Postings: from the desk of Jim Brodrick

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 regulatory 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 promote any of the companies, but rather to motivate and inspire others to follow suit. The philosophy and actions of the companies you'll read about here align with the recommendations set forth in the DOE white paper "Keeping Manufacturing in the United States," which grew out of DOE's 2010 SSL Manufacturing R&D Workshop.

Many of you know that MOCVD stands for "metal organic chemical vapor deposition," and that it's a key part of making LEDs. The MOCVD process puts the chemical layers on the wafer, which is the first step in creating an LED. MOCVD is an especially critical step, because the materials it deposits are the ones that actually emit the light, so their quality and structure determine how efficient the LED is.

Veeco is a company that makes MOCVD equipment. Veeco's origins date back to the Manhattan Project in the 1940s, when the company made helium leak detectors. Today it makes processing equipment – not only for MOCVD, which is used in the manufacturing of solar

panels as well as LEDs, but also for the data storage and CIGS film (copper indium gallium selenide) solar industries. The company's involvement with MOCVD began in 2004, when it purchased the MOCVD division of Emcore. A spinoff of Bell Labs, Emcore was a New Jersey-based pioneer in MOCVD.

Veeco does most of its MOCVD engineering in Somerset, NJ, but outsources most of the manufacturing. However, the majority of that outsourced manufacturing is done in the U.S. by other U.S.-based companies. The net result is more than 1,000 U.S. jobs, according to Veeco, counting those at Veeco and its outsourcing partners, which are located all across the country – from New York, to California, to Minnesota, to Texas. What factors led Veeco to make its MOCVD equipment in the U.S.? Bill Quinn, the company's chief technology officer, says that for one thing, Emcore was already based here. And MOCVD was developed in the U.S. back in the 1980s, so that not only was the technology expertise here, but the equipment expertise as well.

The recipient of one of DOE's first SSL manufacturing awards, Veeco is using that funding in partnership with Sandia National Laboratories to lower the cost of LEDs by developing a new generation of MOCVD tools that are more efficient and have a higher yield. MOCVD is currently used in the manufacture of all LEDs, not just those for general illumination. The majority of the MOCVD tools that Veeco manufactures are used to make LEDs for backlighting TV sets. Only about 10% of the products made by Veeco's customers are used for general illumination, which remains a much smaller LED market than other applications – although it's expected to grow considerably in the years to come.

Veeco's size has almost tripled in the past two years, and Bill says the company plans to continue growing its MOCVD operations. That growth won't be hurt by the rapid expansion of the Chinese solid-state lighting market, which means lots more customers for Veeco's MOCVD equipment.

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