



T&G Staff/MARK C. IDE

Greg Cipriano, vice president of business development at Protonex Technology Corp., holds a lightweight fuel cell.

Powering tomorrow's warrior

By Jim Bodor
TELEGRAM & GAZETTE STAFF

SOUTHBORO — Today's soldiers go into battle with more than a weapon, a backpack and a few meals-ready-to-eat.

Modern soldiers are just as likely to carry a cell phone, a laptop computer and even something called a "warfare physiological status device," which records vital signs and can be used to detect exposure to biological agents.

All of these devices require power, which means today's soldiers also carry batteries everywhere they go, usually distributed in "bricks" that weigh about 11 pounds.

A Southboro company, however, has developed a lightweight, portable fuel cell that it says can offer soldiers more long-term power without weighing them down with batteries.

Protonex Technology Corp., founded by three former fuel cell researchers at

Protonex makes small, man-portable, field-ready fuel cells

Protonex Technology Corp.

Headquarters: 153 Northboro Road,

Southboro

Founded: 2000

Chief executive officer: Norman Strate

Employees: 12

Sales: Not disclosed

Financing: More than \$1 million in venture funding from three investors.

Product: Lightweight, portable fuel cells.

Source: Protonex Technology Corp.

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the defense contracting firm Foster-Miller Inc. of Waltham, has created the fuel cells, which weigh about 1.5 pounds each and can generate up to 1,000 watts

of electric power.

The company also has refined the manufacturing of such fuel cells to reduce the amount of labor required, lowering the cost. Protonex's customers include the Army, Navy and Air Force.

"These are man-portable power packs that can replace batteries," said Greg Cipriano, the company's vice president of business development and a WPI graduate. "The military is one of the largest consumers of batteries. They use just a phenomenal amount. We've created a power pack that replaces that."

Protonex was founded in 2000 by former Foster-Miller employees Paul Osenar, Mohammad Enayetullah and Richard M. Formato. After using federal grants to fund their research for about two years, the company opened up shop in a small facility off Route 85 in Marlboro.

This month, flush with its first round of venture capital funding of more than

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\$1 million, Protonex moved into a 12,000-square-foot office and manufacturing space on Northboro Road in Southboro. Company officials declined to specify how much venture capital the business received in its first round of funding, which was announced March 16.

Protonex has 12 employees, but hopes to grow to 50 within two years.

The company's fuel cells, which are about 4 inches long, 2 inches wide and 2 inches deep, use methanol or various chemical hydrides to generate electricity.

"The military has created a lot of nifty gear for soldiers to use, but not a lot of work has been done in how to power that gear," said Mr. Osenar, the company's chief technology officer.

At the same time, widespread adoption of fuel cells has been hindered by the high cost of manufacturing them, Protonex officials said.

"Before now it required a lot of precision work, highly skilled assembling and a lot of labor," Mr. Cipriano said.

Protonex has devised a way to automate the manufacturing of the fuel cells, removing those labor-related costs.

"We've taken on the nonglamorous manufacturing and product develop-

ment issues," Mr. Osenar said. "It's very tempting to say, 'Well, when we make 20 million of these, these issues will work out.' But the fact is, you have to work them out before that point."

The military is keenly interested in the development of such technologies, said Jerry Whitaker, spokesman for the Soldier Systems Center in Natick.

"We are very interested in fuel cell technology," he said. "We have soldiers being fielded with computer systems, warfare physiological status devices — there's a whole host of electronic technology that we can provide to soldiers to enhance their survivability and capability. However, the logistics of battery technology is such now that it's a major challenge for us."

That demand from the military should fuel Protonex's growth, Mr. Osenar said. While fuel cells have yet to be widely used in autos and electronics, portable fuel cells fill a specific need, he said.

"It's a question of 'like to have' versus 'need to have,'" he said. "In the world of autos and laptops, fuel cells would be neat to have. In terms of the military, this is a need to have."

Protonex is studying ways its fuel cells can be used in commercial settings as well.

The devices, for instance, can be attached to ocean-going data-collection buoys or weather-monitoring stations. They also can be used to provide power to security systems or other hard-to-reach devices that need power for up to 12 months.

The company is looking at exporting its fuel cells to European companies that make electric scooters, which are popular in high-population European cities, Mr. Cipriano said.

"One of the major barriers to fuel cells has been the high cost of making them because of the careful hand assembly that is required," said William C. Osborn, managing director of Commons Capital of Brookline, an investor in Protonex. "They have a way of doing it in one step, very fast."

The devices require far less fuel than larger fuel cells, and Protonex has gotten a good response from military customers who need the devices, Mr. Osborn said.

Protonex's other investors are SAS Investors of New York and Solstice Capital of Boston.

"They're very commercially focused; they're one of the few fuel cell companies that are," he said. "There are a lot of hurdles to fuel cells, but they're on top of them all."