

[small biz] TECH STARTUP

BY ERIC PETERSON

TECH STARTUP OF THE MONTH

COLORADO COOL STUFF

SMALL BIZ

COMPANY

CLEANTRICITY POWER

INITIAL LIGHT BULB: Ralph Belden, a Nevada-based private pilot, started dabbling with windmills in the late 1970s. Several patents and 30 years later, Belden teamed with Richard Smith, the son of a fellow pilot, and his classmate in CU's executive MBA program, Daniel Sullivan, to found CLEANtricity Power.

Belden brought a traditional small windmill called the Survivor to market in the 1980s, and there are now 300 units in operation, largely in far-flung locations in the developing world. Belden's new brainchild is dubbed the Shapeshifter 2.0, as it literally changes shape with the wind.

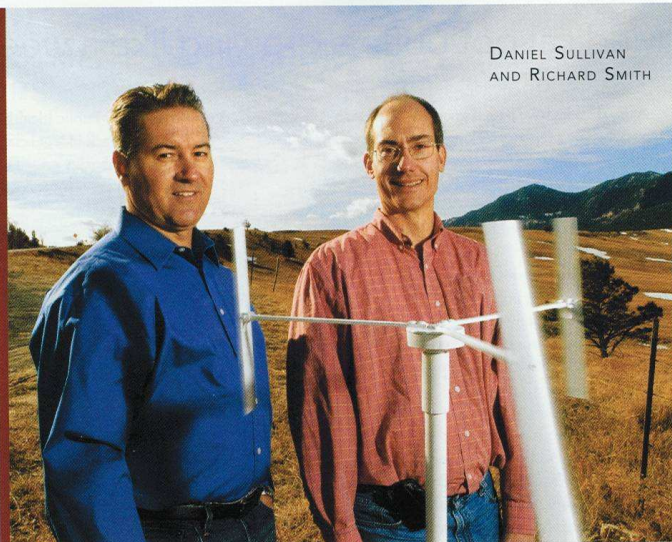
Sullivan acts as CEO, Smith is president, and Belden is chief technologist.

IN A NUTSHELL: "This one has the ability to change its shape so it's large in low winds and small in high winds," Sullivan says. "As the wind speed picks up, the blades are hinged and are able to fold into a helicopter position, which reduces the profile to 10 percent of its original size. The blades move naturally to their optimum position."

Sullivan says there are seven classes of wind speeds, from breezes to hurricanes, and Belden's design can handle the entire spectrum. "It avoids the destructive forces in higher winds," Sullivan says. "This is the biggest problem with small wind turbines: They do not operate across the entire spectrum of wind speed. Most of our competitors will choose to design a low wind-speed device, but they're in trouble when the wind picks up."

While the Survivor is a traditional horizontal-axis windmill, the Shapeshifter 2.0 spins on a vertical axis; the prime benefit is less noise. The windmill is 12 feet in diameter and is installed on a 60- to 80-foot tower with a total price tag of \$30,000 before state and federal tax incentives.

The company has a provisional patent



DANIEL SULLIVAN
AND RICHARD SMITH

"ONE HAS TO REMEMBER THAT POWER IN WIND IS VELOCITY CUBED, SO THE POWER GROWS EXPONENTIALLY. WE START UP IN LOW WIND SPEEDS AND CAN CONTINUE PRODUCING IN HIGH WIND SPEEDS BECAUSE WE CAN CHANGE THE PROFILE OF THE DEVICE TO MATCH THE POWER OF THE WIND."

— CLEANTRICITY CEO DANIEL SULLIVAN

on the Shapeshifter 2.0 and a prototype. "We are currently refining the design," Smith says. "We're going through some virtual testing, wind tunnel testing and some field testing." The founders intend to go into production and ship as many as a dozen units in Q1 2010.

Sam Simpson, founder of Stewart's Root Beer, served as CLEANtricity's business mentor at the inaugural Rocky Mountain Cleantech Open earlier this year. "It's a terrific idea they have," said Simpson, himself involved in an early-stage wind startup. "It has the capability of being a game-changer in the small wind category. The design of this product isn't going to be manufacturing-intensive, because components are off-the-shelf. That allows them to be very nimble."

THE MARKET: CLEANtricity's first focus is the rural residential market, with an eye for the light industrial, military, public safety and international developing markets in coming years. Based on tax incentives and demographics, the initial target states are California, Texas and Wisconsin.

In 2009, the industry as a whole added about 7,000 megawatts in capacity to eclipse 110,000 megawatts worldwide. The U.S. was projected to add about 7,000 megawatts of capacity for the year, exceeding expectations.

FINANCING: The launch was self-funded by the founders. Sullivan says they are currently pursuing about \$2 million in venture financing. ☞

WHERE: BROOMFIELD | FOUNDED: 2009 | WWW.CLEANTRICITYPOWER.COM