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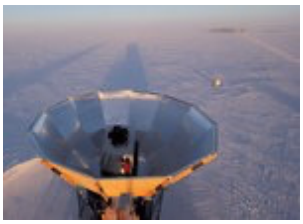

Jed Bothell, 45, stands next to a research model of an aluminum Vivafresh vacuum chamber May 4 at Atlas Technologies' Port Townsend shop. The chamber preserves perishable foods and flowers for later sale or use. Bothell is vice president and co-founder of Atlas Technologies. Photo by Nicholas Johnson

Posted Tuesday, June 2, 2015 8:30 pm

Jeff Noedel Portfolio
Newspaper Article

By Jeff Noedel Contributor

Jefferson County's major manufacturer of scientific-related products is fresh off its largest project yet.

Atlas Technologies, with 17 employees and located in Port Townsend's Glen Cove Business Park, has managed to become a leading supplier to some of the most fascinating and important physics research projects in the world. Atlas' products are also vital to the manufacture of other high-tech products, such as computer chips and solar panels.

"We're in the vacuum business," quipped Dick Bothell, Atlas Technologies president. "Not vacuum cleaners, which is what most people assume."

Atlas makes custom vacuum chambers for other manufacturers and for government-funded research projects. It also makes parts for sophisticated vacuum chambers. It sells a few custom chambers a year; the backbone of its business is supplying smaller parts, selling hundreds of those parts each month.

Customers from all over the world depend on Atlas, with more and more businesses learning about Atlas thanks to a new network of sales reps being built by marketing director Allegra Bothell, Bothell's daughter-in-law.

Bothell, 73, and his son Jed, 45, started Atlas in 1993.

"We started with a file box in the boatyard in a broken-down wooden boat," Dick Bothell recalled of the tug named Atlas at the Port of Port Townsend.

They upgraded after a few years to a shipping container in the woods outside of town, and in 1998 moved to Glen Cove outside the city limits, where they bought and have since expanded a 12,000-square-foot, five-story complex.

When asked why he decided to found Atlas, Dick Bothell said, "I had a job and they fired me!"

ATLAS FLANGE

At a time when stainless steel was the preferred medium for the vacuum chamber industry worldwide, the Bothells took note of groundbreaking research that was proving aluminum to be superior. Stainless steel injects contaminants

into vacuum chambers; aluminum is cleaner. But aluminum is also soft. The solution was to explosively bond aluminum to stainless steel.

When two otherwise incompatible metals can't be welded by conventional means, they can be "explosive bonded," literally welded together in a controlled explosion.

"[Explosive bonding] was first observed in World War I when bullets were being lodged in the sides of tanks, and they thought, 'What the heck is going on?'" said Jed Bothell.

Atlas does not do explosive bonding in its Port Townsend plant. It sends its bonding work out to subcontractors, who do that work far from population centers.

The Bothells' first invention using this new process was a flange, a ring about 8 inches in diameter. And this became one of their two patents. They have three more patents pending.

"The development of the Atlas bimetal flange was a huge improvement to the performance of these systems and helped make working successfully in aluminum a reality," Dick Bothell noted.

Today, Atlas is pushing the envelope from "extreme high vacuum" capabilities to "ultra-high vacuum." Jed Bothell said Atlas is moving toward degrees of manmade vacuum that have never been seen before.

CUSTOM CHAMBER

In late November 2014, Atlas shipped out its largest aluminum vacuum chamber yet, now being used by the Ohio State University's (OSU) High Density Physics research group for its Scarlet laser project.

The Scarlet laser is one of the country's most powerful lasers outside a national lab, according to OSU's High Energy Density Physics program. The existing pulse laser has an output that exceeds 400 trillion watts, more than 300 times the output of the entire U.S. power grid, concentrated into a tiny fraction of a second.

The laser's output is boosted when the laser is installed inside the Atlas chamber. In high-intensity laser-plasma interactions, laser energy is transferred into intense radiation sources, including X-rays, γ-rays, and electron, positron, proton and neutron beams. The applications span a wide range of fields, from medicine to inertial confinement fusion.

Researchers use the intense pulses to study proton beams for cancer therapy, extreme states of matter for learning about the interiors of gas planets, and even antimatter, according to OSU.

"They are very, very excited about what they received from us," noted Dick Bothell referring to the vacuum chamber that's been in use for about five months.

Bothell holds a degree in industrial design. He thinks of himself as an inventor and an entrepreneur, not a scientist.

It's Jed Bothell who is the resident scientist, or at least is scientifically minded. Armed with an unlikely degree in anthropology, Jed's curiosity about science runs deep. Wearing cargo shorts and a T-shirt to work, the Atlas vice president lights up when he talks about his company's involvement in linear particle accelerators and large cyclotrons. Jed says things like "What's cool is if you think of the molecules in a cubic centimeter of space."

It's an effective partnership: Dick Bothell's wisdom and business acumen and Jed Bothell's high energy and passion for science.

LATEST PROJECT

The successful implementation at OSU has led Atlas to connect with a nongovernmental company in the Czech Republic to provide a much larger aluminum chamber. The Scarlet laser chamber is 8 feet in diameter; the next project is to be 15 feet in diameter, which means triple the volume.

The project's potential has led Atlas to take on two business partners in Oregon, which have the speciality equipment and facilities where the largest components would be built. "All the engineering and design would be in Port Townsend, and as many of the components as possible would be done here," Dick Bothell noted.

"The main frame and parts that are bigger than we can handle would be done in Oregon."

VIVAFRESH SYSTEMS

In 2010, Atlas Technologies delivered its first vacuum chamber, custom built using a 40-foot steel shipping container and initially directed at the fresh flower business. Vivafresh Systems is promoted as a leader in vacuum freshness technology, with as much as 10 times greater post-harvest handling time for fresh plant and animal products, without chemical treatments.

Since then, a variety of research has been and is being conducted in places such as California and Australia, and talks are under way with other companies for a variety of uses.

"It's really still the beginning," Dick Bothell said of the Vivafresh technology. "There is a lot of work to be done in the next couple of years, but a lot of promise."

HARD TO EXPAND

The company cannot expand any farther on its property, and acquiring a large, relatively flat piece of land with power, water and sewer access is not easy in Jefferson County.

Dick Bothell said the company has thrived "without any encouragement" from city or county officials or business leaders, and believes that industry is undervalued.

"This is a tourism town," Dick Bothell said. "It's the main focus."

"Thank God we have the mill," he noted. "They brought their own power and their own water here. If it wasn't for the mill, this town wouldn't exist. They built the water line."

Both Dick and Jed Bothell say their location in Glen Cove leaves a lot to be desired.

"We're on five different levels because we are in an industrial park built on the side of a hill," said the elder Bothell.

Jed said of business-park politics a few years ago, "We had a rough time because we were in the industrial park, then out of the industrial park, then back in. There was a schism. And the industrial park gets populated with businesses that are not really industrial, and there's only so many acres. The number of acres devoted to industry in this county is ridiculously small. But industry is a nice alternative economy that can support some people."

The Bothells believe Port Townsend does not have a big pool of skilled labor from which to hire. Many key Atlas employees commute from Clallam County.

"It's hard to recruit people to move here because they often worry the spouse will not be able to find a job," said Allegra Bothell. "The real estate is expensive. This is not a place that easily attracts young working professional people with kids." Despite the challenges they perceive in operating Atlas in Port Townsend, Dick Bothell said, "I doubt the business will move."

And is 73-year-old Dick Bothell thinking of retirement? "No, I'm still having fun," he said. "I like the work, the very interesting people we work with, and the interesting things we're doing."