CTI is an SBA SDB firm

DBE Certifications Include:
Michigan, Maryland, Ohio, and Pennsylvania

MBE Certifications Include:
Michigan, Maryland, Wisconsin, City of Toledo

CTI and Associates, Inc. (CTI) is an SBA Small Disadvantaged Business (SDB) with expertise and experience in:
- Landfill design
- Landfill construction
- Complex geotechnical projects
- Remedial process optimization
- Remedial design and construction
- Environmental compliance and sustainability
- Environmental restoration
- Stormwater and site improvements

Our renewable energy group specializes in landfill gas-to-energy and biomass digestion including:
- Design
- Permitting
- Construction
- Operations support

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Accelerated Landfill Energy Recovery Technology (Patented)

DoD facilities – like all communities – face solid waste management challenges. More than half of all solid waste sits in landfills, potentially impacting the long-term health of our communities. Many of these landfills have untapped methane (natural gas) potential. Both challenges (long-term environmental liability and unstaffed landfills) have the same cause – the glacial pace of natural waste stabilization.

CTI’s commitment to harnessing the untapped potential and supporting the federal government’s Net Zero initiatives led to the development of the Accelerated Landfill Energy Recovery Technology (ALERT). ALERT builds upon a patented technology owned equally by CTI and St. Clair County, Michigan, providing a total waste management solution that creates cost-efficient renewable energy (US Patent No. 7347648 B2).

ALERT works by adding sewage to an active or closed landfill to promote expedited decomposition of solid waste. Seepage in combination with organic waste (such as food waste, cardboard, and yard trimmings) promotes anaerobic digestion – a powerful and proven biomass technology. Both processes help expedite the generation of biogas, which can be used to generate renewable energy and/or as an alternative heat source.

CTI’s full-scale demonstration over the past 8 years at the Smith Creek Landfill in St. Clair County, Michigan, has shown that this technology can increase the rate of methane generation by up to 8 times over conventional landfill gas-to-energy technology. The project has been so successful that St. Clair County (serving a population of 170,000) was able to construct a 3.2 MW gas-to-electricity facility – using the generated electricity to power on-site operations and generate revenue for the community by selling excess power to the local utility.

CTI’s ALERT innovatively combines multiple waste streams and converts them to renewable energy while improving environmental protection. This proven technology can help installations and bases achieve their goals of energy independence, energy security, Net Zero Energy and Net Zero Waste.
The ALERT Concept
Solid waste landfills contain over 60% bio-degradable materials (papers, food scraps, wood, etc.) that contain energy potential. Natural decomposition of such wastes emits landfill gas (50% methane and 50% carbon dioxide) - major climate-warming contributors if not properly captured and treated. However, if harvested and converted, landfill gas can be used for heat or electricity generation.

The proposed technology utilizes septage as moisture and nutrient augmentation to accelerate waste decomposition. The technology is proven to dramatically expedite the rate of landfill gas generation by 8 times, making it economically feasible for the facility owner to construct an on-site electricity generation facility. More specifically, this technology will benefit small landfills by optimizing their rate of gas generation.

The ALERT Process

Anaerobic Composting
Organic wastes (food waste, yard trimming, etc.) can be anaerobically digested in sealed pits. The process emits biogas that is captured and used as renewable energy. Similar to traditional composting operations, Anaerobic Composting Units (ACU) also yield matured compost at the end of process.

Inject Septage Liquid into Landfill
Approximately 70% of septage is in liquid form, which can be introduced via subsurface injection into landfills. Because septage liquid is rich in microbes and nutrients (e.g., phosphate), it promotes biological breakdown of solid wastes. This augmentation has proven to accelerate the rate of decomposition (hence the biogas generation) by as much as 8 fold!

Benefits of Septage Injection
- Diversion of septage to the landfill reduces load on wastewater treatment plant
- Extends life of landfill through waste settlement
- Reduces post-closure liability through waste stabilization

Add Septage Sludge into ACU
Similar to benefits shown by adding septage liquid to landfills, septage sludge (approximately 30%) will be introduced into the Anaerobic Composting Units (ACU) to promote decomposition of segregated organic and yard wastes that are banned from land disposal.
Teaming Partners:
St. Clair County (RDDP Location)
Matt Williams, Landfill Director
Smiths Creek Landfill
6779 Smiths Creek Rd.
Smiths Creek, MI 48074

Marstel Day, LLC
515 Prince Edward St.
Fredericksburg, VA 22401

Capabilities:
• Natural and Cultural Resources
• Climate Change and Adaptation
• Energy Services
• Water Resources
• NEPA – EAs, EISs
• Stakeholder Outreach and Engagement
• Community Partnering and Facilitation
• Geographic Information Systems (GIS)

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Net Zero Hierarchy
ENERGY
Reduction
Re-Purpose
Recycling & Composting
WASTE
Energy Recovery
WATER
Dispose

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