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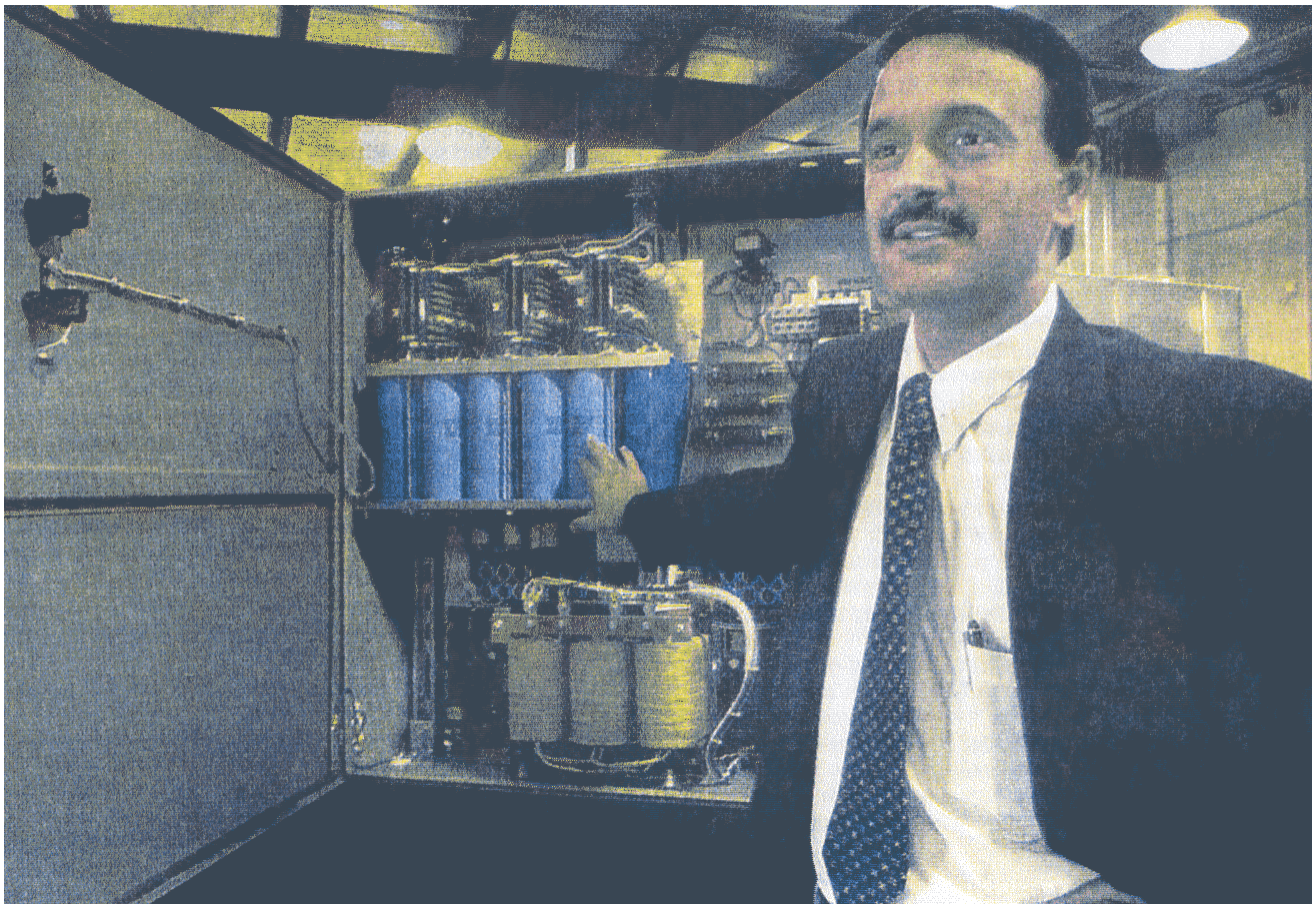
Middleton Company Helps Fill in the Power Gaps at Factories Around the Country.



SARAH B TEWS/WSJ photos

Deepak Divan, 46, president and chief executive officer of Soft Switching Technologies of Middleton, shows off the company's *PRODySC*™ device. It provides a momentary jolt of power, big enough to keep a plastic extrusion machine or paint shop robot from shutting down if a factory's lights flicker. The company plans to build a factory to set up manufacturing of its power correctors with $6 million in venture capital it recently received.

Soft Switching powers into electrical industry

■ A growing customer list is helping the power electronics company build a name for itself.

Divan demonstrates how Soft Switching Technologies' products provide electricity to ride through minor voltage sags that can shut down crucial industrial machinery.

By Judy Newman
Business reporter

You may barely even notice that flicker of lights or the momentary lull in the air conditioning draft, too small even to set the clock on your home VCR flashing.

But in a factory, it doesn't take a full-blown power outage. Even a tiny dip in electricity may be enough to grind sensitive machinery to a halt.

``On a bad (stormy) week, it can happen several times on an eight-hour shift," said Howard Luedtke, maintenance supervisor at the Springs Window Fashions plant in Middleton.

The result is lost production time, and ultimately, lost revenue.

That is where Soft Switching Technologies comes in. The Middleton company makes equipment that keeps factory lights on and machines humming during those little blips in the electric supply.

Its dynamic sag corrector, or DySC (pronounced ``disk") pulls extra current from the electric grid to cover power dips. It also stores nearly a quarter-of-a-second of electricity, for times when there's a momentary but complete loss of power.

That covers nine out of 10 power problems, said Deepak Divan, Soft Switching founder and chief executive officer. The rest -- the lengthy outages -- ``those will shut you down, anyway," he said.

After five years in startup mode, Soft Switching is about to turm up the juice.

Fueled by $6.18 million in venture capital, the power electronics technology company will build a factory, set up a sales and marketing force and start preparing a full line of product offerings.

Negotiations are still proceeding over a site for the 34,000-square-foot factory. Meanwhile, Soft Switching's customer list is growing.

``We're really now aligned with some of the biggest players in the country," said Divan, who left a position as a UW-Madison electrical and computer engineering professor to launch the company in 1995, with patented technology he developed at the university.

Chief investors in the company are Venture Investors Management in Madison and the Beacon Group Energy Investment Fund in New York, recently purchased by Chase Manhattan, the nation's No. 2 two bank corporation. Beacon's two energy funds total $1.6 billion.

``There's a tremendous market opportunity for what they're doing," said Venture Investors partner Scott Button.

Divan is ``one of the acknowledged leaders in this area of power electronics and power technology," said John MacWilliams, a founding partner of Beacon.

The DySC product line is ``rather innovative" and ``sleek," MacWilliams said. ``We believe the technology SST has should be very competitive."

Soft Switching's clients include Lucent Technologies, General Motors, Ford Motor Co., Fort James Paper and Eaton Corp.

And Springs. The Middleton factory, with 1,100 employees, bought the DySC six months ago to protect a manufacturing line that has ``very finicky" electronic controls, Luedtke said.

``In many cases when we can just barely see the lights flicker, that's enough to shut the machines down," he said.

It's an increasingly common problem. A study in the mid-1990s by the Electric Power Research Institute showed power dips or sags -- lasting just a fraction of a second -- are ``very frequent," said Laurence Carmichael, project manager for distribution systems.

They can result when a tree branch or bird touches a power line or when a lightning strike occurs nearby. They can also happen within a factory when a large piece of machinery starts running.

Newer equipment with electronic controls is more sensitive to the power variances, said Carmichael, whose Palo Alto, Calif. non-profit organization represents electric utilities.

And when the voltage dip triggers an automatic shutdown of manufacturing equipment, a plant's losses can be huge, Carmichael said.

``If you don't make it, you don't sell it," he said.

A U.S. Department of Energy study estimated power quality problems are responsible for $150 billion a year in productivity losses nationwide.

At the Springs plant in Middleton, when the machines making plastic louvers for vertical blinds switch off midstream, employees have to start the batch over.

``It might take half an hour to an hour to get things running again," said Luedtke.

Since Soft Switching's DySC was installed, machines on that line have kept running, he said. That's saved the company money, and averted ``a lot of frustration for people running the machinery," Luedtke said.

The DySC won a Governor's New Product Award this year from the Wisconsin Society of Professional Engineers and the state Department of Commerce.

It is different from most other power solutions on the market. It does not use batteries or magnetic coils to store electricity. It is not a backup generator.

Instead, it pulls excess energy from the electric system and stores only a small electric charge in capacitors, a standard electronic component, if no electricity is available elsewhere.

``We build circuits that efficiently process electrical power," Divan said.

The DySC is smaller and less expensive than other options, he said, and can back up a large industrial machine with a unit as small as a briefcase. The smallest units cost $1,200 while the largest can run $300,000.

``We have carved a very substantial niche," Divan said. He estimates the market at $1.5 billion a year.

Even in cramped quarters at the Middleton Industrial Park with limited manufacturing capacity, Soft Switching expects $5.5 million to $6 million in sales this year.

Divan anticipates the company's staff will jump from 42 to more than 70 employees within a year.

Soft Switching is not likely to go back to manufacturing one of its first products, though: an ultra-quiet power electronic drive for submarine motors for the U.S. Navy, sold through Eaton Corp. in Milwaukee. They will appear in submarines scheduled to be tested later this year, Divan said.

``It's not really our intent to go into Defense manufacturing," he said. If the Navy wants more, Eaton will make them and Soft Switching will get royalties. But he credits the quiet-drive device for the DySC's success.

SARAH B TEWS/WSJ photos

Technician Mark Gevelinger does final testing to the DySC, or Dynamic Sag Corrector, products manufactured by SOft Switching Technologies. The Middleton company's products keep factory equipment operating through minor voltage dips.

``If it had not been for the Eaton contract, we wouldn't have been able to develop this product and bring it to market," Divan said.

According to Beacon's MacWilliams, the Navy contract might be small potatoes compared to the DySC's prospects.

``We think SST is going to be a very large company," MacWilliams said. ``We're very excited about it."