SSL Postings

It's been two years since we introduced our "SSL in America" series of occasional *Postings*, which to date has profiled 16 solid-state lighting companies that are growing or establishing a manufacturing presence here in the U.S. There are many others like them, and we'll be profiling some of these in future *Postings*. But this is a good time to take a step back and look at those 16 profiles, with an eye toward picking out common threads and lessons learned.

From the outset, we harbored no illusions about today's global marketplace, where manufacturers of all stripes are lured offshore not only by low labor rates, but also by substantial incentives offered by foreign governments – not to mention the buying power of foreign markets. In light of this, it would be naïve and unrealistic to expect SSL companies to do all of their manufacturing here in the U.S. But it's equally naïve and unrealistic to assume that none of it can be done here – or that American SSL manufacturers should just roll over and play dead in the face of foreign competition.

In fact, there are plenty of companies that are doing a significant portion of their SSL manufacturing here. Those we've profiled in our "SSL in America" series run the gamut from large to small, and their products range from replacement lamps, to components, to materials, to controls, to luminaires, to power platforms, to manufacturing equipment, to OLEDs. Many of their reasons for manufacturing domestically are interrelated, but all are based on good, hardnosed business sense.

For example, many of the companies we profiled cited the fact that a substantial chunk of their customer base is right here in the U.S., so a domestic manufacturing presence not only cuts down on the cost of transportation, but allows them to respond much more quickly to the changing needs of those customers than they could from overseas. That may not matter so much for simple commodities, but it can make a big difference when it comes to luminaires and other complex products – and will become even more critical as SSL designs become increasingly "intelligent."

In addition to making it easier to stay on top of customer needs, U.S. manufacturing shrinks lead time – often to a matter of weeks instead of months – by eliminating the need to ship products across the ocean. Faster lead time increases customer satisfaction and also enables manufacturers to make products to order – often by customizing baseline models to the needs of the installation – instead of keeping an extensive inventory on hand.

Making products to order means meeting customer needs better than would be possible with off-the-shelf products, but it also has other advantages. Tying up less money in inventory not only makes good financial sense but, in addition, helps a manufacturer control obsolescence by reducing the chances of being stuck with products that are unsellable because they've been superseded by newer models – a very real possibility with a technology that's developing as rapidly as solid-state lighting. And custom orders often involve relatively small quantities, whereas many overseas factories are set up for high-volume production and add a surcharge for smaller runs – to say nothing of the higher freight charges that result when maritime shipping containers are not completely filled.

Another advantage of manufacturing domestically is that it allows everyone in the process – from researchers, to engineers, to production-line workers, to sales staff – to all work together under the same roof, or at least to be in fairly close proximity with one

another. This makes possible the kind of synergy and cross-pollination that can result in major breakthroughs. It also shrinks the time it takes to develop new products, as well as to respond to customer feedback and address quality issues.

What's more, it's easier to protect intellectual property here in the U.S. than overseas, which is an important consideration for those aspects of SSL manufacturing that involve proprietary formulas or techniques. In addition, it's easier to find people with the specialized skill sets required for some aspects of SSL manufacturing. And our country's strong tradition of independent thought and "outside the box" approaches makes for an intellectual climate favorable to the sort of innovation that's crucial to a developing technology such as SSL.

Many aspects of SSL manufacturing can be – and often are – automated, which negates the advantage of low overseas labor rates because the cost of capital equipment is the same the world over. On top of that, the U.S. is home to a number of state-of-the-art automation facilities that are already set up for that sort of thing.

Another factor to consider involves a part of the infrastructure that's so basic we rarely give it a second thought here in the United States. Electricity is an essential component of the High-Tech Age we live in, and it's especially critical for certain aspects of SSL manufacturing – such as making LED substrates, which is vulnerable not only to power outages, but also to voltage spikes. Those unwelcome occurrences are less likely here in the U.S. than overseas, thanks to the reliability and stability of our electric grid.

Despite the many advantages of manufacturing solid-state lighting in the United States, it's far from a no-brainer. The attractions of overseas manufacturing are real, and it would be foolish to sweep them under the rug. But news reports of offshore migration obscure the reality of the situation, which is much more nuanced and less black-and-white. As we've learned from the 16 companies we've

profiled so far in these "SSL in America" *Postings*, there's definitely room for a U.S. manufacturing role in solid-state lighting. The real question is what, exactly, that role should be – and what DOE can do to foster it.

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