

October 15, 2018

Memorandum

To: Melbourne Beautification and Energy Efficiency Board (BEEB)

From: John Windsor, BEEB Alternate Member

Subject: Biosolids to Energy

At a previous meeting of the Beautification and Energy Efficiency Board (BEEB) the subject of converting sludge from Melbourne Wastewater Treatment Plants to Energy was discussed. The Janicki Omni Processor was the unit of interest because it produces energy and clean water from sewage sludge. I was tasked to gather information about this process and share it with the Board. Below are facts that we can discuss at the monthly meeting on Friday, October 19, 2018.

1. **Contact for Janicki Omni Processor information** Janickibioenergy.com . An excellent 13 minute video link is on the homepage (TEDMED Talk | Peter Janicki - Turning Waste into Wealth). Peter Janicki's motivation and advice is very important. If you want to see how the processor works you can also see details at the website. From the FAQ about waste processing on the homepage of that site:

FREQUENTLY ASKED QUESTIONS

Waste Processing

What are the desirable feedstocks for a Janicki Omni Processor?

Desirable feedstocks for the Janicki Omni Processor include wastewater (i.e. digested/undigested sewage sludge, biosolids, residential septage), animal by-products (manure and organic waste), pre-sorted municipal solid waste (MSW), biomass solid wastes, and various industrial waste streams (food and beverage processing waste, distillation by-products, industrial septage). Examples of acceptable MSW include paper and plastic products, domestic household waste, and biomass. The JOP cannot process metal, glass, batteries and several other toxic chemicals.

What are the minimum and maximum daily waste inputs for different kinds of waste with the JOP S250?

The Janicki Omni Processor S250 requires roughly 12-15 metric tons of dry waste per day as fuel, or 60 metric tons of wet waste per day into our dryer. The plant can be scaled to a variety of flow rates however.

Can the JOP S250 serve a population of fewer than 300,000-500,000 people?

The JOP S250 is designed to consume the fecal waste or sewage sludge from a population of roughly 300,000 to 500,000 people. However, as long as adequate dry fuel is supplied (approximately 12-15 metric tons/day) from a secondary source (such as garbage, or other solid waste), the JOP can function in a smaller community, providing electricity and drinking water while consuming fecal and solid waste. If there is not

enough wet sludge to make drinking water, then ground water can be processed in the JOP and brought to potable water standards. It is also possible to scale the technology down if necessary.

Is there a household model?

A household model has not yet been built, however, our engineers are working on developing a similar product: a self-sustaining household toilet that combusts waste as the fuel source. As this technology matures, we will provide more details about this product.

How is the waste fed into the machine?

Depending on the type and moisture content of the waste streams, the preferred method is to combine any wet and dry material first before feeding or pumping into the dryer. If the waste stream is already dry, an auger mechanism would be used to feed the boiler directly.

Can the S250 process wastewater that has a low solids content? What about grey water?

Yes, the JOP can process waste with up to 100% moisture content. However, solids concentrations less than 20% may require an auxiliary fuel source to provide the additional energy required to run the plant. Similarly, the S250 can be configured to process or pasteurize grey water with additional equipment.

Can the JOP work connected to a western style wastewater or sewage treatment system?

Yes, the JOP is capable of integrating with a western style system. This would be the ideal location for this type of application due to the fact that the S250 IS NOT designed to act as a standalone treatment system without additional dewatering and solids separation equipment.

When co-located at a wastewater or sewage treatment plant, the S250 would consume the digested or undigested sludge that is separated during treatment. This reduces transportation and further treatment requirements.

2. How much sludge is produced in Melbourne?

- D.B Lee WTP – 1092 tons per year
- Grant Street WTP – 748 tons per year
- Melbourne Total is 1840 tons per year
- Average daily Melbourne production is 4.7 tons per day
- The Melbourne sludge hauler is permitted to dump at 2 ranches (Whaley and Deseret). Landfill disposal would only be used in an emergency.
- Costs for the last 13 months: 416 trailers of biosolids, 30 cubic yards per trailer, \$23.82 per cubic yard over 13 months; Cost for the 13 months is \$297,274 or approximately \$753 per day for hauling sludge to ranches.

3. How much sludge is produced in Brevard County?

- North Brevard – 45 dry tons per year
- South Beaches – 644 dry tons per year
- South Central – 1766 dry tons per year
- Sykes Creek – 517 dry tons per year
- Total for all facilities is 2972 tons per year
- Average daily County production is about 8.1 tons per day
- Cost for disposal - \$588,000 per year (\$498,000 of that is tipping fees paid to the landfill)
- Daily cost to the County for disposal at landfill is approximately \$1611 per day.

4. **I reached out to the folks who brought Dr. Janicki here a few months ago.** It is unlikely that he will return just for us. However, a group expressing interest in such technology in our region has been working toward bringing him back.