SSL Postings

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Although you do not often hear about growth in domestic manufacturing here in the United States, the solid-state lighting industry is steadily growing and establishing a manufacturing presence here at home. Solid-state lighting was not only born of U.S. ingenuity and R&D, but is riding the crest of a worldwide trend toward greater energy efficiency. This offers a golden opportunity for U.S. manufacturing to take a significant role in SSL. From time to time, these Postings *will focus on SSL companies manufacturing here in the U.S., a series we call "SSL in America." This is not intended to endorse or promote any of the companies, but rather to describe advances in energy-efficient solid-state lighting. The activities you'll read about here are consistent with the* U.S. Department of Energy (DOE) white paper *"Keeping Manufacturing in the United States," which grew out of DOE's 2010 SSL Manufacturing R&D Workshop.*

Spotlight on TOGGLED

TOGGLED is a Michigan-based manufacturer of commercial-grade LED replacements for fluorescent tubes. Formerly known as Ilumisys, Inc., the company is a wholly owned subsidiary of the global software and engineering firm Altair, from which it spun off in 2007. TOGGLED began developing products a year or two before that and initially manufactured them in China, but stopped in 2009 after deciding to automate its manufacturing and move those operations to the U.S.

A regular attendee at DOE's annual SSL workshops, TOGGLED is based in Troy, MI, with a panoramic window view of downtown Detroit. Altair's corporate headquarters are just three miles away, which makes it easy to share resources and personnel. TOGGLED's facility – about halfway between the arenas of the Motor City's NBA Pistons and NHL Redwings – is home to about 20 employees, who work in research, development, materials control, supply chain logistics, shipping, and receiving.

TOGGLED president Dave Simon explains that the company's manufacturing operations are 100-percent automated – from the soldering at the front end of the line, to the robotic final assembly at the back end of the line, and every operation in between. He

says that's the only way to provide a consistently high level of throughput and product quality – and the only way, here in the U.S., to be competitive at high volume with nations that have low labor rates. TOGGLED began U.S. production in October 2012 and became fully automated earlier this summer, with the arrival in Troy of the last piece of automation equipment. According to Dave, this not only makes for high throughput, but also gives the company better quality control, because the machine repeatability is very high. And it allows for a high degree of traceability and accountability, through data management.

TOGGLED's products – which come in various combinations of power consumption, color temperature, and optics – are assembled at the Troy facility, and the heat sink, lens, and end caps are made by U.S. suppliers. Dave notes that even though the heat sinks are made of lightweight aluminum, their bulk would entail substantial freight charges, which is why it's cheaper to get them from U.S. suppliers than from overseas. The electrical components come from all over the world, including the U.S.

According to Dave, one of the advantages of manufacturing domestically is cost. Earlier versions of TOGGLED's products, which were made in China, required a lot of hand assembly, which is expensive even at cheap overseas labor rates – helping to convince the company to automate the process. Another advantage of domestic manufacturing is that it enables a tight coupling between R&D and manufacturing, which can lead to manufacturing and design improvements as well as to new products. Still another advantage, Dave notes, is intellectual property protection – not only for the products themselves, but also for manufacturing innovations.

From a supply-chain and logistics standpoint, he says, manufacturing domestically allows TOGGLED to speed up the product-development, production, and delivery processes, which means there's no need for anyone in the distribution chain to carry inventory. In a market that's developing as rapidly as SSL, this also means that customers receive the most up-to-date product versions rather than what Dave calls "day-old bread."

The downside of automating the manufacturing process, he notes, is that it requires a huge capital investment in the equipment. In TOGGLED's case, this was partly offset by a 48C advanced energy manufacturing tax credit made possible by the American Recovery and Reinvestment Act of 2009, as well as by help from the Michigan Economic Development Corporation, Oakland County, and the City of Troy.

Dave says that all told, there's a considerable "ripple effect" from TOGGLED's use of U.S. suppliers, many of which are based in Michigan. He notes that Michigan is ideally suited for SSL

manufacturing because of its existing manufacturing infrastructure, which makes it easy to find whatever a manufacturer might need – for example, someone with the capability to move delicate multi-ton equipment and put it in place. That's why TOGGLED's parent company, Altair, helped form the Michigan Solid-State Lighting Association in partnership with DTE Energy, with the goal of making the state a global center for SSL manufacturing. Dave envisions SSL as being a key part of the economic comeback he sees occurring around him. He notes that TOGGLED's Troy facility lay vacant and neglected for more than three years before his company purchased it, and neighboring buildings that were once vacant are now occupied as well.

TOGGLED is among a number of companies that are working to create and strengthen a solid-state lighting manufacturing base here in the U.S. This will not only help bring significant energy savings through more efficient lighting products, but will benefit our economy by adding jobs at multiple levels of the supply chain.

As always, if you have questions or comments, you can reach us at postings@lightingfacts.com.