Insight into the Heartland Biogas Project

Presented by:
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A1 Organics

Presented to:
SWANA Rocky Mountain Chapter
Pueblo, Colorado

A1 Organics

- Based in Eaton Colorado
- 41 years in organic recycling/composting business
- 2014 Winner Colorado Companies to Watch.
- Colorado Department of Public Health and Environment, Gold Partner - Environmental Leadership Program member.
- United States Composting Council “Composter of the Year”

A1 Organics

Eaton Facility

Rattler Ridge Facility
A1 Organics – 20 Year HBG Agreement

- Exclusive Substrate Provider to HBG Project:
  - Source, contract, locally manage, and service diverse and acceptable substrates and substrate providers.
  - Substrate Partners to be included in REAP “Renewable Energy Partnership Alliance.”
  - Coordinate logistical requirements for substrate delivery

- Build and Operate Digester Processing System at HBG facility
  - Contaminant / packaging removal from substrate stream
  - Particle size reduction and segregation
  - Blending and delivery to dosing tanks

- Provide composting backup
  - Secondary backup to digester substrate generators to insure 365 day per year sustainability.

- Exclusive digested solids marketing
  - Market finished digested solids (DS) produced by the HBG project
  - Assist in marketing of liquid digestate

Heartland Biogas LLC Project

- Owned by EDF (Electricity De France) Renewable Energy
  - http://www.edf-re.com/
  - Wind, Solar, Hydro, Landfill Gas, Biomass, AD

- EDF Renewable Energy - more than 25 years of expertise in the renewable industry in North America

- Portfolio of over 6.3 gigawatts of developed projects and 3.1 gigawatts of installed capacity

- EDF Renewable Services is the leading provider of third-party operations and maintenance services in North America with over 9,300 megawatts of power under contract
Heartland Biogas LLC Project

- 20 year off-take agreement with SMUD (Sacramento Municipal Utility District)
- Located NE of LaSalle, Colorado on Weld County Road 49 and 40, on approximately 108 acres
- 8+ years in the making
- Broke ground Fall 2013
- April 1, 2014 RNG (Renewable Natural Gas) delivered to meet agreement requirement – Covered Anaerobic Lagoon (CAL)

- Digester feed stocks – manure and substrates
  - Manure – local area cross vent barn dairies
  - Substrates - (foodwaste, FOG, DAF, etc.)
- Digested Solids
  - Soil amendment

Heartland Biogas LLC Project

- Digestate (liquid)
  - Soil amendment
  - Crop land needing nutrients is accessible
    - 3,500 acres required
- Delivery of RNG to SMUD
  - CIG 30” high pressure (900-1200 PSI) interstate pipeline crosses site
  - Biogas will be “up-graded” to natural gas quality and injected into pipeline
Heartland Biogas LLC Project - FACTS

- Digester
  - (6) Bioreactors totaling 10,200,000 gallons of digester capacity
  - (2) 600,000 substrate storage/receiving tanks
  - (2) 20,000 dosing tanks
  - Multiple compressors (Gas Up-grading and RNG Delivery)
  - Gas cleaning/scrubbing
    - Kanukas
    - BioRem
  - 50,000,000 gallons of storage
  - 28,000,000 south pond
  - 14,000,000 north pond
  - 8,000,000 Covered Anaerobic Lagoon (CAL)
  - Solids recovery
    - (2) Centrisus centrifuges
    - Flair (backup)

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INPUTS

- 160,000 gallons per day dairy manure
  - Clean (very low sand or soil) from cross vent barn
- 140,000 gallons per day substrates
  - Substrate types
    - Dissolved Air Flotation (DAF) float
    - Packing/rendering waste
    - FOG (Fats, Oils, Greases)
    - Foodwaste from food processing and manufacturing
    - All types of food production, processing, distribution waste
    - Source Separated Organics “SSO” – grocery, retail, cafeteria, etc.

OUTPUTS

- HBG project will produce Renewable Natural Gas (RNG)
  - Phase IB – 4,700 Dekatherms/day of renewable energy in the form of (RNG) beginning Fall 2015
  - Phase II – is expected to produce the full 7,000 Dekatherms/day by Summer 2018
  - RNG will be used to produce a cost-effective and base-load renewable electricity in an existing gas fired combined cycle power plant under the 20-year off-take agreement with Sacramento Municipal Utility District (SMUD) in California
- 450-500 cubic yards per day digested solids
  - Compost and/or peat moss substitute
- 315,000 gallons per day liquid digestate
  - Area agricultural use

Heartland Biogas LLC Project

Process Flowchart
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Digester Island

Project Site View from NW

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High Fat and Low Fat Substrate Tanks

Dosing Tanks
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Boilers – Bio Reactor Heating

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Tank Heating System

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Bio Reactor Membrane Roof

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Bio Reactor Delivery System
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Compressor BioGas Upgrade System

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Biogas Upgrading System – Kanugas

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BioGas Upgrading - BioRem

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Compressors RNG to Pipeline
Digester Processing System (DPS)

**SUBSTRATE PROCESSING**
- Press grate and auger system (pre-reduction)
- Contaminant and packaging removal
  - Tiger HS640 (10-12 ton per hour)
  - DODA (10-12 ton per hour)
- Feedstock slurry preparation
  - Particle size/reduction (grinding)
  - Mixing / Blending
- Storage
  - (3) 30,000 in-ground concrete substrate processing/blending tanks with Vaugh chopper mixing pumps
  - (3) 31,000 gallon glass lined substrate and low solids storage tanks – above ground
  - (1) 227,000 gallon heated, insulated vertical storage tank with internal mixers.

**TIGER HS640**

Tiger HS640 Products it Can Treat - SSO
DPS – Tiger Substrate

TIGER HS640 - Products it Can Treat - SSO

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DPS – Tiger Substrate

TIGER HS640 - Products It Can Treat

PACKAGED FOODS

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DPS – Tiger Substrate

TIGER HS640 - Products It Can Treat

KITCHEN WASTE

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DPS – Tiger Substrate

TIGER HS640 – Kinds of Packaging

CANS AND TINS

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DPS – Tiger Substrate
TIGER HS640 – Kinds of Packaging

DPS – Tiger Substrate
TIGER HS640 – Kinds of Packaging

DPS – Tiger Substrate
TIGER HS640 – Kinds of Packaging

DPS – Tiger Substrate
TIGER HS640 – Kinds of Packaging
DPS – Tiger Substrate

TIGER HS640 – Packaging Removed

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INDIVIDUALLY BOXED DRY ANIMAL FEED

DPS – Tiger Substrate

TIGER HS640 – Packaging Removed

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TIGER - DE-PACKAGING SNACKS & EXPIRED POTATO CHIPS

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Prepared Slurry in Transport Tank

Contact Information

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