ZEROWASTE

Solving the world's organic waste problems with fully-integrated processing solutions... **that's SMART Technology.**

SMARTFERM and SMARTTURN are advanced systems that transform organic waste streams into safe, environmentally friendly biogas and high-grade compost. SMARTFERM generates low-cost heat and methane to be converted into electricity or clean carbon neutral fuels to power CNG vehicles. SMARTTURN converts organic waste and AD digestate into high quality, nutrient rich Class A compost using a dynamic, fully-engineered solution for accurate process control.

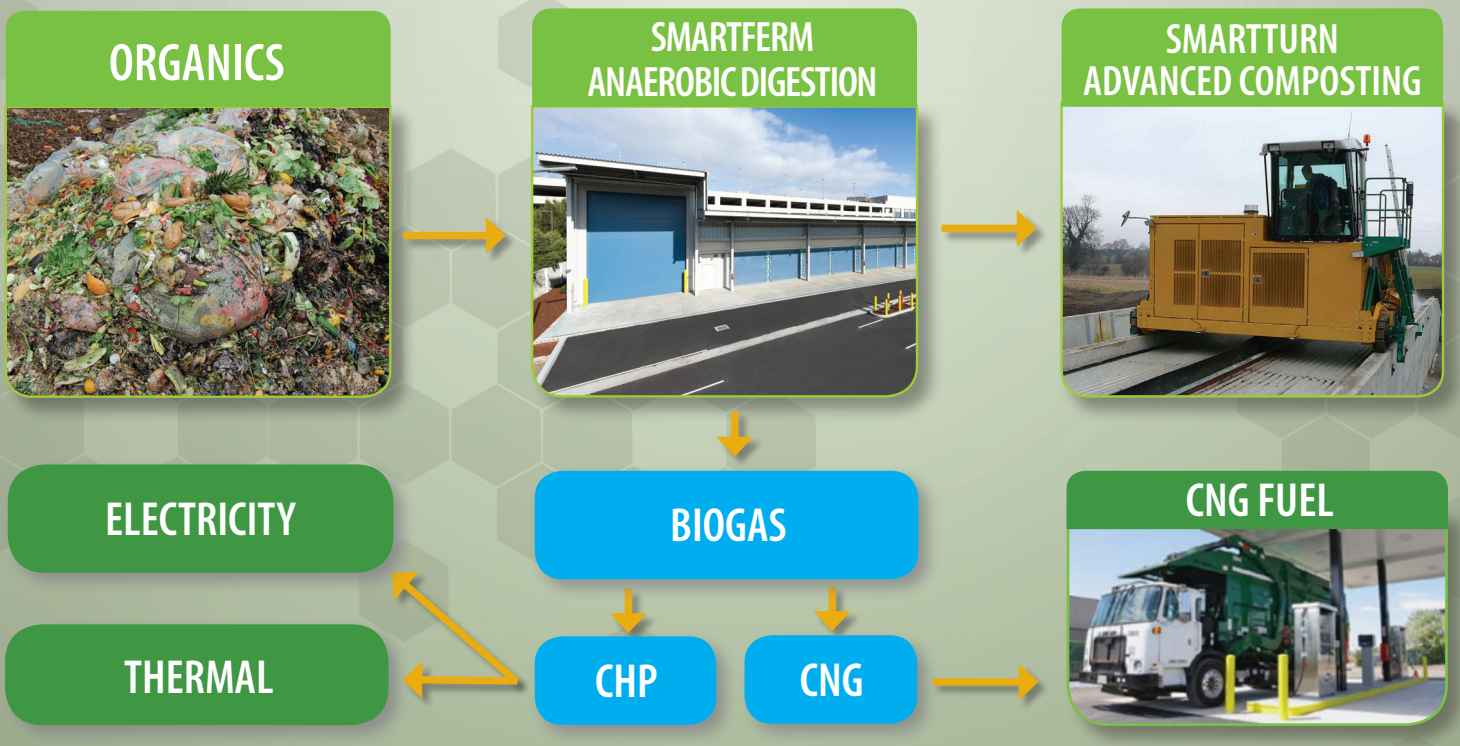
SMARTFERM
DRY ANAEROBIC DIGESTION SYSTEMS

SMARTTURN
ADVANCED COMPOSTING SYSTEMS

SMARTFERM and SMARTTURN accomplish this all while eliminating noxious landfill gases, reducing dangerous greenhouse gases, and helping companies and communities quickly meet mandated recycling and waste-reduction goals.

Waste into fuel. Fuel into power. Power into possibility.

SMART Technologies



Creating new solutions to process waste that reduce landfill use and generate energy...cleanly, efficiently, and cost-effectively.

SMARTFERM
DRY ANAEROBIC DIGESTION SYSTEMS

What is SMARTFERM?

SMARTFERM systems are scalable, dry anaerobic digestion systems refined through years of focused research and development. The underlying SMARTFERM technology has been widely used for more than a decade throughout Europe—processing hundreds of thousands of tons of waste per year.

SMARTFERM is offered on two platforms to better adapt to each customer's unique needs:

Shop Fabricated Steel Digesters can be installed in a space as small as 3,000 square feet and be constructed in as little as 90 days. These systems can efficiently process between 4,000 and 30,000 tons per year (TPY) of pre- and post-consumer food waste, green waste, and other forms of organic material.

Cast-in-Place (CIP) Concrete Digesters offer the same benefits and flexibility of the Steel Digester modular design. However, their on-site, concrete construction allows for larger scale digesters and systems. The CIP systems are equipped with pre-assembled process controls and mechanical equipment.

SMARTFERM doesn't just help save the environment, it complements it. The low-impact, low-profile design blends seamlessly into existing urban footprints and infrastructures, making it an ideal solution for large- and small-scale utilities, corporate campuses and universities.

How does SMARTFERM work? In a word, naturally.

Organic waste is sorted and deposited into an air-tight chamber, where naturally occurring microorganisms are introduced. These organisms break down the biodegradable materials to produce primarily methane gas, with a minor amount of carbon dioxide and minimal amounts of trace gases.

These biogases are then filtered and cleaned, either to power a combined heat and power engine that generates heat and electricity or to create CNG, which can safely be stored as vehicle fuel.

The remaining solids are transformed into compost, which returns essential nutrients back into the soil—spurring plant growth, naturally fighting disease and infestation, and protecting against erosion.

From waste, nothing is wasted.

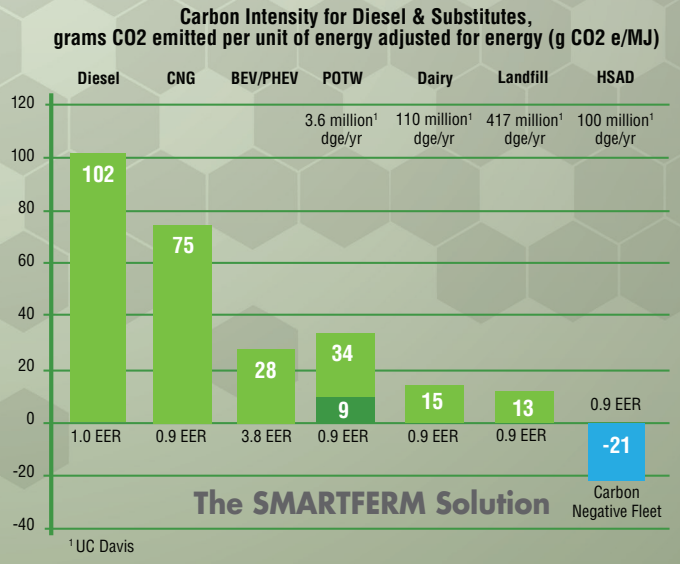
From Biogas to CNG. Quickly. Cleanly.

The natural biogas generated from a SMARTFERM system can be quickly cleaned and converted to create compressed natural gas (CNG)—at half the cost of traditional CNG sources.

It's clean—emitting up to 90% less smog-producing pollutants and 40% less greenhouse gas emissions than conventional diesel fuel.

It's efficient—CNG-powered engines generate the same amount of torque and horsepower as dirtier-burning alternatives.

For these reasons and more, SMARTFERM is the perfect solution for operators who have or will have a CNG fleet.



(Information provided by: California Air Resources Board & the Edgar Institute)

SMARTTURN
ADVANCED COMPOSTING SYSTEMS

What is SMARTTURN?

ZWE's SMARTTURN lane turner in-vessel composting systems offer industrial-scaled, controlled lane composting of OFMSW and digestate fractions. This fully-engineered solution provides a high level of process control, including accurate control of odor, air flow, moisture and temperature to produce high quality, nutrient rich Class A compost suitable for soil amendment and agricultural applications.

The two step process begins with covered lanes with process controlled conditions, followed by open lanes for final maturation and stabilization. Self-propelled lane turning machines process up to 12 lanes at once, mechanically agitating each lane up to five times per week for frequent aeration of the biosolids. Meanwhile, heated floors rapidly achieve process temperatures (>149° F) to kill pathogens. SMARTTURN also offers the benefits of best-in-class odor management and emissions controlled with a sophisticated air management and treatment system.

Successful MRF organics applications of SMARTTURN are already in place, maximizing the potential of compost production.

ZWE offers an alternate post digester treatment system with its In-Vessel Composting (IVC). In-Vessel Composting is a fully enclosed tunnel system adjacent to the AD digesters that accelerates and controls the natural aerobic breakdown to create a high quality compost product. This active compost process can be accomplished in less than 28 days, yielding compost ready to bag for retail sales or transport in bulk to end users. The partial treatment version treats digestate for 3 to 4 days in the IVC tunnel, removing most of the odor-causing ammonia to make it acceptable for truck transport to compost finishing. The combination of the ZWE AD process for green energy and IVC for digestate composting yields a complete organics strategy that is easily deployed in any urban location.

Benefits of Processing Organics with ZWE Technologies

100% Organics

For every 100 tons of organics that go into the digester...

15-20%* Transformed into Biogas in AD
Mass is reduced as anaerobic digestion creates biogas (carbon dioxide & methane)

35-40% Transformed into Biogas in IVC
With in-vessel composting, mass is further reduced as it becomes biogas & moisture is lost

Less Than Half Remains Ready for Composting
Out of IVC, about half the original mass of organics remain, resulting in:

- Reduced handling cost
- Reduced transportation cost
- Shorter compost curing time
- High product yields

**All percentages vary based on organics feedstock composition*

From Waste, Nothing Is Wasted.

SMART now, SMART here.

SMART Technology systems are designed and built by Zero Waste Energy (ZWE), a global project developer who delivers patented technologies and practical know how to treat organic waste effectively to maximize energy production and minimize overall costs.

ZWE systems are built upon executable technologies that provide immediate, real-world benefits and are noted for their superior engineering, operational effectiveness, sound economics, and reliable clean energy production.

Industry Experience	ZWE's experienced team members each have years of experience in waste management and renewable energy, providing customers with in-depth industry knowledge as well as a thorough understanding of biogas market incentives. Their combined expertise includes project financing, permitting, engineering and design, construction, and facility management and lane turner technology.
Proven Project Builder	ZWE has already developed facilities operating in the U.S. utilizing SMART technologies for projects ranging from 5,000 TPY to 90,000 TPY of organic waste using both digester platforms.
Strong Partnerships	ZWE has developed a very deep base of industry and technology experts who work on its projects based upon the specific needs of its customers. With partners such as Bulk Handling Systems (BHS) and Environmental Solutions Group, ZWE consistently delivers projects on time and on budget.
Financial Incentives	SMART technologies offer a sound financial return. Electricity and CNG generation, Renewable Identification Numbers (RIN), Renewable Energy Credits (REC) and marketable compost all provide potential revenue streams. Meanwhile, SMART technologies allow for lower disposal fees for businesses and enables clients to take control of their own destiny by protecting against increasing waste disposal and energy costs.
Solutions Provider	ZWE applies technologies that are executable, given the technical, economic, and environmental considerations of the facility and operator. With SMART technologies that achieve recycling mandates and incentives, generates on-site renewable energy and carbon credits, and provides financial return, ZWE brings real, implementable solutions to developers and operators throughout the world.

Think Smart. Act Smart. Choose Smart.

ZEROWASTE

zerowasteenergy.com

3478 Buskirk Ave, Suite 265, Pleasant Hill, CA 94523
Tel. 925.297.0600 info@zwenergy.com