



MaxWest
ENVIRONMENTAL SYSTEMS, INC.

Sanford, Florida Case Study: MaxWest Environmental Systems and CPH Engineers



BACKGROUND

The City of Sanford in Seminole County Florida is a city of 55,000 people on the northern edge of the greater Orlando Metropolitan Area. By Florida standards, the City is mature, having been founded in 1877 as a steamship landing on the St. John's River system. From its early days as an agricultural center, known as the "Celery Capital of the World," the City has grown as the county seat for a booming suburban county. Mixed small industries, distribution centers and a progressive community college influence the local economy.

For many years, Sanford has enjoyed progressive management of its utility department, embracing a series of technical innovations to provide continuing quality service at stable rates for its citizens. The City was one of the first in Florida to install a vacuum sewage collection system, and has a wastewater and reclaimed water system that serves two counties and 3 cities. Planning for continued long term growth and expansion of the City's regional airport and surrounding commercial development led to a decision to build the South Sanford Water Treatment Facility, a state-of-the-art wastewater treatment plant and recycled water distribution center.

Historically, Sanford had disposed of its wastewater treatment sludge (biosolids) by land application on a city owned 1868 acre rural site. Regulatory issues and environmental concerns resulted in a decision to install a natural gas fired biosolids dryer to produce only Class A biosolids. Soon after the dryer decision, natural gas prices rose to an historic high, demonstrating the characteristic volatility of natural gas prices. This and predicted long term price escalation set the stage for Sanford to consider alternative solutions.

THE CHALLENGE

The Sanford Utility Department sought to identify a method of biosolids management and disposal that would be long-term, cost effective, regulatory compliant, and environmentally superior. The City wanted to plan for future expansion to accommodate growth. Operating and capital budget constraints were major concerns. With two wastewater treatment plants producing a combined average of 30 WT of sludge per day, and a forecasted long term average growth rate of 2%/yr, could the City benefit from its willingness to host innovative technology and non-traditional approaches to meet the long term biosolids challenge?

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Cost-Effective, Environmentally Friendly, Biosolids to Renewable Energy Systems

THE SOLUTION - A MAXWEST BIOSOLIDS GASIFICATION SYSTEM

To meet the challenge, MaxWest Environmental Systems, Inc. proposed to design, permit, finance, build, own and operate an integrated biosolids gasification system at the South Sanford Water Resources Center. Dewatered biosolids from the City's older plant would be trucked to a receiving station for combined dewatering, drying and gasifying. The MaxWest system utilizes energy embedded in biosolids as a source of renewable heat energy to dry biosolids to Class A standards, replacing the use of natural gas. The net result is elimination of variable natural gas bills to the city and long term cost savings over the life of the 20 year contract. For Sanford savings could be as great as \$12 million. Instead of paying monthly natural gas bills, hauling charges and tipping landfill fees, the City pays MaxWest a fixed monthly disposal fee. Annual escalation is at a low fixed rate.

The MaxWest system was completed in May, 2009 and, after commissioning and extensive performance testing, commercial operation commenced on September 1, 2009. Early operations indicated the need to integrate operation of the dewatering system, the drier and the gasification facilities. MaxWest agreed to take over management of the combined operations.

Early operations also confirmed that, as expected, the combined facility would have significant capacity over and above Sanford's current and projected needs. MaxWest and the City provided in their service contract for the sale of excess gasification capacity to other nearby cities and private utilities. Sale of the additional capacity has been accomplished by the City entering into inter-local agreements. The system can accept both additional liquid biosolids and dewatered biosolids. After payment of each party's additional expenses, additional revenue is shared.

THE DRYER: A FURTHER SOLUTION

Early operation of the fully integrated MaxWest System suggested to MaxWest and the City that both the capacity and the efficiency of the system were limited by the type of dryer. Gasification produces a steady state thermal energy flow. Batch dryers, such as the City's, have variable thermal energy demand. Thus, with a batch dryer, energy demand is never in balance. MaxWest began an extensive and intensive study of alternative dryers.

The solution was the selection of a dryer system manufactured by Therma-Flite, Inc. of Benicia, California. Therma-Flite is a long established manufacturer of drying equipment for the industry with a reputation for products of high quality, efficiency and reliable long term performance. Therma-Flite dryers are fully automated and capable of producing Class A biosolids on a continuous basis with minimal operator interaction.

Management of the Sanford Utility Department and MaxWest Environmental Systems agreed to achieve maximum long-term gasification system benefits by replacing the original dryer with a new Therma-Flight BIO-SCRU unit, scheduled for installation and commissioning by June 30, 2010. The new dryer will not only improve efficiency of the gasification system but increase overall system capacity. MaxWest and Sanford will be able to expand the concept of a mini-regional biosolids disposal center for small cities and private utilities by as much as 30%.

THE FUTURE

The MaxWest facility in Sanford will serve as the commercial showcase for MaxWest's integrated gasification system for management and disposal of biosolids. Installation of the new Therma-Flight dryer in the 2nd quarter 2010 will allow MaxWest and the City to double the capacity of the facility with biosolids from other cities and utility operators. Visitors will see an operating regional disposal system with financial and environmental benefits to the host utility and surrounding wastewater systems.



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