Minimizing the Footprint of Deployed Bases: 
Army Approaches to Waste to Energy Conversion

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7 May 2009
Select Waste to Energy Conversion (WEC) Systems in Development

If you’re here today, you’ve probably heard of…

- Onsite Field-feeding Waste-to-Energy Converter (OFWEC)
- Tactical Garbage to Energy Refinery (TGER)
- Mobile Integrated Sustainable Energy Recovery (MISER)
- Green Pyrolyzer Gasifier (GPG)
- Integrated Battlefield Support System (IBSS)

You may not know much about…

- Green Energy Machine (GEM)
- Pyrolysis Waste Disposal System (PWDS)
- Military Encampment Waste to Electrical Power System (MEWEPS)
- High Energy Density Waste to Energy Converter (HEDWEC)
Agency: Natick Soldier RDE Center
Company: Community Power Corporation
Description:
- CPC BioMax® stratified downdraft gasifier
- Interfaces with 60 kW TQG
- Shredded feedstock has proven problematic
- Handles only paper and plastic (no wet food)
- Can be combined with Solid Waste Preprocessor to handle food
Status:
- Reliable long-term operation not demonstrated
- Future efforts expected to focus on other related systems
Agency: Edgewood Chemical Biological Center, Rapid Equipping Force
Company: Defense Life Sciences/Purdue University
Description:
- CPC BioMax® stratified downdraft gasifier with bio fermenter and pelletizer
- Includes 60 kW gen-set (ethanol and producer gas used to displace JP-8)
- Designed to handle foodservice waste (including paper, plastic, and food)
Status:
- Current prototype field tested in Iraq with mixed results
- Further work needed to address issues
Agency: Defense Advanced Research Projects Agency

Company: General Atomics

Description:
- Supercritical water gasification
- High pressure, high temperature reactor
- 100 kW gen-set
- Prototype designed primarily for plastic, will be tested with mixed waste

Status:
- Being fabricated, reliable long-term operation not demonstrated
- Further work needed to address issues and reduce costs
**Agency:** Natick Soldier RDE Center, Defense Advanced Research Projects Agency

**Company:** Green Liquid & Gas Technologies

**Description:**
- High-temperature pyrolytic gasification
- Very small scale

**Status:**
- Demonstrated with MRE and UGR packaging
- Will need ancillary equipment (shredder, gas and liquid cleanup, generator)
- Further development and engineering needed
**Integrated Battlefield Support System (IBSS)**

**Agency:** PM Force Sustainment Systems, HQ-RDECOM

**Company:** QinetiQ

**Description:**
- Solid waste incinerator paired with waste water treatment and water generation technologies
- Incinerator and emissions clean-up housed in five ISO containers
- Incinerator destroys >4400 lbs mixed solid waste per day

**Status:**
- Demonstrated at Royal Engineer Training Area
- Further work needed to add energy recovery
**Agency:** Army Research Laboratory, Edgewood Chemical Biological Center, Tank-Automotive RDE Center

**Company:** InfoSciTex

**Description:**
- Stratified downdraft gasifier integrated with Solid Waste Preprocessor
- 120 kW gen-set
- Developed with private funding following related SBIR contracts
- Designed for up to 3 TPD waste

**Status:**
- Significant interest for non-military use
- Demonstration planned for Sep 2009
**Agency:** PM Force Sustainment Systems

**Company:** QinetiQ

**Description:**
- Also known as Pyrolysis Total Energy Converter (PyTEC)
- Pyrolysis plant with additional capabilities
- Designed for 220 lb/hr mixed waste
- Packaged in two ISO containers

**Status:**
- ST 150 pyrolysis plant installed on HMS Ocean and operating effectively
- Foreign Comparative Test being pursued to containerize and recover energy
Agency: Tank-Automotive RDE Center

Company: NextEnergy, Community Power Corporation

Description:
- CPC BioMax® Gasifier
- Interfaces with 60 kW TQG
- Shares much in common with OFWEC
- Adds gasifier design improvements and pelletizer
- Designed for paper and plastic, some food

Status:
- Being fabricated, reliable long-term operation not demonstrated
**Agency:** Army Research Laboratory, Natick Soldier RDE Center

**Company:** Community Power Corporation

**Description:**
- Shares much in common with OFWEC
- Larger gasifier (or multiple gasifiers) with pre-processor/pelletizer
- Interfaces with multiple 60 kW TQGs
- Intended to handle all solid waste

**Status:**
- Awarded March 2009

*Image coming soon!*
Acknowledgements

- Mr. John Munroe, PM Force Sustainment Systems
- Mr. Leigh Knowlton, Natick Soldier RDE Center
- Ms. Carol Wong, Hughes Associates, Inc.

My apologies to the dozens of other systems that might have applicability to the Army!