

WATER & WASTES DIGEST

Wastewater Treatment System



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As a low-cost, energy-efficient alternative to centralized sewerage for small communities, towns, villages, or large commercial properties, the MyFAST wastewater treatment system (flow range: 20,000 to 160,000-plus gpd) is an ideal, high-strength sewage treatment plant (HS-STP). The Fixed Integrated Treatment Technology (FITT) means high performance, low maintenance and better sludge management all in one tank. It is fit for the purpose intended.

MyFAST® HS-STP™ System with BioSolids Sludge Management

By Allison Blodig, REHS

Based on the obvious need for cost effective and sustainable solutions, studies have been conducted in cooperation with community and environmental groups to develop less centralized and more environmentally beneficial wastewater treatment systems. The possibility of using a decentralized MyFAST® High Strength Sewage Treatment Plants (HS-STP™) in place of expanding existing centralized plants makes more sense when focusing on pretreatment or water reuse opportunities. With a self-contained, MyFAST® HS-STP™, it is possible to have access to reliable, affordable water supplies and infrastructure to sustain community growth.

Several considerations, including operation and maintenance and sludge management, need to be taken into account with Innovative, decentralized sewage treatment technologies; and Bio-Microbics has done this by providing Sludge Management zones: BMS (BioSolids Management systems) and AMS (Aeration Management Systems) on such Sewage Treatment Plant as the MyFAST® HS-STP™.

Decentralized concepts are generally not taught in engineering schools as the centralized approach is generally understood by academics and passed on to students. Universities have been teaching town planners, engineers, architects, graduate students, doctorates, and professors, the art of water and air contamination with little or no question about the ecology or environmental concerns. Unfortunately, there is much in the way of education for conventional or centralized municipal design, but lacks in teaching the benefits of decentralized treatment solutions. Since the education isn't there, regulatory and financing rules generally discourage their use. With dense urban populations a centralized plant seems well-suited; however in this economic climate, the thought that smaller communities must have a large complicated treatment plant must be challenged and corrected. Decentralized solutions help to enhance the typical engineering that goes into building for better water management and permit more communities to be addressed by limited assistance funds (US EPA).

The approach that the Fixed Integrated Treatment Technology (FITT®) process takes of the MyFAST® system is to employ pre-aeration (AMS Zone) to mix and start to degrade the sewage before it enters the actual treatment zone. This eliminates the need for pumping of the primary settling before the treatment zone. The pre-aerated wastewater flows to the treatment tank where bacteria and higher life forms become 'fixed' to the honeycomb media inside the MyFAST® units. Better able to cope with surges and provide higher removal rates for organic material, the growth on the media thickens and sloughs off from the media by the aeration process and settle to the bottom of the treatment zone for removal.

Technology Innovation for Commercial Outlets

Frost & Sullivan did research focusing on decentralized wastewater treatment for commercial outlets, their findings resulted in alarming urbanization and population rates are continue to increase exponentially. Commercial outlets, such as shopping malls, restaurants, grocery stores, etc., generate a substantial quantity of high strength wastewater. When this wastewater is channeled through a centralized sewer line, this increases construction costs dramatically. In addition, poorly controlled wastewater discharge into nearby bodies of water or the subsurface will contaminate the ecosystem and adversely affect public health. As a result, decentralized wastewater treatment systems have become an attractive option for dealing with wastewater at the point of generation.

Frost & Sullivan's research has found that the FAST® Fixed Integrated Treatment Technology, with its new advancements in decentralized wastewater systems, have made these systems easy to install, reliable, effective, and affordable. "Bio-Microbics' FAST technology has successfully met stringent treatment standards, thus causing a major headache for the competition who's systems are not able to offer these reuse options." Frost & Sullivan believes that this reuse feature will open up a number of application opportunities for the FAST technology, especially with commercial outlets where the ability to generate large quantities of recycled water is possible.

Decentralized sewage treatment technologies are ideal for projects with land constraints and flows of up to 160,000 gallons per day or more. An important advantage to onsite wastewater systems is the ability to design systems to treat wastewater and develop 'reuse opportunities'. As most of the treatment occurs inside the tank, the effluent is more than 95% free from solid and waste. The treated wastewater is then available to replenish groundwater and aquifers, or in some cases, it could be made available for grey water reuse. Water reuse opportunities include use in toilets for flushing, lawn and landscape irrigation, firefighting, and more. Frost & Sullivan's unbiased research compares the FAST technology versus competitors in its marketplace and recognized the FAST system with its consistent performance, easy installation, and minimal maintenance requirements. "In addition, the FAST system boasts long-term reliability; while complying with global regulations. These factors, in concert with the cost/time saved on maintenance and install [when compared to competing systems], will provide customers with unmatched value and optimal ROI," according to the Frost & Sullivan Report.

With versatile design and flow rate, the FAST technology maintains consistent high performance, low maintenance, as well as sludge management all in one tank. FAST® technology's short retention time (24 to 36 hours) will allow commercial outlet owners to treat wastewater on a daily basis. As the population increases and urbanization moves forward, the adoption of these systems is expected to increase with the ability to repurpose the treated water making this system even more compelling. Frost & Sullivan views Bio-Microbics' FAST technology as an excellent addition to the Decentralized Wastewater Treatment Systems market, especially given its 'green' wastewater recycle capabilities.

The treated effluent from a decentralized treatment unit, as in the case from the FAST® system, can then be discharged into a drain field to recharge groundwater or it can be made available for water reuse, such as subsurface landscape irrigation. With further disinfection it can be used for surface or spray irrigation or even for toilet flushing.

Conclusion

Whether the project is to help defer plant expansion, promote pretreatment, post secondary upgrade options, or to develop the entire treatment scheme, decentralized technologies can help to reduce costs and greatly contribute to the health and well-being of the community. Cities cannot ignore the infrastructure issues they are facing today or those that may be coming in the next few years. As water-related issues escalate in major cities across the world, the important role of water must be recognized and smartly managed to improve conditions for people, the environment and job growth. Poor management or a gap in infrastructure means a community is vulnerable to higher water rates, greater long-term debt and future economic challenges.

About the Authors:

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