

# SSL Postings

U.S. DEPARTMENT OF ENERGY

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*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 [DOE white paper](#) “Keeping Manufacturing in the United States,” which grew out of DOE’s 2010 SSL Manufacturing R&D Workshop.*

## Spotlight on nTact

nTact is a manufacturer of solution-processing deposition equipment that’s used to make a variety of microelectronic devices, including OLED lighting panels, so among its customers are OLED panel manufacturers and researchers. Solution processing is typically a less costly way to do the deposition than the standard vacuum deposition methods. Miguel Friedrich, nTact vice president of sales and marketing, says that with OLED panels, his company’s equipment is currently being used mainly to deposit the hole-injection layer, but some customers are researching its possible use in depositing other layers in the OLED stack, such as the hole-transport layer, transparent conductive layers (indium tin oxide replacement), as well as the emitter layer—although with the latter, there are still some challenges to be overcome.

nTact is based in Dallas, where it not only does its R&D but also a good portion of the manufacturing involved in producing its deposition equipment. Currently, about 15 fulltime nTact employees are based in Dallas, including machine shop workers, assembly workers, engineers, and administrative staff. nTact evolved from FAS Technologies, which started in 1988 with a focus on developing a scalable coating technology to replace traditional spin-coating for the emerging LCD industry. FAS Technologies pioneered the use of slot-die coating for depositing photosensitive materials on LCDs, a technique that became the de-facto standard. But with the eventual migration of virtually all LCD manufacturing to Asia, that aspect of the

company's business tailed off, and in 2006 it began adapting its technology to emerging-market applications, including OLED displays. In 2009, FAS Technologies became nTact.

nTact does a lot of custom manufacturing, so it's very efficient for the company to do its manufacturing domestically, which enables it to react quickly, with short lead times. Miguel adds that it also allows nTact easy access, so that its employees can be involved in the entire manufacturing process. He notes that while a few components, such as the controls, are imported from overseas, up to 40% of nTact's manufactured parts are produced in-house, with the other 60% outsourced—mainly to companies in Texas, but some to companies in other states, and a small portion overseas. All of the assembly is currently done in house, but as volume increases, that too will be outsourced—although, again, primarily to local contractors.

Miguel explains that outsourcing in this way keeps capital outlay low, because instead of investing heavily in manufacturing equipment, nTact can use that money to continue investing in R&D. This, he says, helps keep the company competitive by enabling it to stay a step ahead of the competition.

Another advantage of manufacturing in the U.S, he says, is intellectual property (IP) protection, because our legal system makes it easier to protect IP here in the U.S. than overseas. In addition, most of nTact's manufacturing processes are highly automated, which helps negate the advantage of lower overseas labor rates. And because some of the components of the equipment it makes are very delicate and easily damaged, most of the company's products have to be shipped to customers by air, which is very expensive. Thus, it makes sense for nTact to do the bulk of its manufacturing near to where most of its customers are.

Since there's little if any mass-producing of OLED lighting panels at this point in time, most of the systems nTact sells for OLED panels are used for R&D or pilot lines and are produced at fairly low volume. While most of its customers are in the U.S. and Europe, Miguel says the company has been getting a lot of interest from Asian manufacturers lately, primarily for use in making OLEDs for displays, so nTact has considered the possibility of moving some of the assembly overseas to be closer to Asian customers. A huge determining factor in where the company will ultimately do most of its manufacturing, he says, is how things shake down for OLED panel manufacturing in the U.S. Although virtually all OLED display infrastructure is in Asia, OLED lighting is a different enough animal (i.e., it uses different infrastructure) that the field is wide open for the U.S. to establish a dominant manufacturing presence. Although the jury is still out, Miguel is optimistic that this will happen.

nTact 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@akoyaonline.com](mailto:postings@akoyaonline.com).