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Friday, November 7, 2008

# Davis firm develops system to streamline steel production

Sierra Energy's technology can also be used to turn solid waste into fuel

Sacramento Business Journal - by [Celia Lamb](#) Staff writer

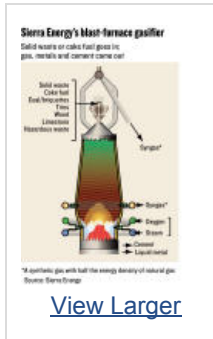
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A Davis startup wants to help companies turn garbage into energy and make steel more efficiently.

Sierra Energy Corp. has licensed a patent to make blast furnaces work better and hopes to sell the technology. The company is working on a deal to retrofit a blast furnace at a steel mill



owned by Shanghai Baosteel Group Corp. in China. Sierra Energy needs about \$3 million for the work; its president, Golden Capital Venture Funds partner Chris Soderquist, is recruiting potential investors.

Investors so far have put about \$1.5 million into the company, founded by Sierra Railroad Co. president Michael Hart.

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The technology builds on conventional blast furnaces, which “blast” air into a vessel that burns coke fuel at temperatures hot enough to melt ore. Sierra Energy’s process adds nozzles that inject oxygen and steam instead of air. The change would boost metal output as much as 40 percent while reducing greenhouse gas emissions, the company estimates.

Superheated organic materials turn into a gas, called “syngas,” that can be burned in a power plant to make electricity.

Molten metal runs from the furnace to a water bath and cools into cheap metal used to make toys, auto parts and other items that don’t require structural steel. Sulfur and other inorganic compounds in the furnace turn into a cement-like substance that can be used for construction, Hart said. “There’s nothing else left.”

That zero-waste promise has yet to be proven. Engineers with the former Kaiser Steel Corp., which went bankrupt in 1983, invented the process. They never had a chance to test it.

Sierra Energy licensed their patents. Margaret Wong, president of West Sacramento-based McWong Environmental & Energy Group, helped Sierra Energy link up with Baosteel. McWong will perform the retrofit, Hart said.

There are about 1,000 blast furnaces in China, and Sierra Energy could charge \$1 million per retrofit, Hart said.

A railroad executive might seem an odd candidate to start an energy company. Hart sees a market for short-line railroads to serve blast furnaces that vaporize solid waste. Each could handle about 5,000 tons of garbage per day, which would fill about 50 railcars. “This is a means of creating a whole new line of business for railroads.”

### Green bugs

Clark Pest Control has become the first company in the Sacramento area to receive a “green” certification by the National Pest Management Association.

The QualityPro Green certification requires companies to adopt an integrated pest management program. First they have to inspect a site and try non-chemical measures, such as trimming bushes that harbor rodents or sealing cracks that let in moisture and ants. If that doesn’t work, they can introduce low-toxicity pesticides. Conventional pesticides become a last resort, and they try to use as little as possible.

“At this point the QualityPro Green certification is geared to individual sites,” said Darren Van Steenwyk, Clark’s technical director. “We’re looking to implement this inspection-based service on a companywide scale.”

Pest-control firms typically use a handful of products regularly. Clark is looking at alternatives. “We’re looking at going away from synthetic pyrethroids and moving towards a botanical product,” Steenwyk said. Among the candidates: oils of clove, eucalyptus and thyme.

Pyrethroid exposure can make people’s skin itch or burn, and large amounts (way more than a pest-controller would spray around your home) can cause convulsions or knock people out for a few days.

But even the harmless-sounding botanical extracts can have some drawbacks.

“Sometimes the smell may be a little overpowering,” Van Steenwyk said. “The technology is definitely improving. But in certain circumstances they work, and in certain circumstances they don’t work.”

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