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01 Nov 2006 | 05:00 GMT

Crowning the Clean Tech Stars

Can a prize-granting contest spur the development of technology that helps the environment? The winners of this year's California Clean Tech Open sure hope so

By **Tekla S. Perry**

Last November, two electrical engineers attending a seminar in Palo Alto, Calif., on environmentally beneficial technology decided that they personally could make a difference. Laurent Pacalin and Michael Santullo didn't have money to invest or a big company behind them, but they had an idea: they would hold a contest.

In January, they started raising money with the help of the MIT Club of Northern California, and in March, they announced the establishment of the California Clean Tech Open, in Palo Alto, with US \$500 000 in prizes. They brought in advisors and judges who had themselves launched new technologies and got San Francisco Mayor Gavin Newsom to sign on as host of the launch.

Though the contest was limited to projects in five categories of environmental technology, backed by entrepreneurs living in California, it drew some 200 entries, 43 of which made the first cut, in June. The finalists spent the summer fine-tuning their business plans with help from the competition's volunteers, and on 26 September, five winners emerged. For each one, the prize may mean the difference between success and failure.

Take Dave Culp, a mechanical engineer who has been obsessed with kite power for 28 years. He designed and patented an early kiteboard—a surfboard pulled by kite power—and built a kite sail in 2001 for BMW Oracle Racing's America's Cup sailboat. His company, called KiteShip Corp., in Martinez, Calif., now plans to build kites as big as 5000 square meters.

A helium-filled central body helps the pilot launch the kite and keep it aloft. In a favorable wind, the wings fold out to a span of 106 meters, fill up with air, and pull the ship. In calm or contrary winds, they fold in against the helium body, and the ship tows the kite.

Jeremy Walker, a spokesman for the company, calculates that a kite can cut the fuel consumption of a large commercial ship by 10 percent—that's about 2 million gallons of fuel a year, worth more than \$2 million at today's prices. One such kite, he says, would improve air quality as much as replacing every car in California with a hybrid vehicle.

By winning in the transportation category, KiteShip got a \$50 000 cash prize, donated by Lexus, which will go toward hiring an additional research engineer and filing a raft of provisional patents. The legal services included in the prize package will also contribute to the patent push, which is aimed at making the company more attractive to investors. KiteShip is trying to nail down several million dollars in an initial round of investment; if the company is successful, it plans to bring out the first commercial products in the second half of 2007.

More important than the cash and services, says Walker, is the way the prize has ushered the tiny company into the clean-technology club. "We don't fall easily into the standard clean-technology categories. We are in transportation, but we don't have wheels. We are wind powered, but we don't generate electricity. We are involved in energy efficiency, but we aren't connected to the grid."

In fact, when KiteShip entered the competition it had little hope of winning. "The organizers suggested we enter transportation," Culp says. "But we wondered if we would have any kind of chance there, given that the prize is sponsored by a car company and the other entries involved cars." Culp looked at the competition as a way to polish up his business, soaking up all the advice from the experts that he could, and not thinking much about the prize. KiteShip's victory has the company "hugely jazzed," he says. The venture capitalists have noticed. "We're getting phone calls from VCs we talked to long ago; they didn't think there was a business play here. Now they do."

The winner in the water-management category was Crystal Clear Technologies, in Menlo Park, Calif., founded by IEEE Member Jim Harris in early 2005 as a moonlighting operation. Late last year he quit his job at Redwood MicroSystems, also in Menlo Park, to work full time on the project. He and his business partner, Lisa Farman, are developing a nanocoating that can be applied to cheap minerals, such as zeolite, titanium dioxide, or sand, and used to remove toxic metals and other dangerous substances from water. They estimate that the system could filter one person's water for one year, for \$1. Harris says pitching a business plan to a panel of judges was less stressful than doing the same to a venture capitalist, and the publicity is giving him a jump-start in his efforts to raise \$2 million to \$4 million in venture capital. He expects to start field-testing the technology in the summer of 2007.

Bob Cart, founder of GreenVolts, the winner of the Renewable Energy Prize, doesn't have a technical background, but the business of technology is not new to him. He started his career running a machine tool business, and from 1994 to 2004 he helped to manage Internet development efforts in banking, advertising, and other fields. Then, in 2004, he and his wife took a break to sail a small boat to New Zealand and back. The two spent many nights along the way in tiny island villages; in return for the hospitality of the villagers, Cart rebuilt corroded solar panels, discarded by other passing sailors, and attached them to batteries to power village lighting. By the end of the trip, Cart was hooked on solar energy, and in July 2005 he started GreenVolts to build solar power plants that hook into local grids at the substation level, bypassing the transformers that convert power from high-voltage transmission lines. Since last year, GreenVolts has developed a way to concentrate the sun's rays on the panels, making the system much more efficient than competing designs, Cart says.

In early 2006, a venture capitalist suggested that Cart get help in refining his business plan by entering it in a contest sponsored by a graduate business school. Cart found he had missed the deadlines, and a week later he heard about the Clean Tech open. "With this contest, we could get help," he says, "and we would have a deadline, which was good. And, I couldn't help but think, What would happen if we won?"

What happened is the \$50 000 check, enough to last the company two months, at its current burn rate. Coincidentally, the free legal services were donated by the firm Cart had used to negotiate a technology licensing agreement; he's going to credit them against his outstanding bill. The free accounting services will deal with this year's taxes; the recruiter will soon start headhunting at other solar power companies for Cart's next hire. The 185 m² of prime San Francisco office space? That, Cart says, is just really cool, and he's looking forward to moving in.

But most important, he says, "is that everyone in the VC community seems to have heard of this competition. Coming off this victory we're hot, and we hope to close a \$4 [million] to \$5 million round of financing in the next couple of months."

GreenVolts plans a small, 3-kilowatt prototype installation early next year and is bidding on a 10-megawatt project with a major California utility.

Two other companies are also getting a boost from their Clean Tech Open wins: Adura Technologies, of Berkeley, Calif., with a wireless sensor network to manage energy in commercial buildings, and EDC Technologies, of Sebastopol, Calif., with an energy management system to cut the cost of heating water in hotels and apartment buildings. [[Link on www.cacleantech.com takes you to EDC site that says, "Located in Sebastopol California, EDC Technologies, Inc. partners with..."]]

The organizers hope to make this an annual event, but the details of a 2007 competition have not yet been announced.

The contest adds one more point to the curve traced in recent years by a number of donors, all interested in encouraging particular technological achievements. These include DARPA's Grand Challenges, a series of races for robotic vehicles; the privately funded X Prizes for commercial rocketry and, now, for commercial genome sequencing; the Fredkin Prizes, for computer chess and the Loebner Prizes, for artificial intelligence.

Because contests target technologies precisely, they may complement the more general incentives of the patent system, which as Lincoln said, "added the fuel of interest to the fire of genius."