

LED startup Switch Lighting hopes to light the way in Silicon Valley

October 3 2011, By Troy Wolverton

Silicon Valley is known for computer chips, software companies and social networks - but not light bulbs.

Switch Lighting, a San Jose, Calif., startup, hopes to change that. Later this fall, the venture capital-backed company plans to release a new line of bulbs aimed at replacing the ones consumers typically use in lamps and other fixtures.

Switch's bulbs are among a new generation powered by light-emitting diodes, or LEDs, a technology that many experts bet will finally displace the incandescent bulb that [Thomas Edison](#) invented more than a century ago, in part because they're much more energy-efficient. Switch hopes to carve out a place in this [emerging market](#) by offering bulbs that look better than competitors', produce better light, are more durable - and potentially cheaper, too.

"We're going to change the world," said Brad Knight, Switch's interim CEO who recently was replaced as CEO by lighting industry veteran Thomas "Tracy" Bilbrough. "We're improving upon Edison."

Unlike incandescent bulbs, there's no standard design for an LED light bulb. While they have a lot of potential, LEDs pose particular problems when used to power a light bulb you'd stick in a lamp. They emit light in a single direction, for example, and generate a lot of heat for their size. And no LEDs emit a pure white light; the closest have a bluish tint.

Bulb manufacturers are experimenting with different designs to cope with these challenges. GE offers an LED bulb in which the glass is cradled in fins that help diffuse the heat. Philips' new LED bulb looks something like a bug light with yellow-colored plastic that glows white when lit.

Switch, which has 25 employees, has its own design that looks more like a standard incandescent. What also distinguishes its bulbs is that they are filled with a liquid that, along with sophisticated electronics and the metal base, helps keep the LED elements cool. Those factors allow Switch to produce more light - and heat - with each element than other companies can.

Switch's 60-watt equivalent bulb will use 10 LED elements, compared with 18 in the Philips bulb.

That could eventually allow Switch to sell it less expensively and to bring its costs down faster than its competitors.

"We believe they are producing a light bulb that others cannot," said Alan Salzman, CEO of VantagePoint Capital Partners, which is Switch's sole backer and has invested more than \$10 million in the company.

LOCAL CONNECTIONS

[Silicon Valley](#) may seem a strange place to be developing a light bulb, but Knight insists it makes sense. Lumileds, the pioneering LED company now owned by Philips, is based in San Jose. A collection of other companies that make LED modules or related products also are based in the area. Because of that, Switch can obtain nearly all components used in its bulbs locally, allowing it to rapidly test new designs or tweaks, Knight said.

"The infrastructure of Silicon Valley makes innovation possible," Knight said.

Future bulbs could be even more dependent on valley technology. Many in the lighting industry expect bulbs to become more like computers that happen to emit light. Such bulbs could turn themselves on when they sense people in the room, warn residents or emergency responders when they detect a fire, change color depending on users' moods or desires, and even alert owners when their lights burn out.

"I think the humble light bulb is going to get remade," Salzman said. "I think there's real legs to this transition we're going to see."

Even if lighting stays dumb, Switch could face a huge opportunity.

The United States and other countries have new laws that in coming years will bar sales of standard incandescent light bulbs because of their high energy consumption. The U.S. Department of Energy estimates that nationally, consumers and businesses have in place about 971 million 60-watt bulbs, one of the primary ones that Switch hopes to replace.

Consumers have numerous alternatives to standard incandescent bulbs, including curlicue-shaped compact fluorescents (CFLs), bright-white halogens and hybrid bulbs that use a combination of technologies. But many lighting experts expect LED-based bulbs to eventually win out.

LEDs address many of the shortcomings of CFL bulbs, which today are the main alternative to incandescents. Unlike many CFL bulbs, [LED bulbs](#) turn on instantly, don't contain mercury, are often dimmable and can produce light comparable to that of an incandescent bulb.

TECH PUSH

What's more, as a semiconductor technology, LEDs are undergoing the same rapid improvement as [computer chips](#), with the amount of light generated per given amount of power increasing exponentially. That should push down the prices and the power used by LED bulbs rapidly in coming years.

And utilities such as Pacific Gas & Electric are already putting in place incentive programs for LED bulbs that allow retailers to offer them at reduced prices.

Still, Switch faces plenty of challenges. LED bulbs currently are priced at \$30 to \$40 each, which is beyond the reach of most consumers. To bring prices down, companies will have to produce bulbs with fewer and cheaper parts. That could prove particularly challenging for Switch, said Vrinda Bhandarkar, director of research for LED lighting at market research firm Strategies Unlimited.

"They talk about bringing down the price, but I don't know how they will do it," Bhandarkar said. "There are lot of components in that bulb."

Switch is competing in an industry that has long been dominated by Philips, Osram Sylvania and GE, giant corporations that have huge research, manufacturing and distribution networks already in place. And unlike Switch, those companies already have LED bulbs on stores shelves.

MARKET OF POSSIBILITIES

Meanwhile, other big electronics corporations such as Vizio and Samsung could eventually enter the market.

"Anytime you go against a big company, it has the appearance of being dangerous and a hard slog," said Jon Guerster, CEO of Groom Energy

Solutions, a consulting and contracting firm that works with companies seeking to reduce their energy usage.

While technological shifts can disrupt markets and displace incumbent companies, that doesn't always happen. Florida-based Lighting Science Group (LSG), for example, has been selling various kinds of LED bulbs for more than five years and now produces bulbs that Home Depot sells under its EcoSmart brand. But LSG is losing tens of millions of dollars every quarter and lost nearly \$300 million last year.

Still, Switch's executives and backers are confident. The company plans to have contract manufacturers produce its bulbs, which should allow it to have the same scale as behemoths such as Philips without having to make the same investment. And Knight has already identified ways to cut costs that should push down the price of Switch's bulbs.

"If we do that, there's a big opportunity," Salzman said.

SWITCH LIGHTING

What: LED [light bulb](#) designer

Product: LED replacement bulbs for 40-, 60-, 75-, and 100-watt [incandescent bulbs](#)

CEO: Brad Knight (interim)

Headquarters: San Jose

Employees: 25

Investor: VantagePoint Capital Partners

Amount raised: More than \$10 million

Source: Switch, VantagePoint

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