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A pre-gasification chamber is lifted by crane to be mounted on its base before being attached to a plasma enhanced melter, left, at Integrated Environmental Technologies in Richland. The plasma-based gasification demonstration plant is designed to process household garbage and turn it into fuel.

WASTE | Improvements over burning, storing waste in landfill

FROM PAGE B6

almost any kind of waste," said Rick Brouns, senior research manager at Pacific Northwest National Laboratory who specializes in waste treatment.

It's doesn't require any sorting and there's no secondary waste, he said.

The new technologies are better than other waste disposal methods: Burning and storage in a landfill, which either produce pollutants or contaminate ground water.

Many of the new waste separation technologies deal with challenges from landfill interests, said George Sterzinger, executive director of the Renewable Energy Policy Project in Washington D.C. This often can derail the commercialization process for new waste treatment technologies.

But PNNL's Brouns said the market eventually will sort out the cheapest and most efficient technology.

IET combined the vitrification technology developed at PNNL — where Surma and Lamar worked until about the mid 1990s — and plasma arc technology developed at Massachusetts Institute of Technology.

The Richland company, which started in 1995, holds more than 40 patents, Surma said. It developed its first prototype in 1997, which could handle about a half-ton of waste every day.

The company sold its first system — an enhanced version which could handle about four tons of waste a day — in 2000 to a private buyer in Hawaii.

The company, which employs 22 people, has so far sold about eight systems,

including two in Japan and one in Taiwan, which can handle up to 10 tons of waste daily.

The \$20 million system IET is building for Dow Corning plant will process about 25 tons of waste a day.

The company no longer sells the system, but installs and runs it for its clients, Surma and Lamar said. It has subcontracted the running of the Dow Corning waste treatment plant.

Once the business expands, the company may consider running the plant it builds in the future, Surma said.

IET represents a successful technological business that has managed to improve its product, tweak its business plan and raise equity funds, said Gary Spanner, manager of PNNL's economic development office.

Generally, it takes a long time to successfully commercialize a technology, but IET, which has often sought help from PNNL, seems to be on a sound footing, he said.

He said the company has at least four new waste treatment projects in the pipeline. "We expect to grow," Surma said.

► For more information, visit www.inentec.com and click on *Plasma Enhanced Melter Systems* to see a video that explains the workings of the technology.

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Growth through waste treatment

Richland company's technology is designed to convert hazardous wastes, garbage into clean fuels, molten glass

PRATIK JOSHI

HERALD STAFF WRITER

Soaring fuel costs and environmental concerns may help a Richland company market its waste treatment technology globally.

For years, Richland's Integrated Environmental Technologies (IET) worked to perfect a technology that converts garbage and hazardous wastes into clean fuels and molten glass while separating metals for recycling without producing harmful toxins.

And recently, the privately held company signed a contract with Dow Corning Corp. to set up a plant to recycle chemical waste at Corning's Midland, Mich., facility. Dow Corning

produces silicone-based materials, which are used in adhesives, sealants and personal care products including shampoos and conditioners.

It's the nation's first plasma-based gasification process plant to use an optimized form of high-temperature electrical heating, said Jeff Surma, president and CEO of Integrated Environmental Technologies.

The plant, which is expected to go online in late 2008, will be based on IET's patented Plasma Enhanced Melter technology that combines glass vitrification and metal melting processes to produce synthetic gas from which ethanol and methanol can be derived.

The plant will eliminate the need for annually transporting more than

6,600 tons of liquid hazardous waste, which will instead be turned into 12 million pounds of hydrochloric acid to



Surma

be used as raw materials by Dow Corning.

It'll also help reduce emissions, including carbon dioxide emissions, and lower the consumption of natural gas at the Midland facility by 400 billion BTU per year; the equivalent of heating more than 3,500 homes over the winter, said Dow Corning spokesman Jarrod Erpelc.

The Plasma Enhanced Melter uses plasma arcs to vaporize organic materials at 1,200 degrees Celsius or higher, Surma said. It operates on principles similar to an arc-welding machine and is the most efficient method of gasifying waste to produce ultra-clean synthetic gas, which also could be used as fuel.

This company is setting up a temporary demonstration unit at its Richland facility that will allow



Lamar

potential clients to see the gasifier working in conjunction with the company's patented technology, said Dave Lamar, vice president of engineering at Integrated Environmental Technologies.

Dow has helped increase the company's visibility in the market, Lamar said. The 10-year Dow contract is worth \$60 million to the company, Surma said.

Though there are at least a dozen major waste treatment technologies — which are used in several forms to treat wastes — IET's technology is "robust, versatile and can handle