



Case Study: Bio-Augmentation Process Reduces Sludge Build-Up, Improves Effluent Quality For Meridian, MS

By Technautic International Inc.

Wastewater treatment plants are constantly facing the battle of reducing sludge while trying to keep the cost of energy down. The city of Meridian, Mississippi, which operates two wastewater treatment plants, used to fall into this category until it was introduced to the *Sewper Rx*, a patented bio-augmentation process designed to reduce noxious odor and organic sludge build-up, while improving effluent quality, in the summer of 2005.

The Main plant in Meridian is an 11MGD extended aeration design, while the East Plant is a 1.2MGD SBR design running at approximately 50% capacity. It was determined that the smaller, less complex East Plant would be the best place to run an initial trial of *Sewper Rx*.

In August 2005, the *Sewper Rx* was introduced to Meridian officials in an effort to assist management with the reduction of solids costs, odor problems and energy costs. It was agreed that the 300,000 gallon aerated digester in the East Plant could be treated. Up to this time the plant was pressing 35 tons of sludge per month. The primary goal of the treatment was to see if capacity could be improved in the digester and if a recognizable savings could be made in the amount of sludge pressed over time.

Within 60 days of the initial *Sewper Rx* introduction, the reduction in sludge in the digester made it possible for the plant to completely quit pressing sludge altogether. In other words, the entire solids output of the plant was being accepted into the digester without the need for pressing and hauling sludge from the press room. The press remained idle for 15 months, and during that time the volatile suspended solids (VSS) remained flat at approximately 10,000 mg/l. This meant that the *Sewper Rx* process was continuously consuming 100% of the incoming organics.

The total suspended solids (TSS) in the digester, both organic and inorganic, rose from the normal 10,000 mg/l to 20,000 mg/l over the 15 months, so in October 2006, city officials decided to operate the belt press in order to get the TSS back to the 10,000 mg/l

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norm previously maintained. During the 15-month period there were more *Sewper Rx* treatments applied to the digester. The sludge disposal process was again discontinued in April 2007 and although there have been more *Sewper Rx* treatments, no sludge has been pressed or disposed of for over 9 months in the East Plant. As of December 2007 the VSS is steady at approximately 8,000 mg/l and the TSS is running in the 13,000 to 14,000 mg/l range.

Following the successes at the East Plant, attention was shifted to the Main Plant, an 11 MGD extended aeration design. The challenge at the Main Plant was to, again, increase the capacity for bio-solids in the digesters but this was exacerbated by the fact that the digesters were anaerobic, and as the *Sewper Rx* product is best utilized in an aerobic condition, it could not be applied directly to the digesters. Instead, *Sewper Rx* would be applied at the head-works of the plant, a plan that was expected to:

1. Reduce bio-solids before it reached the digesters, and
2. Reduce the digester solids content due to a carryover of *Sewper Rx* into the digesters, and
3. Save electricity.

In September 2007 *Sewper Rx* was introduced into the head-works of the Main Plant. In the first 3 months there has been a 20% savings in electricity expense for the plant. Projecting this level of performance over a 12 month period would result in an electricity savings of \$125,000, while increasing the capacity of the digesters by approximately 40% and reducing sludge disposal costs by an estimated 25%. So far, all these targets are well within reach and city management has entered into a contract with the supplier of *Sewper Rx*.

In the next phase of work with the City of Meridian, focus will move to the equalization lagoons that handle excess daily flow, primarily from rain events. These lagoons have a heavy buildup of bio-solids, which robs them of their capacity. The present proposal is to combine the use of *Sewper Rx* with a patented Reliant shallow water, large surface, lagoon de-stratifier manufactured by Technautic International Inc. out of New Orleans, LA. This process is expected to uniformly reduce the bio-solids content in the City of Meridian lagoons. One Reliant unit can efficiently circulate up to 9 million gallons of water per day. In doing so, it de-stratifies anoxic zones in the bottom of the lagoon and allows for the unique qualities of the *Sewper Rx* process to attack the bio-solids. Reducing bio-solids in this manner will be far more cost effective for the City of Meridian than dredging their lagoons and paying the additional cost of sludge disposal.

These experiences at the City of Meridian Main and East Plants prove that *Sewper Rx* possesses unique capabilities in eliminating bio-solids, reducing plant energy use, controlling plant VSS and TSS, and overall, giving control of the process back to the Operators, while saving money for management. By combining it with other innovative technologies, like the Reliant Model WQA, it can overcome other common problems which the wastewater treatment industry must face on an ongoing basis.

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