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Advanced Electron Beams poised to grow e-beam tech

By Kyle Alspach

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At [Advanced Electron Beams Inc.](#) in Wilmington, CEO Mitch Tyson said the first phase of his company's electron emitter rollout is kicking into high gear.

"This is the year that really we should be taking off," said Tyson, who expects revenue to more than double this year compared to 2009, while the company's 50-person staff could double within 12 to 18 months.

In this first phase, the emitters are being sold for sterilization purposes in the food and beverage packaging industry, as well as the pharmaceutical industry. The company has 12 customers in those industries – equipment makers who are integrating the electron emitters – up from seven customers a year ago, Tyson said.

But there is much more to come. Tyson already knows what the three next phases could be for the electron emitters, which uses a stream of negatively charged particles, projected at high speeds, to initiate chemical reactions or break chemical bonds.

The technology has countless applications, all of which allow for less energy use and a lower environmental impact, he said. In sterilization, the electron emitters are often replacing chemical processes – which require massive amounts of chemicals and water –

or energy-intensive thermal processes, Tyson said.

"In surveys we've done of the food and beverage packaging industry, we've found that they now are all aware of e-beams, and they all see e-beams as the technology of the future," he said.

As for the next phases, Tyson expects the company will first be able to market the electron emitters for curing of inks and other coatings, as well as for making plastics and polymers stronger. Those applications are currently in the pilot phase with customers, he said.

The third phase is expected to be using electron beams to fight air pollution, he said. The beams have the ability to destroy volatile organic compounds by breaking up long-chain hydrocarbons, Tyson said. "The solvents that are used in industrial processes are typically burned – they use a thermal process to break them up," he said. "We can use e-beams to break them up, and it uses much less energy." In May, the U.S. Department of Energy awarded the company a grant of nearly \$300,000 to research that application.

In both the curing and air pollution applications, electron beams use 10 to 20 percent of the energy required in the traditional approach, Tyson said.

Beyond those applications, [Tyson sees a number of future markets](#). They include: food safety (killing E. coli and other contaminants), homeland security (neutralizing anthrax) and oil production (changing heavy oil that comes off of tar sands to make it pumpable.)

"Electron beams are an incredibly useful form of energy, because it really does activate chemical changes very efficiently," he said. "There are a ton of other things that it can do."

Tyson says that while there are companies producing large electron-beam emitters, his company has no direct competition in the area of compact, low-voltage emitters.

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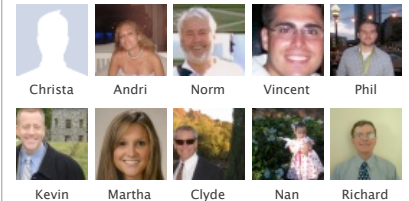
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The company, founded in 1999, has attracted plenty of venture capital, which has totaled \$50 million to date. The company most recently pulled in a [\\$14.2 million Series C round](#) last summer, led by Flagship Ventures. Other investors are GE Energy Financial Services, Atlas Venture Partners, General Catalyst Partners, RockPort Capital Partners and Agman Partners.

Previously, Tyson was the CEO of semiconductor equipment maker PRI Automation Inc., which he brought through an initial public offering and eventual acquisition by Brooks Automation Inc.

When it comes to [Advanced Electron Beams](#), Tyson said he believes the company "would make an outstanding IPO" – at some point.

"A company has to reach a certain critical mass of revenue and profitability and predictability," he said. "I think in a couple of years we're going to be there."

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