

Entrepreneurs

As Clear As ...

Emily Lambert, 11.24.03

Robert Saxe has promised to revolutionize the glass industry. After four decades he has little to show for it.

The power of wishful thinking is on display in the office of Robert Saxe, chairman of Research Frontiers. Surrounding his desk are pictures not of his family but of Thomas Edison, Neil Armstrong and Sir Isaac Newton--inspiration for a 38-year-old public company that claims to be spearheading one of history's biggest revolutions in glass. Alas, it has yet to earn a dime. Be patient, urges Saxe, 68. "When Bill Gates started Microsoft, I'm sure he struggled along for a while," he says.

Not quite as long as Saxe has in developing something called SmartGlass, which changes from dark blue to almost clear with the turn of a knob. A 1960 Harvard Business School grad who did market research for Corning Glass Works, Saxe in the early 1960s sank \$168,000 into the rights for light-valve technology, a method of controlling the amount of light coming through glass, only to learn that the technology had already been patented by Polaroid Corp. founder Edwin Land in the 1930s. That didn't stop Saxe. In 1965 he founded Research Frontiers to exploit a related expired patent of Land's.

There's a tale that goes with this invention, as good as Newton's apple. Supposedly the science started in the 1850s when, in the lab of an English scientist, a dog that had been fed quinine bisulfate for an upset stomach urinated on a tray. The scientist dropped iodine into the tray, forming crystals that absorbed light. SmartGlass involves two panes sandwiching a film containing minuscule liquid droplets of these light-absorbing polyiodide crystals. When an electric potential of 50 volts is applied across the film, the particles line up and the glass turns transparent. Without juice the particles scatter randomly and the glass remains a deep blue.

What would you do with glass that changes color? Glaze a building and make the glass transparent in the wintertime, opaque in the summer. Supposedly the energy-saving potential would be in the billions of dollars, if every building in the country used it. Lest you get carried away with the thought, though, note that there are simpler kinds of glass--coated glass, that is--that also save on heating or cooling bills.

Saxe envisions other applications for his electrified glass--eyeglasses, tinted car windows, ski goggles. But here there is a technical problem. To be see-through SmartGlass needs a constant flow of electricity, which trickles through at a rate of 1 milliampere per square foot. If a car stalls, the windows go dark. Heaven help the slalom racer if his goggle battery runs dry. Other drawbacks: SmartGlass doesn't block heat any more than low-emissivity glass, has a blue hue even in its transparent state and costs upwards of \$100 per square foot, 20 to 30 times the price of plain old windowpane glass.

Saxe has stubbornly resisted submitting SmartGlass to industry standards tests and hasn't applied for government funding. Such testing, as well as major improvements, are left to Research Frontiers' licensees. Not everyone is impressed with SmartGlass. "I don't think the quality's good enough for me to be able to sell it," says Joel Cothery, president of Reid Glass, a Southfield, Mich. glass fabricator and installer. He says the smart stuff is never as clear as ordinary glass. Of the current 27 licenses, several, including General Electric's, are dormant. Saxe's own behavior isn't a ringing endorsement: He doesn't have SmartGlass windows installed in his Woodbury, N.Y. office (he says he's negotiated for them in his new lease) or his New York City apartment (he says there's been a delay getting the glass).

A starvation diet for R&D doesn't help. Last year the company spent \$1.9 million on research, compared with overhead of \$2.6 million; in 2001 it invested \$2.2 million in R&D and \$3.1 million in payroll, marketing, p.r. and patent and insurance expenses--45% of which went to pay the salaries and bonuses of Saxe and President Joseph M. Harary alone.

For the six months ended June 30 Research lost \$2.4 million on licensing revenues of \$149,000. To put that in perspective, consider the financial history of the company since it went public in 1986: It has lost a cumulative \$41.7 million on licensing fees of \$3.7 million. During that time Saxe has collected \$5.3 million in compensation, plus options.

If the company isn't selling glass, it is at least adept at selling shares. In two public offerings and two private placements, it has raised \$47 million. Saxe still owns 12% of Research Frontiers, worth a recent \$15.7 million, and has options to buy another 8%; other insiders hold 7%.* Certainly the insiders are motivated to keep their eyes on the share price. Bonuses, until recently, were tied to market capitalization and stock movement over six-month intervals.

A tricky business, keeping that share price high when a company has no revenues worth mentioning and is energetically selling shares. Since 1998 Research Frontiers has sold \$25 million worth of new shares to a privately held offshore manager called Ailouros Ltd. Ailouros is a London-based firm incorporated in Antigua and Barbuda and run by a Canadian

named Michael Katz. Ailouros was granted a three-month window in which to buy the shares at an 8% discount to the seven-day-average trading price, or a floor price set by Research Frontiers. As part of the agreement Research Frontiers can sell as many as 2.3 million shares to Ailouros through the end of 2003. So far it has sold 1.9 million, or 15% of its 12.5 million shares outstanding. Ailouros, in turn, sells on the open market some of what it buys; it has agreed to keep its stake below 10%.

And who has been buying? Research Frontiers, which has purchased and retired 820,306 shares--43% of the total it sold to Ailouros. It has bought them in the open market, at an average price higher than it sold them for. Last year, for example, Research Frontiers sold 253,500 shares at an average price of \$10.76 but bought 190,441 shares at an average price of \$12.36. In 2001 it sold 359,000 shares for an average price of \$17.35 and bought 407,065 for \$20.

Selling low and buying high seems to indicate either extraordinarily bad judgment--or an effort to firm the stock price. "Buying what you're selling during a distribution has a strong tendency to artificially inflate the price," says Columbia Law School securities expert John Coffee. That's why there are rules--Regulation M--governing such behavior. Research Frontiers strenuously denies that it was manipulating the stock or buying shares improperly, because the period of distribution is spread out over five years. It has been redeeming stock because, Harary insists, it was a good value and reduced dilution. "Ailouros is doing what they're doing," he says. "We have no knowledge of it. It's their business."

Saxe explains it this way: Short-sellers, he says, were depressing the stock price at the time the new shares were issued. Saxe speaks with particular venom about short-seller Manuel Asensio, who is not shy in critiquing stocks he rates overpriced. Whatever the case, Research Frontiers hasn't bought back any stock this year, though Saxe and his directors have been active buyers, acquiring 98,146 shares. Who knows, they may even believe that a fount of profitability lies around the corner.