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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 Cree

Cree is a vertically integrated lighting manufacturer that makes LED chips and devices as well as lamps and luminaires. The company's primary focus is solid-state lighting, with other technologies comprising less than 10 percent of Cree's total business and shrinking fast. Those other technologies are legacies from Cree's acquisition of Ruud Lighting/BetaLED in 2011 and include linear fluorescent and high-intensity discharge products. Cree vice president of corporate marketing and business development David Elien explains how the company made that acquisition in order to enter the rapidly growing LED outdoor lighting market, which BetaLED specialized in. He says Cree's overarching strategy for SSL is to drive consumer adoption, which leads to commercial adoption.

Cree has a long history of involvement with DOE's SSL program – including speaking at our SSL workshops and receiving R&D funding. The company was founded in 1987 by several material-sciences alumni of North Carolina State University, who wanted to grow silicon carbide and use it in a variety of electronic devices to gain advantages in cost and performance. They managed to overcome their college sports loyalties enough to establish headquarters about a half-hour's drive from campus, in Durham, NC – home of Atlantic Coast Conference rival Duke University. In 1989, Cree commercialized its first LED, a blue one that was based on silicon carbide and was used as an indicator light. The company entered the general-illumination LED market in 2004 and began making LED

luminaires in 2007. Today, in addition to LED street and area lights and gas-station canopy lights for outdoor applications, it offers LED troffers and downlights, and in March came out with its first LED replacement lamps for consumers (40W and 60W equivalent).

Cree does SSL manufacturing at three U.S. facilities: two in Durham and another in Racine, WI. One of the Durham facilities is the main campus, where the chips are made and electronic components – such as the integral power supply and some LED boards – are assembled; and the other is a new location, where the replacement lamps are assembled. The Racine facility, a legacy of the BetaLED acquisition, is used for the assembly of troffers and streetlights. David says that all told, about 60 percent of the company's SSL manufacturing is done domestically, with the rest done in China – where the LEDs are packaged into devices and some smaller fixtures are assembled.

Cree's main campus employs about 2,000 people, with the new Durham facility employing another 200 and the Racine location an additional 1,000. In addition to that, about 50 Cree scientists work at the company's R&D center in Santa Barbara, CA. On top of that is a definite ripple effect.

According to David, a big reason why Cree manufactures SSL here in the U.S. is to be close to a major market so that the company can react quickly to feedback. For example, if demand is much higher than anticipated, Cree can gear up and fulfill that extra demand much faster than if the products were made overseas. David notes that this is especially important with a nascent technology such as SSL, because if availability is a problem, it can slow or hinder adoption. In that regard, success can become a trap if the demand outstrips a company's ability to meet it.

Another advantage to manufacturing domestically, David says, is that it makes it easier for an innovative company to get feedback from customers on any aspect of the product, whether performance or cost, and address that feedback much more quickly than if there were a huge amount of inventory tied up for several months crossing the ocean from Asia. Cree has worked to offset higher domestic labor costs by designing its products for manufacturability.

Cree 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](mailto:postings@lightingfacts.com).