

Retrofit Creates Sustainable Biosolids Management Solution

Fairfield-Suisun Sewer District, California

Lystek

Nothing wasted.
Everything to gain.



Fairfield-Suisun Sewer District enters into a unique Public-Private Partnership (P3) with Lystek to bring first, comprehensive biosolids management solution to the San Francisco Bay Area.

ABOUT

Located about 40 miles north-east of San Francisco, the Fairfield-Suisun Sewer District (FSSD) services over 135,000 people and operates 70 miles of sewer, with 13 pumping stations within 48 square miles in central Solano County.

www.fssd.com

CHALLENGES

- High and rising costs for biosolids management; diversion from landfill required
- Regulatory pressures to move towards higher treatment and beneficial use
- Under-utilized assets and spacious site
- Lack of coordinated biosolids management solution for the Bay Area

SOLUTION

The Fairfield-Suisun Sewer District entered into a 20 year (+10) public-private partnership (P3) agreement with Lystek International Ltd. to develop a regional Organic Material Recovery Center (OMRC), implementing Lystek THP under a design-build-own-operate model, providing these benefits:

- Long term sustainable biosolids management solution with extended program security
- Production of a high-quality Class A biosolids product, registered as a bulk fertilizer with the California Department of Food and Agriculture (CDFA)
- Generate revenue and local jobs; establish a regional solution for other Bay Area utilities

RESULT

- Currently providing biosolids management solutions to more than 10 Bay Area utilities
- More than **180,000 tons** (as of 2021) of biosolids converted into fertilizer and applied to local farms
- Increased biogas generation through the LysteMize process



KEY METRICS

WWTP Rating (FSSD): 5,000 m³ / day (23.7 MGD)

Population Served: 135,000

Lystek OMRC Annual Capacity: 150,000 tons

Lystek THP Module Size: 2 x **LY10**

Lystek THP Processing Footprint: 2,500 sq ft.

Feedstock: Municipal biosolids (anaerobically digested, aerobically digested, undigested), anaerobically digested organic waste products, organic-based liquid materials and processed food-grade wastes

The FSSD oversees wastewater treatment and sanitary sewers in northern California's Solano County. Prior to engaging with Lystek, the District had been sending their biosolids to landfill for use as daily cover for decades. In the early 2010s, regulatory changes began to address organic materials in landfills, and it was clear that the State would be requiring biosolids to be diverted from landfills to beneficial use. In addition, the San Francisco Bay Area expressed the need to develop regional solutions for biosolids management.

FSSD has had a long history of looking for innovative solutions for its wastewater treatment program. In 2015, the District and Lystek International Ltd. developed a public-private partnership (P3) project on-site at the FSSD wastewater treatment plant (WWTP). The partnership agreement allowed the development of the Fairfield Organic Material Recovery Center (OMRC) as a regional biosolids and organics management facility, owned and operated by Lystek, leveraging under-utilized infrastructure and assets at the FSSD plant. This facility became operational in 2016, for a duration of 20 years, with a 10-year optional extension.

The OMRC accepts organic residuals year round and, stores the fertilizer end product onsite during inclement weather periods. This fertilizer (trademarked as LysteGro) is land applied throughout the year, as field conditions allow. The material is classified as a Class A biosolids by USEPA (Part 503 standards), and has received a bulk fertilizer registration by the California Department of Food and Agriculture (CDFA). This dual-designation material has allowed LysteGro to be widely used and accepted by area farmers and ranchers as an alternative to chemical and synthetic fertilizers. The use of Class A LysteGro is now accepted in multiple counties which have historically been restrictive to traditional Class B biosolids and land application practices.

The other major opportunity of the FSSD-Lystek partnership involves enhanced digestion and biogas generation. FSSD operates anaerobic digesters to treat wastewater solids and utilize the biogas for onsite co-generation (electricity plus heat for the digesters). This practice reduces the overall plant energy dependence on fossil-fuels sources. Through the LysteMize process, a portion of the Lystek THP treated biosolids can be re-fed to anaerobic digesters to increase volatile solids destruction and boost biogas yields. The LysteMize process was demonstrated at FSSD in 2019-2020, refeeding processed biosolids from FSSD and third party generators to the digesters. Due to new California legislation related to organics diversion from landfills, generators of undigested biosolids who send their material to the OMRC are able to obtain diversion and recycling credits for the volumes processed with the use of the Lystek technology and enhanced digestion.

This successful P3 partnership between FSSD and Lystek has offered Bay Area agencies a reliable, sustainable and cost-controlled biosolids management solution. Generators now have a convenient management facility which produces and manages a Class A biosolids fertilizer, and is capable of reducing GHG emissions through additional biogas recovery in the FSSD digesters. The successful LysteGro management program has sold and applied more than 250,000 tons (as of 2021) of CDFA registered fertilizer, and is in demand from area farmers and ranchers.



About Lystek

Lystek is a leading provider of Thermal Hydrolysis solutions for the sustainable management of biosolids and organics. The multi-use, award-winning Lystek system reduces costs, volumes and GHG's by converting municipal and industrial wastewater treatment facilities into resource recovery centers. The technology transforms organic waste streams into value-added products and services, such as the patented LysteMize® process for optimizing digester performance, reducing volumes and increasing biogas production; LysteGro®, a high-value, nutrient-rich fertilizer and LysteCarb®, an alternative source of carbon for BNR systems.