SG Composting Solution
GORE® Cover Technology

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Discussion

- Team Experience
- Technology Description
- Regulatory Compliance
- Typical Layout
- References
- Questions
SG and GORE® Partnership

SG is the Authorized GORE® Cover Technology Sales and Service Provider in North America

GORE® Cover Globally:
- 300+ installations
- 30+ countries
- +3.5M tons annual processing capacity

GORE® Cover North America:
- 25+ Installations
- +1M tons annual processing capacity

GORE® is our Enterprise Partner:
- $3+ Billion Annual Revenue
- The proven track record of success over time with GORE® Cover.
- Mitigates the composting technology risk for SG Clients and their Projects

Proprietary and Confidential Information: Sustainable Generation LLC
GORE® Cover Global Reference Locations

300 + Installations
30+ Countries
3.5+ millions tons processed annually
GORE® Cover Global Reference Locations

United States & Canada
30+ Installations
1.0+ millions tons processed annually

500k+ tons  New projects coming online

7/9/2019
Experience in Feedstocks

- **35%** Biosolids
- **50%** Source Separated Organics
- **15%** MSW

*EU: Stabilization, Bio-drying & CLO

7/9/2019
Alternative Feedstocks

Fish Waste
Fermented (pasteurized) - Slaughter house waste
Chicken waste (eggs, hatchery, feathers, whole carcasses...)
Manures (cow, horse, goat, chicken litter also pigs)
Digestate from biogas production & Anaerobic Digesters
MSW – Stabilization – Biodrying – CLO (compost like output)
Encapsulated Process
GORE® Cover delivers In-Vessel performance without the need for buildings or roofed structures.
Compliance and Performance Drivers
Simple, Safe, Sustainable Solutions

Compliance

Air Quality
- Odor Reduction (Includes compliance with EU TA-LUFT) & GHG Emissions
- VOC Emissions
  California Compliant for Rule 1133.3, Rule 4565, Rule 4566 & BACT

Water Quality
- Clear Separation of Process Water (Leachate) from Storm Water
- Minimizes amount of “Process Water” needing treatment

Pathogen Reduction
- Meets US EPA for PFRP, VAR producing Class A – Exceptional Quality Compost
  EPA 503: Alt 5: Use of PFRP [503.32(a)(7) and (B)(1) of Appendix B]
  Meets EU for Hygiene Standards and Animal-by-Product (ABPR – PASS100)

Performance

Features and Benefits
- Small Footprint
- Low Energy requirement
- Modular, Expandable Customized Designs - Facilities range from 300 ton/year to 600,000 ton/year
- Feasible for All-Feed Stocks (SSO, BS and MSW)
- Works in most varied climate conditions (hot, dry, wet, cold climate regions)
- Simple to Operate – lowest operating cost
- Produces a consistent stable compost in shortest treatment time as little as 2 to 8 weeks
Time Temperature Study
US EPA 503 Regulations

Biosolids Time Temperature Study
Location: Moncton, NB
Date: August 2008 – April 2009
Source Testing: GMSC, A & L Labs

- EPA PEC (Pathogen Equivalency Committee) has issued a recommendation of national equivalency that the GORE® Cover meets or exceeds requirements for achieving Class A biosolids as described in Alternative 5: Use of PFRP [503.32(a)(7) and (B)(1) of Appendix B].

Additional Studies:
MWRD
Albany, OR (Published TPO Magazine Nov 2016)
San Joaquin Valley Air Pollution Control District has issued an assessment that the Gore® Cover System is capable of meeting and/or exceeding the emission requirements for Rule 4565, Rule 4565 and BACT when installed, operated and maintained per GORE® Cover specifications...

- **BACT (Best Available Control Technology)**
  - Co-composting operations
- **Rule 4565**
  - Biosolids, Animal Manure, Poultry Litter
- **Rule 4566**
  - Organic Material

South Coast Air Quality Management District completed source testing and achieved 90% reduction for VOC emission and 99.3% for NH3...

- **Rule 1133.3**
Scope of Supply: Equipment

SG Mobile™, Heap™ or Bunker™ System
GORE® Cover Package

- GORE® Covers
- In–Floor Aeration Piping Systems with Water Traps or On-Floor System
- Perimeter Sealing System
- Oxygen and Temperature Sensors
- Blowers and Connector Piping
- Controllers/Data Loggers, Cabling and Software (including computer)
- Installation Guide
- Operation Manual
- Web Based Service Package (Remote System Control and Monitoring, Inventory Management and 24/7 Technical Support)
- Spare Parts package
- PWM Mobile Winder for Handling GORE® Covers
Aeration and Leachate Collection System
Process Water Control
Clear Separation of Storm Water from Leachate

1. Rim weight (with sealing function)
2. Rain drops are diverted
3. Oxygen sensor
4. Leachate collection system
5. GORE® Cover
6. Temperature sensor

1. Rim wall
2. Rain drops are diverted
3. Oxygen sensor
4. Leachate collection system
5. GORE® Cover
6. Temperature sensor
7. Sealing mechanism
Green and Food Waste: Washington, USA 200K TPY
Source Separated Organics: Ontario, Canada 60K TPY
Cross Section – SG Bunker™ System
In Floor Trench – Push Wall & Side Walls
Bunker Design
Side Wall Design
Deploying the Technology
Cross Section – Heap RD
In Floor Trench – Push Wall
Heap Design
Canada: 20K TPY
Heap Design
LACSD, Kettleman City, CA: 200K TPY
Source Separated Organics: Fontana, CA 30K TPY
Source Separated Organics:
Kerman, CA 60K TPY
Pilot – Solar Power Mobile System
Green and Food Waste Application
Governors Island
Solar SG Mobile System
Pilot Demonstration
Vancouver BC: Foodwaste Study
Urban Composting
Food Waste and Green Waste
Small Footprint
High Throughput
Pilot - Demonstration
Green and Food Waste Application
Prince George’s County, MD
Under Construction

Commissioning October 2018
Pilot Demonstration
Southern California: Food Waste Study

2017 CalRecycle GHG Grant Award
$3 million
In Permitting
Construction Spring 2019
Commissioning June 2019
Scope of Supply: Services

- **Installation Guide**
  - Drawings, Component Specification, Detail and Installation Guidelines

- **Operations Manual**
  - SG Mega™ System using GORE® Cover technology
  - Portable Winder Machine

- **Permitting Support Services**
  - Support permitting process with technical information

- **System Design Guidance / Support**
  - Preliminary Layout and Drawings as defined in the bid document
  - Layout Drawings to handed over to the Engineer for design and construction

- **Construction Guidance / Support**
  - Pre-Construction Meeting
  - Installation Services/ Guidance
    - Aeration Trench Installation Support
    - Electronics Installation Support
  - Portable Winding Machine
  - Installation/Testing/Commissioning
  - Compost Process Commissioning, Start Up and First Heap Construction

- **Electrical Installations**
  - All electrical conduit and power hook-up to be provided and installed by a locally qualified certified electrician supplied by other.
  - Installation of low voltage components (control cable, data cable, probe cable and wireless connections) by SG technicians.

- **Training for Site Management and Operators**
  - Classroom and On-site training
    - Training 1 - at reference site or on-site (up to 3 days)
    - Site Reference Visits (optional)
    - Training 2 – during system check and start-up (up to 3 days)
    - Training 3 – 12 weeks after commissioning (up to 3 days)

- **Annual Review for first 2 Years:**
  - On-going Technical Support
  - Periodic Site Visitation and System Performance Check Up
  - Compost Quality Lab Analysis
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