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Bioferm Energy Systems – Biogas through Dry Fermentation

economy meets environment

Nadeem Afghan

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www.biofermenergy.com

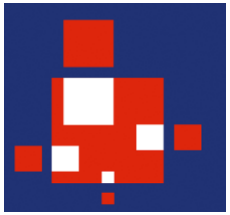
A Company of the Viessmann Group

Oil

Gas

Solar

Components



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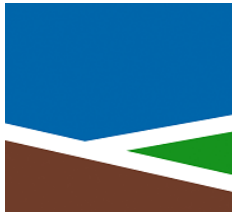
climate of innovation

Natural Heat



Bio Energy: Wood

Combined-Heat-And-Power Systems

Bio Energy: Gas

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Energy solutions for life

Bioferm Process

- Bioferm Dry Fermentation: An Overview
  - Uses moisture from organic input to facilitate AD; only additional required liquid is the percolate (which contains microorganisms that perform AD)
  - Percolate is sprayed to inoculate the organic material and stimulate the digestion process
  - Organic input stays stationary while percolate filters through to reach all material

Bioferm Process

- Bioferm Dry Fermentation: An Overview
  - Generated biogas is collected above the fermenters and routed to utilization room (CHP and/or boiler)
  - After digestion, organic material is removed and a portion is used to initiate new input
  - Residual organic material that has been completely digested can be used as fertilizer for soil enrichment or further composted
  - Percolate is collected and reused to inoculate fresh input material - a closed loop system

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Energy solutions for life

Dry Fermentation for Urban Organic Feedstocks

- Facility fitting for urban environment
  - Customizable aesthetically pleasing design
  - Enclosed operations solves odor problems
- No restraints on material to be used as input
- Non-organic contaminants do not pose risk for equipment damage because material remains stationary once inside fermenter

Dry Fermentation for Urban Organic Feedstocks

- No pre-treatment of organic material required
  - Material does not need to be made into a pulp that can be pumped through plant
- Lower parasitic energy load due to electrical/mechanical needs and mesophilic working range
- Little or no waste water
  - Water does not need to be added for pulping and then removed after digestion
  - Greatly reduces need for transportation of liquid waste out to rural area and risk of ground water contamination

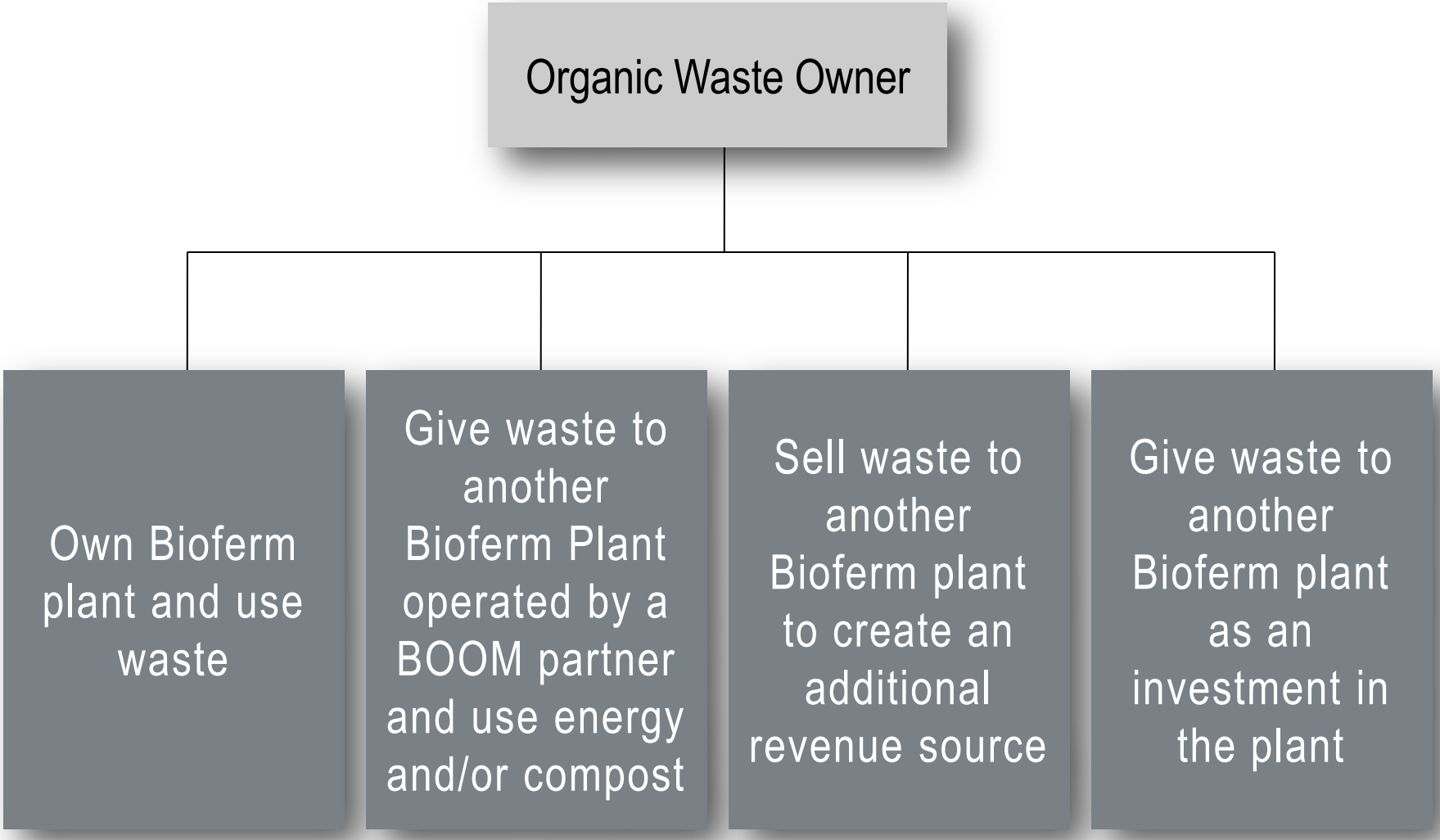
Dry Fermentation for Urban Organic Feedstocks

- Plant controlled via an SPS control system
  - Malfunctions are identified by the control system, registered and plant operator is notified
- Low maintenance and labor needs
- Highly engineered plant and process management
- Proven and reliable system and parent company

Business Models

- Preliminary feasibility report
- Design of turn-key project parameters
  - Includes biogas utilization plan and equipment
- Facility design and system engineering
- Assistance with permitting and financing
- Construction management
- Start up and attainment of guaranteed energy production
- Training of plant operators

Business Models



Resources Available

- Company brochure
- Selected references booklet
- Process flow diagram
- Plant operation animation
- Informational technical flyers
- Concept flyers for
- Viessmann comprehensive product-line information
- Carbon economy overview white paper
- Anaerobic digestion white paper

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