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Where Biology Meets Technology
Seahorse Bioscience Engineers a Success Story
By George O'Brien
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Seahorse Bioscience became part of the landscape in Western Mass. six years ago, when the company needed an injection-molding specialist to produce a sophisticated component for an instrument that would measure bioenergetics in living cells, and found one in Chicopee. It later acquired and expanded that operation, and now has 50 employees involved in the design, production, and testing of those instruments and related parts, with continued strong growth anticipated. This is an intriguing success story, one the region's economic-development leaders would like to replicate in other emerging sectors.

Steve Young was searching for some words to describe, in general terms, what's happened since an outfit called Seahorse Bioscience bought Innovative Microplate Inc. — the Chicopee-based injection-molding company he founded in 1990 — six years ago.

"It's been … a wild ride, a very exciting ride," said Young, now vice president and general manager of Seahorse, using a voice that blended enthusiasm with a trace of understatement that is certain understandable.

Indeed, it has been, and by most all accounts, this ride is just starting.

Seahorse, founded by Jay Teich, an engineer and serial entrepreneur of sorts, manufactures bench-top instruments and sophisticated consumable kits that are used by scientists to measure bioenergetics in living cells, specifically the rate at which cells burn oxygen, produce acid as a waste product, and generate carbon dioxide. Scientists using XF instruments with the Seahorse logo on the side are performing critical research and drug discovery in the areas of diabetes, obesity, cancer, cardiovascular disease, and neurological disease, and to determine the toxicity of new drug candidates. Some of that work is being carried out at the Pioneer Valley Life Sciences Institute (PVLSI) in Springfield.

Seahorse, which is headquartered in Billerica, has been growing at a 50% clip for the past several years — at a time when many companies in this field are downsizing or holding their own — and expects that pace to accelerate in 2011, said Teich, as demand for both the instruments and the plastics consumables used in testing

grows, while the company also continues a steady stream of work for a number of original equipment manufacturers (OEMs).

Seahorse, which logged about $13 million in sales in 2009, is projecting more than $20 million for this year, and could easily pass the $30 million mark for 2011, said Teich. The workforce in Chicopee, just a few dozen not that long ago, is now approaching 50, with more hiring expected in the years ahead. Meanwhile, the company has expanded within its space in the Westover industrial complex in Chicopee, and now occupies some 35,000 square feet, with additional space to grow.

But this is becoming a global enterprise, with a sales office in Copenhagen, Denmark to serve the European market, and a new office in Shanghai set to open this fall.

The company is starting to garner headlines and accolades — it will be honored on Nov. 23 with a Team Massachusetts Economic Impact Award from the public-private partnership known as MassEcon — and is fast becoming a poster child of sorts for the kind of company area economic-development leaders want to attract and grow in Greater Springfield.

What's next for the company, other than projected continued growth, is uncertain. An initial public offering, while possible, is not likely for the foreseeable future, said Teich, adding quickly that the main goal moving forward is developing more partnerships such as the one with PVLSI, which, in turn, lead to more applications for the company's instruments.

"We're just focused on growth, and we'll see where that takes us," he explained, adding that one likely route is to take the company to a much larger size and then sell it. "An IPO is not that likely, but it's not impossible; and if we continue to grow as quickly as we have, we would get to be large enough so that we could do an IPO and go public."

For this issue and its focus on the region's manufacturing sector, BusinessWest puts Seahorse Bioscience under the microscope. The image on the glass is that of a company on the rise and with enormous upside potential for continued growth.

Art and Science

As he offered BusinessWest a tour of the Chicopee plant, Young introduced a number of employees, many of whom have been with the company only a few months. Among them was Brian Moynihan, engineering manager for the company's instruments division, who came to Seahorse amid some turbulence and downsizing at Prima Corp., and David Sirand, instrument assembly supervisor, who most recently worked for an aeronautics parts manufacturer in Georgia. He was so new his business cards hadn't come in yet.

The number of employees and their relatively short tenures with Seahorse are clear signs of the profound growth at the company. This rapid rise results from essentially being in the right place at the right time and with the right products, said Teich, who

has now scripted several entrepreneurial success stories.

Over the past 30 years, he's worked within many fields, including the defense industry, industrial products sector, and now medical devices, and, before Seahorse, ran a company that manufactured infrared cameras for a wide variety of customers, including the military, police departments (which use them in helicopters), the automotive sector, industry, utility companies, and others. Now called Flir, which is the byproduct of bringing three different companies together, the venture, which Teich sold in 1999, today does more than $1 billion annually in sales worldwide.

Teich and several partners took some technology from the Flir venture and spun off a startup, which would become Seahorse, in 2000. The venture was spawned by a project being handled within Flir for Glaxo Smith Kline, he explained, adding that the initiative — developing an instrument that would measure cell metabolism — would become the foundation from which Seahorse has grown.

"At the time, we were using infrared cameras — we were looking at the heat that cells produce — and that's the connection," Teich explained, adding that he and others raised $6.5 million in venture capital to bring that product to the marketplace.

Over the next several years, however, the methodology changed, from measuring heat to measuring the rate at which cells burn oxygen, produce acid, and produce carbon dioxide.

As it went about designing instruments that would do all this, Seahorse assembled what Teish called a "customer design team," comprised of 13 scientists for seven of the world's leading pharmaceutical companies, which contributed significantly to the design — and, indirectly, made Seahorse part of the manufacturing landscape in Western Mass.

"One of the things they told us very early on was that they didn't want to have to clean their instrument," Teich recalled. "So we decided to design most of the product around a plastic consumable; we wanted to make sure that anything that got wet — the cells, the drugs, and the liquid the cells live in, called a medium — was inside the disposable plastic part.

"And when we did that, we recognized that we had a sophisticated plastic part to make," he continued, adding that the search for a partner that would make that part ended in Young's office at Microplate Inc., which had developed a reputation in the industry for taking on complex assignments.

Fast-forwarding a little, Teich said Microplate was contracted to make the consumables, and, when an opportunity arose to acquire the company, Seahorse did.

Eventually, the Chicopee operation added production and testing of the instruments to its roster of duties, and the operation was moved into 20,000 square feet at a mixed-use building on Griffith Road in Westover Airpark North, and it has since expanded to 35,000 square feet.

With that additional space, said Young, the company can more effectively produce and test products that include two major lines of instruments — the XF96, which, as the name suggests, can test 96 different samples simultaneously, and the XF24, the so-called 'workhorse' instrument that uses a 24-well format.

The company has sold more than 250 units (selling for as much as $100,000 each) in 22 countries worldwide to date, he continued, but projects to sell close 200 over the next year alone.

View to the Future

Today, the Chicopee operation continues to make a wide variety of components for a number of different OEMs, said Young, but the majority of what goes out the door has the Seahorse name and logo on it.

And that volume is expected to increase as the company continues to develop new relationships with major pharmaceutical companies and research facilities such as the PVLSI, and adds more business overseas. In anticipation of continued growth, Seahorse raised $5 million in growth financing from a number of sources earlier this year and used it to double the sales force, add to the team of scientists working in Chicopee and Billerica, and build out the additional space in Chicopee.

"We have a complete middle-management team that we put in place this year," said Teich, adding that the company has also opened a sales-support office in Copenhagen and recently opened its facility in Shanghai to capitalize on what should be some intriguing opportunities in that fast-growing nation.

"Most large pharmaceutical companies are opening up shop in China, and these are our customers," said Teich. "And there's also a lot of money, more than $2 billion, that the Chinese government puts into medical research now, and so there's a very nice academic market as well.

"Initially, the Chinese government said that, if someone wanted to sell drugs in that country, they had to manufacture there," he continued. "Now, they're saying, 'if you want to sell drugs in our country, you have to do R&D here,' so there's a migration of people and research into Chinese laboratories, so there are some great opportunities for us; I would expect that, within two years, 10% of our worldwide sales will be in China, and that will probably grow because, while it's not the largest market, it's the fastest-growing market."

Overall, the XF product line has been growing at an 85% clip the past few years, Teich told BusinessWest, adding that he expects this pace to continue and likely accelerate, thanks in large part to new collaborations with entities like PVSLI, which will yield new applications for the instruments and accompanying greater demand for the consumables.

"We just doubled our sales force, so there are parts of the world that were completely uncovered that are now covered, and over the course of the next year,

we'll get a lot of reward out of that," he explained. "At the same time, this is a product that has a lot of different applications, and every time we develop a new application, it grows the market."

As just one example, he cited work taking place at Boston University on pancreatic eyelets, problems with which can lead to diabetes.

"These are a very unique kind of cell," he noted, "and we developed with them a new plastic consumable that is working well for them and has become a big new product for us."

At PVLSI, he continued, Seahorse is working in collaboration with research scientist Nagendra Yadava on an instrument that will measure carbon dioxide production as part of ongoing research into age-related diseases.

"There are diseases such as Parkinson's, where the root cause of that affliction appears to be a breakdown in the ability of cells to produce energy — they're starved for energy," he explained. "Neurons are the cells in the brain that communicate signals, and it takes a lot of energy when the neurons fire and make a connection. Some of these cells have enough energy to survive, but not enough the do their job, to fire and transmit signals. So our technology is ideal for exploring that."

Similar research is ongoing at PVLSI regarding diabetes, he said, adding that Seahorse now works with more than a dozen facilities like the institute around the world, and intends to build on that base in the coming years.

Celling the Concept

Young told BusinessWest that there have been more than 100 major research papers published utilizing information gained from using Seahorse instruments.

That statistic shows that the company is more than just a regional manufacturing success story, but also a major contributor to progress in the fight against a number of diseases.

This progress is a major part of that wild ride he talked about, one that is certain to have many more exciting twists, turns, and positive spins — for the company and this region as well.