Finding a Balance

The Challenges and Lessons Learned for the Transition from Windrow Operations to Aerated Static Pile Composting

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What is a CASP?

- Covered aerated static pile composting
  - Static - Do not turn the piles during the aeration phase
  - Force air through the compost pile to maintain aerobic conditions throughout the active composting phase
  - Negative or positive aeration
  - Approximately 21-28 days
  - Biofilter
Why a CASP?

- Waste diversion goals and legislation and GHG reduction goals lead to an overall push to remove organics from the landfill stream
- Looking for an alternative way to handle the organics
- CASP compost facility to handle the diverted organics and create a marketable product
Presentation Overview

- Converting windrows to CASP benefits and challenges
- Pilot study benefits
- Conceptual Design phase
- Permitting
- CASP Design
- Challenges encountered during design
- Lessons learned
Converting from Windrow to CASP

**Benefits**
- Increase feedstock volume within same footprint
- Potentially less operator intensive
- Reduction of emissions

**Challenges**
- Capital costs
- Permitting updates
- Data management
- Curing/finished space
Pilot Study

- Examine pile sizes
- Review seasonal changes
- Vary commercial food waste intake
- Test bulk density and porosity
- Monitor for oxygen, temperature, and moisture content
Pilot Study Equipment
Pilot Study Equipment
Conceptual Design

- Pre-planning meeting
- Involve all parties
- Prepare design criteria checklist
- Conduct a permitting review
Conceptual Design

- The available CASP pad size and boundary
- The daily feedstock intake rate (both average and peak)
- Number of days per week of expected feedstock receipt
- The reaching height of the facility operating equipment (i.e., operational restrictions on the height of the CASP piles)
- Any site-specific requirements for the facility
Permitting

- Evolving on a state by state basis
- May require permits for facility, stormwater and air
- Multiple permits for the same facility can lead to varying requirements for data collection and reporting
- Requirements can impact design of system controls
- Operational data requirements and permit data requirements may not align
- Data management plan
Monitoring and Reporting

- Appropriate monitoring parameter ranges
- Visual observations during operation
- Material Tracking
- Collection of temperature data
- Oxygen readings
- pH levels
- Moisture readings
Design Challenges

- **Utilize existing footprint**
  - Create a puzzle-like design
  - Flow meter distance requirements
  - Pipe spacing needed for welding and fittings
  - Space for biofilter
- **Management of storm water, contact water, and irrigation water with use of existing facilities**
- **Maneuvering equipment and material**
Design Challenges

- **Location or capital restrictions:**
  - Colocation with a landfill
  - Within facility footprint
  - Within waste footprint
  - May eliminate options for:
    - In-floor spargers
    - Negative aeration
    - Piping material options
Design Options

- Constructed to be easily deconstructed
  - Flanges for piping disconnection
  - Durable and easy connection for sparger piping
  - Bin block walls
Design Options

Allow for future upgrades to be implemented

- Partially automated to fully automated
- Left in a difficult transitional phase
Training

- Conduct with managers and operators at the site prior to operation
- Review permitting and compliance as well as operations
- Need to highlight changes from traditional windrow operations
Training

- What Can Be Composted?
- Mix Recipe and Feedstock Processing
- Aerated Static Pile vs. Windrow Pile
- Pile Construction
- Maintaining Temperature for PFRP
- Pile Deconstruction
- Curing Process
- Fire Prevention Protocol
- Questions
Key Lessons

- Communication between operations, site engineers and design engineers from the start of the design process
- Investing in additional operational space if available
- Investing in the right materials and equipment
- Considering what controls and features may be desired for the future, even if not installed now
- Detailed plans and training for the management of the facility operational data, and the intersection of operational data for permit requirements
Questions

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