



ESTECH USA the winner of the 2009 "Green Technology Award"

Community and environment friendly "Virtual Landfill"

A global solution from Ohio, USA

The MOD-3 System substantially reduces waste streams, enabling lower processing costs, significantly increase recycling rates, and improving the operation's environmental footprint; generates profits independent of subsidies but qualifies for tax and other credits.

Recovered biomass²energy

No harmful air and water emissions

Highest rates of recycling

Low electricity gen. cost next to fossil fuels

HISTORY of the AUTOCLAVE

The benefits of using pressurized steam have been known since ancient times. The use of autoclaves dates back to various cultures over 6000 years ago. The high-pressure steam autoclave was invented by a French scientist in 1879 to sterilize and disinfect medical instruments. Autoclaves are now commonly used in healthcare, laboratories, and commercial food preparation. Today, Estech USA's Mod-3 System utilizes high-pressure steam and mechanical forces in a rotating vessel to significantly alter the weight and volume characteristics of the municipal solid waste while sterilizing it.

During the process...

- The Mod-3 System uses recovered biomass to power the plant. Separated, sterile mixed plastics may be added to the biomass as fuel to increase the electricity production capacity
- 100% of waste is sterilized; all bacteria and viruses are killed
- Animal bi-products and co-incident medical waste are sterilized
- Glass products are broken into smaller fragments
- Most plastic products shrink and ball-up and are recycled or used with the biomass as fuel
- Metals are cleaned and labels are stripped off
- Biomass fibers from food, paper stocks, and lawn clippings are thermo-mechanically pulped
- Food and vegetable wastes are reduced to various fibers.
- Common household chemicals are hydrolyzed and detoxified

Through this process, the MSW is reduced by 80% by volume. The waste stream contents, now sterile, dry, and virtually odorless, are separated for recycling and electricity generation- fiber, metals, plastics, other misc. contents. A small mixed remainder (less than 4% of total) is sterile and is free of pathogens, litter, and decaying material that attracts vermin and flies. It is ground and used as landfill cover or other architectural fill.

HOW IT WORKS...

A Fibrecycle® Mod-3 plant contains:

- An inbound waste-tipping floor
- A main processing area with 2 steam autoclaves and pre- treatment and post-separation equipment
- Gasifier and a gas turbine electric generator, IGCC; modular system – 2MW modules
- The exhausts from the power generators and the plant air system are treated by the use of a wet electrostatic precipitator. The emissions from the Mod-3 plant meet and exceed the applicable US and EU emissions standards.
- In-process water testing and treatment plant; 100% of the processed MSW is tested for harmful contaminants and toxins
- Hazardous material segregation and isolation equipment
- And a shipping area for recyclables, an office area, maintenance shops, and a central control room.

Estech™'s proven and proprietary Fibrecycle® autoclave process is an elegantly simple and robust system that sterilizes, reduces, and sorts municipal waste.

The Mod-3 system uses off-the-shelf equipment where possible. Some such equipment requires modifications to be able to integrate into to Mod-3 system. Only approximately ¼ of the machinery is custom, produced by Estech's trusted contractors.

Mod-3 System produces electricity the cost of only 2x the cost of coal fired power plant much less than competing technologies, or wind and solar.

Each Mod-3 System is capable of capital repayment in less than 5 years dependent on geographical location.

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