

New technology in trash disposal

Is there a solution to the many landfill issues? What if there were a technology that is friendly to the environment, could handle virtually any type of waste, save land and allow for the recovery of energy? Solid waste treatment utilizing plasma torch technology accomplishes this and more.

Every day in 2005, U.S. residents, businesses, and institutions produced more than 650,000 tons of municipal solid waste, or about 4.4 pounds of waste per person per day. Approximately 60 percent of this waste went into landfills. This amounted to more than 140 million tons of waste sent to landfills during that year.

A landfill is a method of waste disposal in which garbage and trash are buried in low-lying ground. They often waste land and energy, are environmental hazards and are increasingly opposed by citizens living nearby. As for the so-called "modern" lined sanitary landfills, the U.S. Environmental Protection Agency states that "even the best liner and leachate collection systems will ultimately fail due to natural deterioration." This will result in leaching into nearby land and water. At best, liners only delay the leaching problem. Landfills emit methane and are one of the leading man-made contributions to global warming. Landfills also represent a major waste of energy. The U.S. Energy Act of 2005 recognizes municipal solid waste (MSW) as a renewable energy source. In fact, energy in annually generated MSW is nearly ten

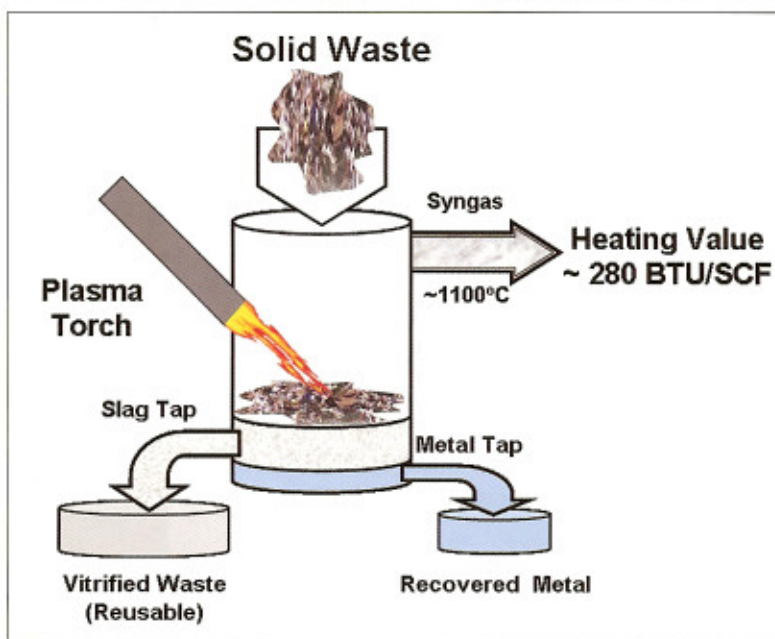
times that available from wind power.

The plasma torch is actually a mature technology. It has been around since the late 19th century. It is commonly used for welding, metal-cutting and metal-melting purposes. It was used to test the heat shield on the space shuttle during the 1960s. Since that time it has been applied to large volume metal-melting and solid waste treatment.

The flame emitted from a plasma torch exceeds 5,000 degrees Celsius, which is hotter than the surface of the sun. When applied to solid waste in an oxygen-starved vessel, it disassociates the molecules of the organic portion of the waste into basic elements and produces a clean synthetic gas, called syngas. The syngas has a thermal content about one-third that found in natural gas and can be used to generate steam or electricity. If used to produce electricity, the process generates between three and four times the electricity

needed to run the plasma torches. There is no burning in the process; it is not incineration.

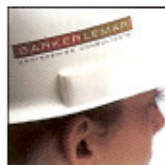
The non-organic portion of the solid waste is converted (vitrified) to an inert lava-like slag which can be used as an aggregate for construction. Metal can also be extracted from the slag or the slag can be converted to rockwool (or mineral wool, meaning fibers made from minerals or metal oxides).



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Currently, there are two successfully operating plasma waste treatment plants in Japan. One is a plant in Mihama-Mikata and handles 24 metric tons per day. The second plant is in Utsunomiya and has a capacity of 300 tons per day. It also provides solid evidence of successful plasma treatment of large quantities of municipal solid waste.

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Recently, St. Lucie County in Florida decided to construct, own and operate a plasma arc torch solid waste treatment facility. It will be operated as a profit-making facility. The system will handle 2,000 tons per day of generated solid waste and will also treat an additional 1,000 tons per day of solid waste in order to reclaim an existing

landfill. The plant will produce electricity for sale to the grid and steam for nearby industrial use. There are also plans for a plant in International Falls, Minnesota.

Options for utilizing this technology in Iowa are now beginning to surface. An organization called *wastenotIOWA, Inc.* is pursuing this method to end the need for landfills. In order to get the word out, the group will visit communities, political groups, colleges and service organizations to educate citizens about the possible environmental, energy recovery and economics opportunities of plasma torch technology used to treat solid waste.

St. Lucie County Commissioner Chris Craft said, "The plasma process is bigger than just the disposal of waste for St. Lucie County. It addresses two of the world's largest problems including how to deal with solid waste and the energy needs of our communities."

*This article was submitted by Charlie Kress of *wastenotIOWA, Inc.*, a non-profit organization working toward a landfill-free Iowa. For more information on this technology and this organization, go to www.wastenotiowa.org or call (319) 377-4207. Information can also be obtained by writing to *wastenotIOWA*, P.O. Box 11413, Cedar Rapids, Iowa, 52410.*



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