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Benefits of Custom LED & LCD Technology

Optical bonding

One of the most significant developments in the global optoelectronics and display markets over the past few years has been a complete revolution in the value proposition offered by custom technologies. Recent technological advancements have radically redefined industry notions about the inherent benefits and drawbacks of customized versus standard technologies.

avionics display

Understanding how customized technology has evolved, the unique benefits it provides end users, and the process through which quality providers create personalized solutions can help brands speed time to market, identify cost savings, improve product performance and enhance brand differentiation.

Over the past five years, there has been a radical improvement in the quality, cost and speed of custom LED and LCD product creation.

The Evolution of Custom LED & LCD Technology - Updating Outdated Assumptions

For much of the past 20 years, custom made LED and LCD technologies were commonly associated with enhanced application-specific performance but also with higher costs, long lead times and reduced reliability. Over the past five years- technological advancements have completely redefined how custom made technology performs on each of these fronts.

Cost

In the past, customized technologies were often more expensive than their "off-the-shelf" counterparts due to the need to create custom made tooling and pay for design engineering expertise for product design. Happily, this is no longer the case. Over the past few years, technological advancements have significantly brought down the cost of tooling materials. At the same time, many quality LED and LCD suppliers have started offering complimentary design engineering support to customers looking to create custom solutions. These two developments combined with the many process simplifying and performance enhancing benefits of customized technology (outlined below) mean that oftentimes personalized technologies are less expensive than standard technologies over a product lifetime.

Lead Times

The time it takes to deliver a custom solution - from product design through delivery and production -- has also been dramatically reduced in recent years. As custom tooling has been simplified and quality suppliers have developed expertise in the specific challenges of custom technology development, processes have been streamlined resulting in shorter lead times. Whereas previously a custom made technology could have a lead time of three to four

months, today personalized technologies can have lead times as short as two to four weeks for LEDs and four to six weeks for LCDs.

Product Reliability

It is also no longer appropriate to view custom technologies as less reliable than standard products. Over the past several years, quality suppliers have developed significant expertise in developing consistently high-quality custom made LEDs and LCDs. A good supplier can deliver products with less than 50 to 100 parts per million (PPM) failure rates.

A quality LCD provider has the technical expertise to create a customized LCD specifically tailored to an applications performance and cost needs and can integrate this optimized technology into a compreh

Benefits of Customized LED & LCD Technology

There are several key cost and performance benefits that personalized LED and LCD user interface technology provides when compared to standard off-the-shelf technologies.

Cost

The ability of a quality supplier to identify the most effective technology for a particular application and create a streamlined production process that integrates various components (like light pipes, switches, connectors, PCBs, etc.) in the most efficient way possible generates cost savings in a number of different ways.

- As a single personalized LED or LCD supplier can provide a comprehensive custom made solution, the number of suppliers needed is reduced, reducing procurement costs.
- Acquiring various components through a single supplier allows for a single bill of materials, simplifying accounting processes and reducing transaction costs.
- As quality LED and LCD providers today offer complimentary product integration support for custom made technologies, expense on design engineering is saved as design engineers no longer need to spend time and money researching individual components and integrating them in a way that ensures maximum efficiency. In addition to saving expense on design engineering, this also saves time on product development and speeds time to market.
- Cost savings can also be achieved through more efficient technologies. Because the product is custom-tailored to specific application requirements, cost savings are achieved by identifying the components that most exactly fit specific product demands. For example, energy savings can be generated if a high output / low power consumption technology can meet and fulfill all performance expectations (rather than over spending on high power that is not needed).

Performance

Due to their expertise in personalized product design and integration a quality LED or LCD supplier can provide technology that meets and exceeds performance expectations in a number of ways.

- Enhanced reliability and reduced infant mortality is achieved by having experts identify and integrate the most efficient and effective components in the most streamlined manner into a

total solution.

- Because the technology is custom designed for a particular application - it can be created with custom wavelengths or optics to match application needs in a way that off-the-shelf technologies cannot match.
- The ability to acquire a personalized technology with unique performance abilities enhances brand differentiation and allows products to stand out in crowded markets.

The Personalized LED & LCD Product Development Process

One good way to identify a quality LED or LCD technology provider is to study their customized product development process. The following three steps should be offered by a quality provider.

1. Focus On Application Needs

The first step of a custom design process should always be to ask questions in order to understand exactly what the customer's needs are for a particular application. Rather than pushing a customer towards a particular product solution already in their portfolio, a quality supplier will instead put their focus on customer needs and identify a solution that is custom-tailored to an application's specific performance and cost requirements.

2. Provide Expert Design Support

A quality supplier will provide expert and complimentary product design support. Further, a quality supplier is flexible enough to provide this support in the way that best matches the application needs. For example, a quality supplier is ready to design a solution from scratch or help tweak an existing product design. Several design options should be presented that meet and exceed expectations. Also a quality supplier provides complementary custom product design support for small, medium and large volume products.

3. Streamline Entire Production Process

Personalized product development is not completed until the product has passed through the entire production process - from in-bound inspection, to production, to in-field performance. A quality supplier not only provides tips on how to streamline the entire production process for maximum efficiency, they also have experts available worldwide to provide assistance in each step of the process. This helps ensure that the personalized product designed for maximum efficiency and performance can in fact provide superior performance as the product moves out of design and into production and distribution. Quality LED and LCD suppliers have representatives worldwide to guide products out of the development process and through production in tangent with any contract manufacturers or other production partners.

In today's unique marketplace where design engineers must meet the growing demand LED and LCD technologies with reduced resources due to global economic conditions, it is key to stay up to date with the very latest being offered in the way of customized technologies. Identifying a quality custom made LED or LCD supplier can have a significant impact in obtaining the best possible technology for your specific performance needs.

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