodate the new reactors.

No additional real estate was available, so the use of existing tankage was required. In 2008, an existing aeration basin was converted into 2 ThermAer reactors. The three 1st generation ATAD reactors were retrofitted to the Storage Nitrification Denitrification Reactors (SNDR™). Primary solids are continuously fed to one of these two ThermAer reactors, on alternate days. Thickened WAS is also fed to the same reactor on the same alternating days. High TS and VS reduction is achieved, within the ThermAer, resulting in increased reactor temperature, to between 140-160°F. To achieve ammonia reduction, it was essential to cool the treated ThermAer solids before introduction to the SNDR. A TPS CoolAer™ heat exchanger and a cooling tank were utilized to reduce the temperature to less than 100°F. The SNDR process provides the ideal environment for the nitrification/denitrification, while lowering the solids pH and reducing the nitrogen recycled to the headworks. A TPS BiofiltAer™ is utilized to ensure that no odors were released to the atmosphere.

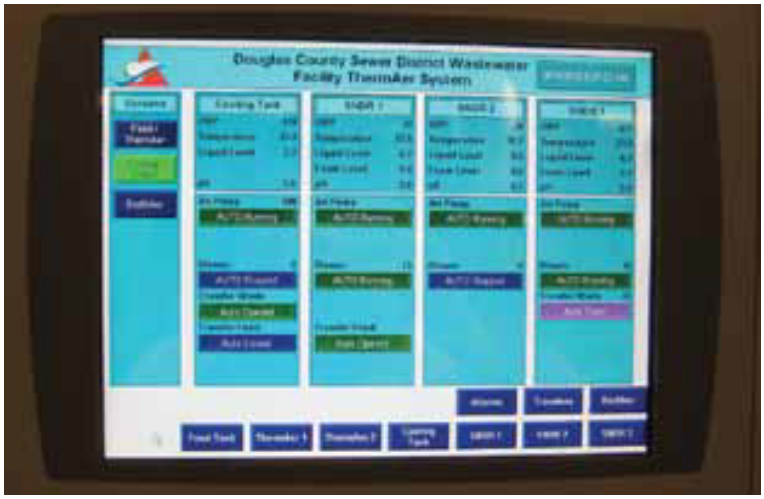
In 2009, the ThermAer was started up at the Douglas County Sewer District #1, WWTP. Foul odors are now nonexistent. The support from the community has been outstanding. Local businesses appreciate the efforts of the plant to reduce odors. Each day, a scenic bike path that runs directly in front of the facility now carries many hikers/bikers who once avoided walking past the plant due to odorous conditions.

The high fiber content of the solids require a special scroll in the centrifuge. Once installed, based upon pilot testing, it is anticipated that the facility will achieve 35% cake solids. This is a considerable improvement over their 25% TS average obtained after dewatering the 1st generation process solids.

The TPS ThermAer Process demonstrated the following results:

- 35% anticipated cake solids (based on pilot data)
- No odors on-site
- Volatile Solids Reduction = 60-67%
- Increased capacity by 50%
- Utilization of existing infrastructure

Odors are a big concern for this facility. A BiofiltAer ensures no offensive odors are on-site.



Complete automation of the system requires less operator interface

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