

Aubrey Group

Aubrey's Technical Prowess

Aubrey Group gives medical device start-ups a fast path to the market. BY CHRIS PETERSEN



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The Aubrey Group develops complex medical therapeutic and monitoring equipment for start-up companies.

CHARTING THE SUCCESS of Aubrey Group is as simple as looking at the company's various facilities through the years. Founder and CEO Vytas Pazemenas says he started the company in his bedroom and garage in 1994, and since then has moved it in and out of three different facilities before settling into its current 43,000-square-foot location in Irvine, Calif.

The firm develops complex medical therapeutic and monitoring equipment for start-up companies. Among the devices the firm has developed are blood pumps for patients awaiting heart transplants, monitors that measure heart rate and respiration rate without direct contact with the patient, and heart muscle treatment devices that eliminate heart flutter. Aubrey Group specializes in devices for cardiovascular applications, Pazemenas says, but the firm has also developed many other types of devices, such as a portable artificial kidney, a mutant gene detection system, and a device for destroying precancerous cells in the esophagus.

Not only does Aubrey Group tackle engineering and manufacturing of such complex and challenging devices, but it also does this primarily for companies that are just getting started in the medical industry. "Our customers are mainly start-up companies, medical

COMPANY PROFILE:

Aubrey Group

- ▶ www.aubreygroup.com
- ▶ **Headquarters:** Irvine, Calif.
- ▶ **Employees:** 70
- ▶ **Service:** Medical device development, manufacturing
- ▶ **Vytas Pazemenas, President/CEO:** "We are competent in a number of technologies, so we can handle a broad set of design challenges."

An Extraordinary Background

Aubrey Group founder Vytas Pazemenas says he understands the needs of his firm's clients – medical device start-up companies – because he has been in that position in his own career. Before using his bedroom and garage as the firm's first facility, however, Pazemenas followed an interesting path to his current position.

Born in Lithuania, Pazemenas escaped Russian occupation during World War II and eventually came to Pennsylvania in 1949. While still in high school, he founded a television repair business and later served as a machine gunner in the Marine Corps. He studied electrical engineering and worked for Sylvania Electronic Systems and even served as an engineer on military bases during the Vietnam War.

In 1976, Pazemenas joined Oximetrix, a medical start-up firm based in Silicon Valley, Calif. After that firm was acquired by Abbott Laboratories, Pazemenas held positions such as director of design engineering and vice president of research and development with several medical firms. When his previous job was eliminated during a merger, Pazemenas found the inspiration to form his own medical device engineering and manufacturing firm.

device start-up companies," Pazemenas says.

This means that Aubrey Group must not only be highly skilled at the nuts and bolts of its work, but also in the intangibles of working closely with fast-paced, cash-conserving start-up companies. Pazemenas believes that close working relationships with its start-up clients are critical to success.

Broad Expertise

The technical prowess of Aubrey Group, however, is what makes everything it does possible. Pazemenas says the firm has some of the most diverse capabilities in the industry. "We are competent in a number of technologies, so we can handle a broad set of design challenges," he says. "We have physicists, we have biomedical engineers, we have systems engineers and they're used to dealing with complex systems."

The firm's engineering expertise runs a gamut of disciplines, from software to fluidics. Pazemenas says the company's mechanical engineers are capable of handling sophisticated analyses of fluid flow,



thermal effects, material stresses, and other analytical and simulation tasks – skills that are often needed at the Aubrey Group.

“These are complex devices, and their design requires a whole set of engineering disciplines,” he says.

Napkin Inspiration

The cocktail napkin is the mythical starting point for many brilliant business ideas, and Pazemenas says Aubrey Group helps start-ups take their ideas from napkin to the production floor. The firm has been contacted by start-ups while their ideas were still in the napkin stage.

“A start-up company calls us and asks us if we would be willing to develop this device for them, so we talk to them, they usually visit us and take a look at the facility, and talk to staff,” Pazemenas says. From there, Aubrey Group develops a formal proposal and a rough estimate of the cost of the project. If both sides agree to

the terms, the firm begins work.

Case Study

One example of how Aubrey Group’s process works is the cardiac ablation system it developed for start-up Epicor Medical, which was later acquired by St. Jude Medical Inc. Epicor delivered the original requirements to Aubrey Group in 2000, and the firm spent two years developing the clinical test units.

The product was developed to block the currents that create heart flutter, or atrial fibrillation. These are dangerous because they may cause blood clots to form. A ring of ultrasound transducers is wrapped around a patient’s heart. These emit high-intensity sound that treats the heart muscle so that it does not conduct these currents. Before, the most effective cure for atrial fibrillation was the Cox-Maze procedure, which involved incisions into the heart muscle and required a very high level of

skill from the surgeon.

A major problem encountered by Aubrey Group’s 13-member team, which included Pazemenas, was that under some conditions power could be reflected back from the transducers to the amplifiers and damage them. Since it was not possible to adjust power fast enough to avoid damage, extensive testing and some changes to the design were necessary to solve the problem.

The production systems were completed in 2004, and, today, the system is in use in hospitals in Boston, Chicago, Houston, Kentucky and North Carolina. Aubrey Group continues to provide support for St. Jude as it refines the product.

Start-ups will continue to turn to Aubrey Group for help, which gives him reason to be optimistic about the company’s future. “There’s a general, overall trend to outsource product development,” he says. ■

