

ThermAer™ Applications Report ***Kaukauna, Wisconsin***

2nd Generation ThermAer Provides Retrofit for World's Largest Municipal ATAD

Kaukauna, Wisconsin – The ThermAer™ consistently produces Class 'A' Biosolids at the Heart of the Valley WWTP in Wisconsin. The Biosolids are liquid land applied with minimal restrictions.

Heart of the Valley WWTP, located in Kaukauna, Wisconsin, installed a 2nd generation Autothermal Thermophilic



Aerobic Digester (ATAD) in 2007. With their anaerobic digesters at capacity, the only option for expansion was the addition of more tanks, a challenge given the limited space at the site. McMahon and Associates were retained to aid in the design of a

more efficient and cost saving operation. After reviewing several design considerations, the district selected Thermal Process Systems' 2nd generation ATAD system.

Existing tankage allowed for the treatment of the current solids loading and the additional solids to be generated by the proposed expansion. The high rate digestion coupled with the 12 day HRT of the TPS system, provided the perfect application for the ATAD technology. The Storage Nitrification/Denitrification Reactors (SNDR™) and the BiofiltAer™ were also incorporated into facilities already on site, saving the community money. In addition, the operators were delighted with the elimination of the methane gas and the boiler operation associated with the anaerobic system. The upgrade to Class A biosolids removed restrictions for their land application, an

additional bonus. Designed for a future peak flow of 60 MGD, the plant currently operates at an average of 8.5 MGD.

The ThermAer™ ATAD is a cost effective process capable of digesting high concentrations of volatile solids and total solids. It uses aerobic thermophilic temperature conditions without supplemental heating. The system monitors the oxidation/reduction potential to meet the oxygen demand of the system resulting in stabilized class A biosolids.

ThermAer™ Offers:

Aerobic Process, 54% TS Reduction, ORP Process Control, Quality Class 'A' Biosolid, Odorless Solution, Ability to Retrofit Existing Tanks, 10-12 Day HRT*

**Actual HOV WWTP results*



ThermAer™ Applications Report

(continued)

The waste, feed and isolate strategy are controlled automatically utilizing a PLC. The ATAD reactor is fed once a day, seven days a week. Using a gravity thickener and DAF unit with polymer addition, the biosolids are thickened to about 5% total solids prior to storage in a day tank. Typically 15,000 gallons per day are fed from this day tank to the ThermAer, however, this volume can reach as high as 40,000 gallons during peak conditions. The waste and feed in the ATAD reactor are done in a relatively short time frame to allow sufficient time for required kill. The contents are isolated in the ATAD reactor which will assure required pathogen kill and VS destruction to meet EPA 503



Existing infrastructure was retrofitted to the ThermAer™ and SNDR reducing the overall capital cost.

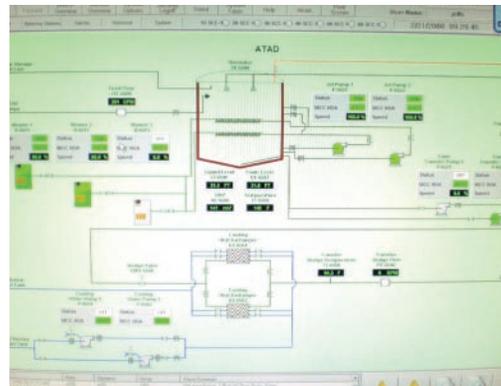
regulations for Class A Biosolids. The biosolids are transferred from the ThermAer to SNDR-1, SNDR-2 and long term storage tank before being utilized for liquid land application. Nitrification/denitrification, in the SNDRs, reduces the total nitrogen allowing the solids to be spread on less land. Decanting from the long term storage tank increases the solids concentration for land application as well as reduces the volume to be transported off site. The decant supernatant is returned to the head of the plant. This operation combined with reduced nitrogen levels, the effect of nitrification/denitrification in both SNDRs, results in fewer gallons applied to the farm ground.

The off-gas air in the head space of all three reactors is treated by the BiofiltAer™ to ensure no odors are present on site.



“The reduction in solids has saved us tons of money (approximately \$150,000 annually) in hauling fees alone... We now have farmers waiting in line.”

*Kevin Skogman, Foreman
Heart of the Valley Municipal Sewer District.*



PLC automation allows the operator to oversee the entire process. Real time changes can be made via the touch screen.

The ThermAer system installed at Heart of the Valley offered the following:

- Class A Biosolids
- Total solids reduction = 54%
- Volatile solids reduction = 76%
- Odor-free operation
- Utilization of existing infrastructure
- Annual cost savings exceeding \$150,000*
- Complete PLC automated control
- Capacity expansion at reduced capital
- Ability to take septage
- The storage tank contents are decanted to 6% solids
- Elimination of dangerous methane gas

**Savings associated with hauling fees and fuel surcharges*



Thermal Process Systems
627 E. 110th Ave.
Crown Point, IN 46307 USA

Phone: (219) 663-1034
Fax: (219) 663-7248

E-Mail: engineering@thermalprocess.com
www.thermalprocess.com