



## CleanWorld Sacramento BioDigester

Commissioned December 2012

Designed and built by CleanWorld, using innovative, proprietary anaerobic digestion (AD) technology developed and patented at the University of California, Davis (UC Davis), the Sacramento BioDigester and Atlas ReFuel facility is the second commercial organic waste AD project CleanWorld delivered.



The facility enables the Capital Region of northern California to become the greenest fleet-city in the nation, producing negative carbon intensity fuel and it helps the region achieve aggressive organic waste diversion goals, provide green jobs, and showcase a closed-loop economy. At its construction it was the largest commercial facility of its kind in North America.

Invented by Dr. Ruihong Zhang, a UC Davis researcher and professor, the Sacramento BioDigester was commissioned in December of 2012, and built to completion in less than six months. CleanWorld's digesters are pre-fabricated, value-engineered, modular-by-design, and require minimal additional water for solid waste digestion - making the system less expensive, quicker to build, and smaller by its footprint.

### *Project Benefits:*

- **Waste Diversion:** Gives public and private waste producers located in the city an environmentally and economically sound alternative for disposing of organic waste.
- **BioFuel for Public and Private Fleets:** Generates 700,00 diesel gallon equivalents (DGE) of renewable compressed natural gas (BioCNG) and diverts nearly 40,000 tons of organic waste from local landfills annually. The fueling station is owned and operated by our partner Atlas Disposal.
- **GHG Reductions:** Reduces greenhouse gas emissions by 20,500 tons annually, as well as produces over 10 million gallons of fertilizer and soil amendments.

### *Project and Technology Innovation:*

- The **high loading rate and high-solid digestion** capability of CleanWorld's BioDigester technology make it particularly beneficial to institutional, commercial, and municipal solid waste producers.
- The processing system design – **a patented three-stage proprietary system** – allows for the higher rate capability and a greater yield of methane, among many competitively unique processing benefits.
- This **facility produces CNG at the adjacent Atlas Disposal Fueling Station**, which is used to fuel their waste hauling fleet in addition to city buses and other private fleet vehicles. This CNG is **the only negative carbon intensity fuel** commercially available in the United States at the time of commissioning.

**Project financing:** provided by Five Star Bank, Central Valley Community Bank, the California Energy Commission, CalRecycle, and Synergex. Key project partners include Otto Construction, and the City and County of Sacramento. Additionally, Carson Development Company, Atlas Recycling, Peabody Engineering, TSS Consultants, Frank M Booth, Regatta Solutions, BioCNG LLC, and Vasko Electric have played key roles in the development of the Sacramento BioDigester.

**Farm-to-Fork-to-Fuel:** The Sacramento BioDigester is a global example of what's possible in zero waste economies, and in climate resiliency and organic waste management leadership, where the bridges between research and academic discovery and commercialization have been built and crossed.

This is the new model for Farm-To-Fork-To-Fuel for organic waste repurposing, the new "Zero Waste" value chain: food grown locally, consumed locally, and anaerobically converted to valuable, sustainable "fuel" byproducts locally, in the form of green electricity (or renewable natural gas RNG), soil enhancements, cleaner air, and cleaner land.

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