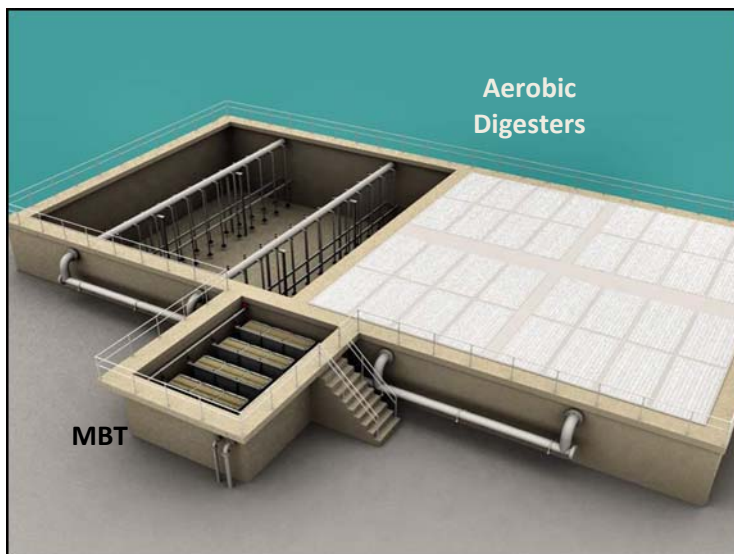


Case History – Dundee, MI (Membrane Aerobic Digestion System)

Background

The Dundee, MI WWTP needed a process that could provide class B sludge for subsurface injection which wouldn't negatively impact their Biological Nutrient Removal (BNR) activated sludge system. Since sub-surface injection timing was limited due to regular heavy snowfall, the facility was required to have a holding time of approximately 180 days with very limited sludge hauling.



Ovivo Value Added

In order to increase the sludge retention time to 180 days, Arcadis Engineers integrated Ovivo membrane aerobic digestion with existing aerobic digester tanks. Four submerged digester tanks (SMU) were added in a new membrane thickening tank (MBT) to form a complete pre-thickened aerobic digestion process.

Results

After implementing the Ovivo membrane aerobic digestion process, the plant was able to thicken from 2.5% to 5.5% solids prior to the season when sub surface injection was not

possible, all without the use of polymers. Due to the improved performance, the 180-day storage objective was achieved and the facility was able to limit sludge hauling to twice a year. Direct results from this upgrade allowed the plant to double their capacity to 1.2 MGD, while reducing their sludge disposal costs by nearly 40%.

Excellent Permeate Quality

The high quality permeate from the digestion process allowed it to be rerouted to the head of the plant without compromising the performance of the BNR activated sludge process. This type of permeate quality has been sustainable throughout the entire course of the operation of the Dundee membrane aerobic digestion process.

Parameter	Presence in Permeate (mg/L)
BOD	1.12
TSS	2.00
Total Phosphorus	1.09
NH3-N	0.22
NO3-N	0.03