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Environmental Waste develops way to break down tires



Chris Sweeney

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AJAX, Ontario—Environmental Waste International Inc. has developed a technology designed to break down tires and recycle their byproducts.

The Canadian company's reverse polymerization process reduces organic matter back to its byproducts using microwaves. In the case of tires, the microwaves pull the chains apart until they are reduced to carbon black, steel, oil and hydrocarbons for other use.

"The microwave applies energy directly into the volume of the material, and it's a very efficient way of reducing the rubber back to its constituent components," said Daniel Kaute, CEO and president of Environmental Waste International. "The components you get out of it, the carbon black and the oil, are very high quality."

EWS is working to find out where the byproducts produced from its recycling process would best fit in a production process. Once sales contracts are finalized for the byproducts, EWS has about 10 companies lined up to buy its process.

The company is targeting markets in Europe, Asia, South Africa and South America.

Kaute said EWS invested \$40 million over the last 20 years to develop this technology. To sharpen the technology, it invested \$8 million last year in a facility in Sault Ste. Marie, Ontario. The site eventually will employ 15 and have the capacity to process 300,000 tires a year.

"People have told me it is the only plant in the world where you can go and see a full tire go in at industrial scale and industrial rates and see the byproducts coming out," Kaute said. "That is a huge step toward commercialization."

He claimed the process is more cost-effective, safer and produces better byproducts than pyrolysis, which uses heat to break down the tire.

The level of heat in pyrolysis is significantly higher than that used by EWS' process, which according to the company has an effect on the quality of the product that comes out. Pyrolysis requires a higher degree of safety precautions because it either is done under vacuum or high pressure, he added.

Most pyrolysis processes require the tire to be broken into crumb rubber first; EWS' process eliminates this step. Kaute estimates that EWS' process generates about \$8 per tire, and that not having to break down the tires into crumb rubber saves anywhere from \$1 to \$3 per tire.

The technology has more uses than just tire recycling. EWS has found it can be used to sterilize medical waste efficiently. The company believes it can be used to treat biomass and clean up coal.

"The fantastic thing about this technology is that it is an enabling technology," Kaute said.

"We've developed over the years a number of applications for it. It is a risk as well because if you try to do too many things at the same time, you don't do anything right, which is why we are

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concentrating our efforts on the tires, because it has a very strong business case.”

EWS, with a current work force of 10, specializes in designing eco-friendly systems that break down organic materials.

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