

GROWING YOUR BUSINESS

## LED streetlights put spotlight on Halifax firm



Before, left, Leavenworth Street in San Francisco lit with high-pressure sodium streetlights. After, right, the same street outfitted with the whiter, brighter LED streetlights.

### **In three years, LED Roadway, a low-energy light startup, expands its business across North America**

BY MARY GOODERHAM

Searching for a way to use its lighting and electronics technology in a product with high-performance standards and a sizable market, LED Roadway Lighting Ltd. only had to look down the street.

The small Halifax Company focused its attention on the ubiquitous street lamps found in communities everywhere. Some 500 million of them line highways and roads, and an additional 100 million or so illuminate parking lots worldwide.

The typical streetlight, which today uses high-pressure sodium technology, accounts for about 35 per cent of each municipality's energy bill. LED Roadway, with its own research and manufacturing facilities and government support in the form of a loan, design assistance and a capital investment, developed a streetlight based on light emitting diode (LED) technology that can cut that amount in half or more.

The low-energy, long-life and environmentally sound LED Roadway streetlights now being used and tested have the potential to reduce energy consumption and maintenance costs for municipalities and utilities around the world.

"The sheer volume and size of the market is huge," says Ken Cartmill, vice-president of business development for the private company, which has 20 employees.

The custom-designed LED streetlights can last 20 years, about four times the life of high-pressure sodium fixtures. They are robust, made of recyclable materials, function in a broad range of temperatures, and do not waste light and energy by flooding into homes or the night sky. In a recent installation in Halifax, the fixtures provided an average of 60 per cent energy savings and increased the light levels on roadways and sidewalks, Mr. Cartmill says.

His father, Charles Cartmill, its president, who has been in the field for more than 35 years, selling lighting, and industrial products through his company, CSA ENTERPRISES LTD, started LED Roadway in Halifax. Seeing the potential in emerging LED lighting, in 2002 he started C-Vision Ltd., an electronics manufacturing and design plant with 85 employees in nearby Amherst, N.S.

Three years ago he created LED Roadway, with the help of a \$2.1-million interest-free loan from the Atlantic Canada Opportunities Agency's Atlantic Innovation Fund and with input from Nova Scotia Power on the lights' performance requirements and design. Earlier this year, LED Roadway got a \$6-million equity investment from Nova Scotia Business Inc., a government agency responsible for business development in the province.

Stephen Lund, the agency's president and chief executive officer, says it's tough for small, regional companies such as LED Roadway to get noticed by venture capitalists, especially given today's difficult economy. He says the homegrown firm's strong management; its compelling product and significant market opportunities prompted the agency to make the investment, its largest ever.

"If you've got a company that has a good product, a good management team, and you've identified a niche market where you're a leader, you have a pretty good chance of hitting a home run," he says. The key to getting government funding and finding a significant market, Mr. Cartmill says, was focusing solely on streetlights, which fall under strict performance requirements for public safety rather than needing to be "as cheap as possible."

That way LED Roadway doesn't have to compete in "the Wild West" of large, offshore manufacturers with questionable quality.

"This is a market where people are held to some standard," he explains. "As a small company ... we were able to separate ourselves from the rest of the pack."

"The LED fixture is not a bulb but a solid-state device. It includes a series of LED's and a power supply set in a cast-aluminum Housing. On a typical cobra-shaped lighting pole, the head is removed and the new fixture is popped on. Although the upfront capital cost is substantial- \$600 to \$1,000 per new fixture - LED Roadway says there is a savings of \$1,500 to \$2,500 over its lifetime.

The largest deployment of the lamps has been a demonstration project in Nova Scotia, where 1,100 high-pressure sodium streetlights in 10 municipalities as well as at Halifax's Stanfield International Airport and along some highways were converted, with the support of provincial and federal government energy conservation programs. The town of Annapolis Royal converted all of its 120-plus streetlights, estimating it would save \$3,620 per fixture over the 20-year life of the lamps.

In the past year, LED Roadway has supplied its streetlights for use in a number of tests and pilot projects throughout North America, including high-profile locations such as the Confederation Bridge and FDR Drive in New York and as well as in Los Angeles, San Francisco, Pittsburgh, and cities across Canada.

LED Roadway is hoping that large-scale orders will follow, Mr. Cartmill says, particularly prompted by infrastructure funding and programs to help pay for energy-saving projects.

## **WHITE NIGHTS**

### **DARKENING THE NIGHT SKY**

Anyone who has flown over a city at night or stargazed from an urban back yard has seen the effect of street lamps on the night sky. Typical high-pressure sodium fixtures radiate light high into the air, have hot-spots around them as seen from above and glare into bedrooms and other unwanted places on the ground. "It's wasted light, and it's wasted energy to produce that light," says Ken Cartmill, vice-president of business development for LED Roadway Lighting Ltd. in Halifax. LED streetlights direct the beam along the roadway or sidewalk. "We've eliminated light pollution," he adds.

### **MAKING WHITE LIGHT**

Many people are familiar with early LED lights used in tiny red pointers and traffic lights. Indeed, coloured LED's are much easier and cheaper to make. To produce what is perceived as white light usually means taking a blue LED and adding a yellow-green phosphor coating, like a lens, Mr. Cartmill says. Combining the two can be difficult to get right and especially to make bright enough. Buyer beware: not all white LED lights are created equal; some may change colour or lose their whiteness over time.

### **THEY JUST FADE AWAY**

Unlike conventional bulbs with filaments, ballasts and lenses that can pop fizzle and fail all at once, solid-state LED fixtures typically never burn out. Instead, the tiny LED's simply dim as they age, becoming fainter over the years. Eventually they degrade to such a point that the fading is noticeable to the human eye and the entire unit must be replaced. Most high-pressure sodium lights are Rated such that 50 per cent of the fixtures will burn out after five years. The LED Roadway fixtures are designed to maintain their required light output for 20 years and then be replaced.

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