

## VORS WORKSHOP BY BOB SPENCER

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### Implementing In-Vessel Composting Systems for Institutions, Schools, Resorts and Communities

Technology advancements are making in-vessel composting systems cost effective (compared to landfilling) for businesses and institutions in Vermont. This workshop provides an overview of the steps you need to consider to incorporate an in-vessel composting system in the workplace. The presenter will use case studies and a technology review to cover issues such as:

- Cost
- Operation & maintenance
- Permits
- Compost quality
- Uses of finished compost

#### 1. *Definition of In-Vessel Composting Systems*

Initial composting process conducted inside a container, vessel, building, or under a fabric cover.

#### 2. *List of Vendors as of November 2010*

(<http://www.calrecycle.ca.gov/Organics/Food/compost/InVessel2.htm>)

#### 3. *Mid-sized in-vessel composting unit directory: see BioCycle March 2011 pg. 50*

([www.biocycle.net](http://www.biocycle.net))

#### 4. *Benefits and Disadvantages*

Potential benefits include improved control of odor, temperature, aeration, and moisture.

In-vessel systems may also reduce potential for vermin, reduce labor, and reduce land area required.

In-vessel systems may also result in faster processing time, and provide more consistent compost quality.

In-vessel systems may also be more acceptable to neighbors, and regulatory agencies, and thus easier to permit at local and state level.

Disadvantages include higher capital cost, higher electrical costs, and higher O&M costs.

#### 5. *Costs*

Wide range of costs. Capacity calculated by either weight or volume.

See attached Table from BioCycle March 2011 page 51 on technology capacity and costs.

What is bulk of material going to the vessel?

See Table 1 for costs of in-vessel systems appropriate for medium scale food waste generators.

## 6. *Permits*

Each state has different regulations. Many states do not require a full solid waste permit if the system handles waste generated only from the site. Once material brought from other generators, probably triggers permits.

Need to look at local zoning and health regulations.

Local building permit often required

## 7. *Operation and Maintenance*

Need to have qualified operators. Most vendors will provide initial training. What is cost of additional technical assistance? Can they provide remote monitoring via computer?

Need vendor to provide an O&M Manual.

Need vendor to provide critical spare parts, and keep some on site. Be careful with ordering from out of country and lead time for spare parts.

## 8. *Compost Quality*

In-vessel systems do not necessarily guarantee high quality compost. Garbage in.....

What is the retention time in the vessel, and what is the state of degradation accomplished? What is maturity as measured by Solvita, re-heating, respiration, and odor?

Curing and storage very important. Weed seeds should be minimized if possible.

What are the intended uses?

Get compost analyses and characterize the product.

## 9. *Compost Markets*

On-site uses for landscaping and turf.

On-site uses in gardens for vegetables, or ornamental flowers.

Other potential users include greenhouses and nurseries, on or off site.

On-site uses for erosion control.

## 10. *Case Study*

See BioCycle Hypothetical Example page 53 Verde Hospital: 200 lbs per day of food scraps.