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Crystal IS makes key purchase

Move will help company develop ultraviolet LEDs widely used in high tech

GREEN ISLAND -- Crystal IS has bought two new \$1 million machines that will help it take advantage of what could become a lucrative market for what's known as ultraviolet light emitting diodes.

The small ultraviolet LEDs the Green Island-based company is developing may one day be used in a variety of applications, from water purification devices in homes to bio-agent detectors in airports.

An LED is a semiconductor that emits certain types of light when an electric current flows through it.

The company, which specializes in making aluminum nitride wafers being tested for other types of electronics, took a huge step toward full-scale manufacturing of its own type of ultraviolet LED device when it recently bought two organometallic vapor phase reactors.

The two machines became full operational only a few weeks ago, and the company, which currently employs 25 people, believes ultraviolet LEDs could help it increase annual revenues from a few millions dollars to many tens of millions of dollars within the next five years.

"This takes us to another level," said Tim Bettles, the company's vice president of business development, sales and marketing. "Before this, we were just focused on being a materials manufacturer. This moves us up the food chain."

Bettles said that ultraviolet LEDs are also being developed by others, but they typically use sapphire as the substrate upon which they are built, compared to Crystal IS, which uses aluminum nitride.

He said an ultraviolet LED made of aluminum nitride has a higher power output and a longer life span than those made with sapphire, making it more desirable, the company hopes.

"They last a lot longer," he said.

Crystal IS is planning to provide samples of its ultraviolet LEDs to manufacturers later this year, and it hopes that it could move into production after that.

The company had a special visitor on Friday. U.S. Rep. Michael McNulty, D-Green Island, visited Crystal IS's headquarters on Cohoes Avenue to see the two new reactors himself. Crystal IS has received more than \$5 million in federal research grants and contracts since 2003, and McNulty said he will seek more money.

"I live a couple of blocks from here," McNulty said. "We're really proud of having them here. We're going to try to get them additional resources." McNulty said one of the benefits of ultraviolet LEDs is that they are a clean technology that don't contain mercury like other light sources.

Bettles said Crystal IS, which was founded at Rensselaer Polytechnic Institute, bought the two machines with investor money. Last year it received \$10.6 million from a number of investment firms and the New York State Common Retirement Fund.

Until now, the company had to use organometallic vapor phase epitaxy reactors at RPI and at the University at Albany to develop its ultraviolet LEDs.

To make ultraviolet LEDs, Crystal IS takes two-inch aluminum nitride wafers and deposits microscopically thin films of special material onto them using the reactors. The company says it's analogous to spreading tomato sauce and cheese onto pizza dough, except that the thickness of the layers is controlled on the nanometer scale. A nanometer is one billionth of a meter.