

ZERO WASTE ENERGY DEVELOPMENT COMPANY (ZWEDC) A GREENWASTE/ZANKER PROJECT



SMARTFERM Technology

SMARTFERM is a state-of-the-art dry anaerobic digestion system that processes organic waste feedstocks and generates renewable natural gas. SMARTFERM systems can include biogas-processing technology for combined heat and power (CHP) generation as well as compressed natural gas (CNG). In addition, in-vessel composting (IVC) options can provide partial or complete maturing of compost for the wholesale or retail market.

Based on the amount of organic waste to be processed, SMARTFERM is offered on two platforms: shop fabricated steel digesters or cast-in-place (CIP) concrete digesters. A basic prefabricated SMARTFERM features steel fabricated digesters, requiring a minimal amount of space. The cast-in-place concrete SMARTFERM digester system combines the SMARTFERM's modular mechanical and electrical systems design with on-site construction of concrete digesters. SMARTFERM facilities can process over 4,000 TPY of any organic material.

The space-efficient, prefabricated, scalable modular system is manufactured in the U.S. by Marathon Equipment Company, one of the solid waste industry's most respected brands of waste handling and recycling equipment. Marathon is part of Environmental Solutions Group, a division of Dover Corporation.

"The City of San José is proud to partner on the development of our world class facility, which showcases the City's Green Vision through public-private partnerships, cutting-edge technology development, and environmental sustainability. As the capital of Silicon Valley, this type of leading edge project propels the City as a leader in diverting waste from landfill and converting it to usable, clean energy."

– Kerrie Romanow, City of San José Environmental Services Department Director

The ZWEDC facility is the result of a partnership between local companies GreenWaste Recovery and Zanker Road Resource Management who have come together to design and construct an innovative dry anaerobic digestion (AD) facility. Through a competitive RFP process, ZWEDC was ultimately selected to provide commercial organics processing services for the City of San José. ZWEDC turned to Zero Waste Energy (ZWE) to design the AD process for the project.

The facility utilizes patented ZWE technology, including 16 concrete AD digesters plus four in-vessel composting (IVC) tunnels. The largest of its kind in the world, this facility processes an estimated 90,000 tons per year (TPY) of commercial organic waste that would otherwise be disposed of in a landfill. The renewable biogas provides 1.6 MW of on-site power for Zanker operations with excess power for sale to local users of green energy. In addition, the high-quality compost produced is used to enrich soils. Commercial operations began in November 2013.

"GreenWaste and Zanker have built our reputations on designing and integrating innovative resource recovery technology in all our processing operations. Diversifying our composting operations to extract and utilize the energy value of organic materials to power our other resource recovery operations was the next necessary evolution for our family of companies."

– Rich Cristina, President, GreenWaste Recovery & Zanker Road Resource Management



- 16 concrete AD digesters + 4 IVC tunnels
- Up to 90,000 tons per year of organic waste throughput
- 2 x 800 kW combined heat & power system generates 1.6 MW power
- Fully enclosed and ventilated waste processing facility
- Accessible piping chamber at digester rear-wall
- Containerized process equipment on digester roof
- Dual-mode lean-gas/emergency flare

Benefits of AD System in San José

- Achieves California AB 32 mandate by diverting almost 85 percent of organic waste from landfills
- 1.6 MW of renewable power that complies with California's Renewable Portfolio Standards
- Reduction of fugitive methane emissions from landfills
- Generation of high-quality compost available for use or resale
- On-peak electricity production used to power Zanker's stationary resource recovery equipment
- Off-peak power to be sold back to the utility

SMARTFERM AD Process	Results
Site Acreage	23
Building Area	90,000 SF
Maximum Annual Volume	90,000 TPY
Digester Dimensions	97' (L) x 18.2' (W)
Concrete Digesters	16
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000 - 3,200
Methane Content (%)	58 - 62
Electrical Output	1.6 MW

