

Experience Meets Opportunity:

The Somnetics International team of dedicated engineers isn't afraid to take on the big boys.

Bruce Bowman has seen his share of paradigm shifts in the world of biomedical technology. In fact, he has come up with some of the key innovations that fueled those changes. These days, the chief technology officer at Somnetics International Inc, New Brighton, Minn, aims to use his company's nimble culture to sprint ahead of the competition.

"Usually the big companies aren't going to get flustered by a small company like ours, at least not initially," says Bowman with a chuckle. "But it's just a matter of time when they'll have to look seriously at what we're doing, and they very well may be doing that now. Our challenge is to stay a step ahead. When you come out with something as innovative as we have, they will try to catch up."

Staying one step ahead means trying to predict what the next generation product might be. With Somnetics' signature product, the Transcend, Bowman immediately saw the logic of the unit during observations outside of the office. "I've been at the airport so many times where passengers have CPAP in front of me, and they pull their huge machine out of their bag and stick it on the security counter," says Bowman, who received his doctorate in 1981. "That is no way for a traveler to have to deal with CPAP. There are already too many other reasons why people don't use CPAP. Why should they have to deal with size and weight as another reason?"

After stints at a variety of cutting edge sleep manufacturers, Bowman recognized an opportunity at Minnesota-based Somnetics and opted to shut down his successful consultancy. Why make the leap to an unknown company? In short, Bowman's entrepreneurial spirit kicked in when he saw a place where he could contribute and quickly see the fruits of his labors.

With a decorated resume, Bowman, who oversees advanced technology assessments at Somnetics, appreciated the autonomy he has with this new company, but also needed hungry and talented people who could work fast. "While the big competitors have many times our budget, they get bogged down, and it takes them much longer to do things," he enthuses. "With the talented young engineers we have, I knew we would be able to develop the smallest and lightest weight CPAP on the market, and do it fast."

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Playing with big companies can be intimidating, but Bowman believes the key is maximizing advantages. "We are able to identify opportunities quickly and solve problems quickly," he explains. "We found a niche that wasn't being served. Look at the number of CPAP users and the big clunky equipment that many of them have to use. Our competitors are pushing to match what we've got at Somnetics, but they are not there yet."

Why the lag among the big competitors? Bowman conjectures that it comes down to the sheer size of the CPAP market. "The big guys are already selling so much product and making so much money," he says. "For them, a small CPAP was not deemed necessary to grow as a company. For a small company like ours, we need to

differentiate, and a small, lightweight device for active patients was a place where we could contribute in a space that the big guys were not bothering with. However, I'm sure that eventually they will get there."

Bowman may not be in the marketing department, but he knows that establishing the "smallest CPAP" as a solid brand is a top priority while Somnetics holds the advantage. At this point, the goal is to improve the fundamental technology, while also developing new accessories.

Eric Becker, director of engineering, helps to achieve these goals thanks largely to a user's perspective that seeks to make equipment more intuitive. "Mobile phones have gotten to the point now where users can operate the device without detailed instruction," says Becker. "We're trying to emulate that product development mindset, so that users can pick up our product without too much guidance."

On-screen simulations and "rapid prototypes" fuel a culture of creativity that allows the 26-year-old Becker to quickly do several iterations of a proposed product. "We want to test everything on the finished assembly," he says, "not only to ensure regulatory standards compliance, but we also prove things out ourselves internally to make sure products will be perceived exactly as we want them."



Transcend Sleep Apnea Therapy Starter System

Stars Are Aligned:

Young, aggressive, and driven are all words that accurately describe Somnetics, a relatively new company that embraces a nimble culture. "We do happen to have a lot of young talent," says Becker. "Regardless of experience, our engineers don't have the mindset that they can't get things done. They push for these projects and have a personal investment in the projects."

The Transcend Portable Solar Charger is one of those projects with a fast turn-around that came off the wish list generated by patient and clinician feedback. Part of an ambitious goal to release multiple products in a given year, the plan to harness the sun's rays seemed like the perfect complement to the travel CPAP niche.

Users can plug the CPAP unit into the wall anywhere and/or use a battery that charges in the traditional manner (plus a back-up feed), but what if someone is traveling for a week or two? What if the area is somewhat remote, without ready access to traditional recharging?

The massive awareness of sleep disorders has penetrated into the younger population, and suddenly the idea of backpacking CPAP users is not so farfetched. Once Becker and his colleagues had the vision, they went searching for answers, working with solar vendors to solve the inherent challenges of an inconsistent power source.

The so-called "inconsistent" power source could, in fact, be counted on every day—though the relative intensity would vary. "It's a variable current," muses Becker. "How can we charge a lithium ion battery and charge fast enough so that we can charge this every day and use the CPAP for 8 hours a night? We continued to meet with several companies until we found someone that could help us."





Transcend Portable Solar Battery Charger full flat

Now with no less than two Medtrade awards, and a Frost & Sullivan Award for Best Practices, company officials have reveled in positive feedback. They appreciate the recognition, but Becker acknowledges that now is not the time to get overconfident. “Everybody loves the positive feedback, and it affirms that we are moving in the right direction,” muses Becker. “It is making people realize that Somnetics is going to continue to come out with new products that revolutionize what we’re doing with CPAP therapy.”

With the belief that accolades come as a byproduct of hard work, Becker and his engineering team are continuing to tweak the Transcend Solar while also working on a new stand for the device that features an LCD output screen. The screen will give patients the opportunity to review portions of compliance info directly from the system without needing Transcend’s application software for the computer.

Other subtle evolutions of the Transcend, including a new filter replacement methodology, are on the horizon. And despite the environmentally friendly solar technology, Becker says the company wants to continue to push the “green” envelope by developing a way to replace filter media in the device without throwing away plastics. “It’s all part of our mission to continually introduce new designs and stay on the forefront of customers’ minds,” he says.

“Nobody knew our name when we came out,” adds Becker with a chuckle. “We were the niche product, and we were not a threat. Now with these awards over the last 6 months, we are more of a true competitor. Now our customers and our competitors realize we are going to be around for the foreseeable future.”

Small Product, Big Impact:



Transcend CPAP

How much smaller can the Transcend get, and should it get any smaller? From an engineering perspective, size is limited by the blower motor. A certain amount of energy must be delivered, and Transcend engineers tackled that problem coming up with a patented way to reduce the necessary power to operate the blower.

The result is that the Transcend requires only a small, lightweight battery to operate the unit, while other companies need a marine or car battery to run it. From an engineering standpoint, Bowman says the unit can probably be made a bit smaller, but “the smaller you make it, the more challenges you have with noise,” he says.

With a large CPAP, it's relatively easy to take a noisy motor and blower, put it in a big box, and fill it with foam. Making an acceptably quiet device in a small package is entirely another matter. Does the Transcend need to be smaller? Or can the whole paradigm be rethought?

Meanwhile, Somnetics engineers continue to toil away at full steam as 2012 comes to a close. They are hesitant to reveal what is on the horizon, preferring to keep a firm lid on any new innovations. "I can't talk specifics, but we are working to broaden the Transcend line with new accessories that I think will be received well by both current and new customers," enthuses Becker. "We're doing things to keep us at the forefront of the market from a technology standpoint. We are moving quickly, and hopefully we'll be able to introduce those soon."

"While we may be smaller, we still are a continuous entity within the market," continues Becker. "There are certain themes that ResMed and Respironics may try to emulate in the future, as well as different strategies we have that may be of interest to them. We are at least a blip on the radar these days."



Transcend P4 Overnight Battery

A Home Sleep Testing Pioneer

In 1983, Bowman co-founded EdenTec, a company built around a portable apnea monitor for kids who were prone to sleep apnea, and possibly even sudden infant death syndrome (SIDS).

The sleep diagnostic device that Bowman and his colleagues developed, called EdenTrace, was the first of its kind that could go home with patients for OSA screening. The device caught on quite well, but ran into "a lot of politics" which rankled Bowman's sensibilities as an engineer merely looking for a solution. "Basically, there were a lot of problems gaining acceptance in the sleep labs," Bowman said.

Despite scientific backup from the likes of Helene Emsellem, MD, George Washington University Medical Center and Susan Redline, MD, Harvard University in the early 1990s, the figurative grenades essentially worked. "The sleep labs directors did not realize home testing could increase their business, so they dug their feet in," says Bowman. "It took another 25 years before home diagnostics became officially approved and accepted, and there is still a lot of debate as to its worthiness, even though many papers have shown that when used in the proper manner it can be useful and less expensive."