



OLED: Form Follows Function for Digital Displays

Presented by:

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We are witnessing the dawn of a new era. With the introduction of a new palette for creating environments and engaging customers, OLED technology has reinvented the AV digital display. It is now possible to create environments that simply weren't possible with LCD panels. You can now create stunning digital environments within your space that truly engage your staff and customers to pull them in. With OLED, never before possible configurations of super-thin, curved, and even double-sided displays bring your messaging, imaging, and branding to new life with a totally new approach and new opportunities to engage.

INTRODUCTION

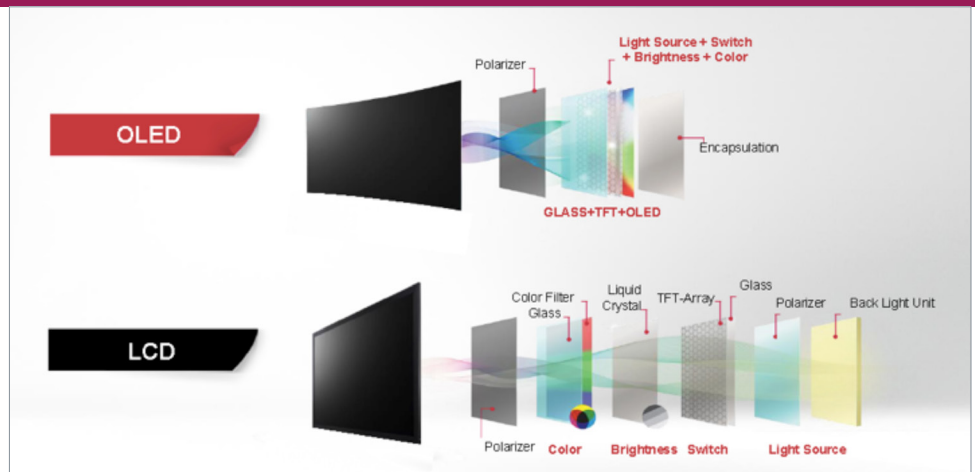
With so many AV and digital signage displays in recent years, it's been hard to spot one technology that lets your messaging and branding stand out from the crowd—until now. The new Organic Light-Emitting Diode (OLED) technology stands out because of its superior imaging. OLED provides not just incremental imaging improvements, but dramatic improvements over LCD panels for contrast, color saturation, viewing angles, and more. OLED is not your father's flat panel display—it's a stunning reinvention of digital imaging that allows you to create an immersive experience for customers, employees, and brand stakeholders. Can you imagine a dual-sided display in a retail store or a lobby of a company? With OLED, you can have separate content on each side of a dual-sided display. The OLED 4K curved display can bring your branding right into the retail space with stunning image quality in a way no LCD display can. Your retail, enterprise, educational, or museum space can be reinvented with attention commanding technology far beyond the capability of previous LCD panel-based displays.

THE NEW REVOLUTION IN DISPLAY TECHNOLOGY

OLED is an entirely new display category that uses a revolutionary technology to deliver images with infinite contrast and vastly greater color space. OLED provides images that are unlike any picture that LCD/LED flat panels or TVs can deliver. Because of OLED's unique capability to turn each pixel on or off completely, OLED displays produce perfect blacks, vibrant colors, and rich shadow details. The display even maintains its sharpness when bright objects are next to dark areas. This is an upgrade from LCD TVs that have a halo effect from lights that

bleed over from lighter to darker parts of the displayed image.

The name, Organic Light-Emitting Diode, is the key to understanding the technology. "Organic" refers to the carbon film layer inside the panel that produces the images the eye sees. Unlike LCD panels that need a backlight, which often includes a fluorescent bulb or LED backlight to shine through the LCD panel, OLED pixels emit their own light to produce the image. The viewer sees each pixel directly. The color saturation, contrast, and off-axis viewing are far superior to images on LCD panels. The



OLED-based displays are self-lighting displays without BLU liquid crystal. The viewer sees each pixel directly because the color saturation, contrast, and off-axis viewing are far superior to images on LCD panels.

bottom line is the viewer is pulled into your message and images.

FORM FOLLOWS FUNCTION FOR DIGITAL DISPLAYS

“Form follows function,” a phrase known to most architects and industrial designers, refers to a principle associated with the innovations of modernist architecture and advanced industrial design in the 20th century—and the principle is even more relevant for technology in the 21st century. The idea is that the shape of a building or

of smartphones, that are essentially computers that can fit into our palms and pockets. The idea is not to design a product and then try to force that design onto the user. Rather, the function—the needs of the user—dictates what form is needed. When function comes first, form follows function.

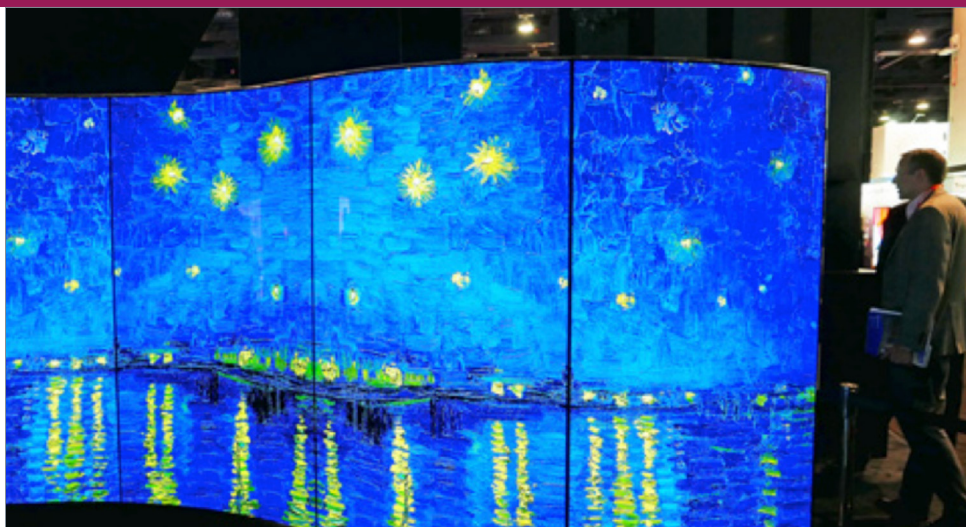
In the AV world in recent years, unfortunately, it’s been more of a case of function following form. The form (i.e., the product) came first, then it was pushed out in an attempt to satisfy all needs. There is now a huge demand for display solutions that go beyond the “me too” look of the LCD flat panel. These solutions bring stunning imagery and a new form factor.

With OLED, form follows function. Because the OLED light sources are so tiny, the depth of the OLED screen is small—and less depth has many advantages. Less depth for each display means less weight for that display, which translates to easier and less costly mounting and installation. More importantly, it means users can be more creative about where they place displays.

“Not only is OLED superior in image quality,” says Stephen Blount, product marketing manager at LG, “but when have

OLED displays show an infinite contrast ratio through perfect black so that it looks much brighter. Studies show that viewers find the images more beautiful and comforting than images on an LCD TV.

of any tool or device should be based upon its intended function or purpose. This concept has brought untold numbers of innovations in architecture, industrial design, and consumer product design. We can see this in the shift away from ornate building facades to sleek, practical ones; in streamlined, lighter weight, and more fuel-efficient cars; and in the design



you ever seen a dual-sided display in a retail store, airport, or company lobby? With OLED, you have a display that is less than one centimeter in depth. You can also have separate content on each side.”

Welcome to the new world of display—this is not your father’s flat panel. With the new dual-sided OLED displays from LG, there are no back or front sides. Users can show content on both sides of the display. It’s amazing that different content can be shown on the A and B sides of the display. Users can mirror content on both sides of the display or show different content on both sides in new ways. The thin form factor of OLED, including its light weight and mounting innovations from OLED supplier LG, allows users to mount OLED displays to fit their needs.

indeed follows function. Users have the option of mounting OLED displays in the following ways:

- Floor standing
- Side mounting from a wall (see page 5)
- Ceiling mounting

Numerous retail, enterprise, educational, museum, and transportation spaces that could not be effectively addressed with LCD panels are now ripe for AV displays with OLED. For example, a long aisle in an airport or a retail store can now feature displays that literally jut into the space. This kind of display will command attention in a way that an easy-to-overlook, wall-mounted LCD panel never could.

In addition to these form factors and specs of the revolutionary new OLED displays, LG offers another unique form for OLED that takes display design to a new level—a curved OLED display for a truly stunning form factor that is not available in any other display technology.

LG’s Dual-View Curved Tiling OLED display offers a beautifully curved design using slim tiles to form customizable displays that link two, three, or four tiles together. Users can combine both the messaging and content doubling of the dual-sided OLED with a curved design that stands out in any environment.

There is a huge demand for display solutions that go beyond the “me too” look of the LCD flat panel.

How thin and light, are OLED displays? While a 55” LCD video wall is about 86.5mm deep, an LG 55” OLED is only 3.65mm deep. This is a huge difference. A 55” LCD video wall weighs twice as much as an equivalent OLED display. Form



"It's about thinness," says Dan Smith, senior director of sales at LG. "And the ability to curve [provides] flexible options, not just 'flat' panels. More than anything, it's about the ability to put these OLED panels anywhere. You can mount them flat side up. You can curve them. You cannot do that with LCD."

"It all comes back to form factor," says Smith. "Form follows function in the best way possible. The form of this new OLED technology—thinness, less weight, the ability to curve, and to mount anywhere in any fashion—means that now the designer, working with the user, can make the solution fit the need, not the other way

around. That is what great product design and innovation is all about."

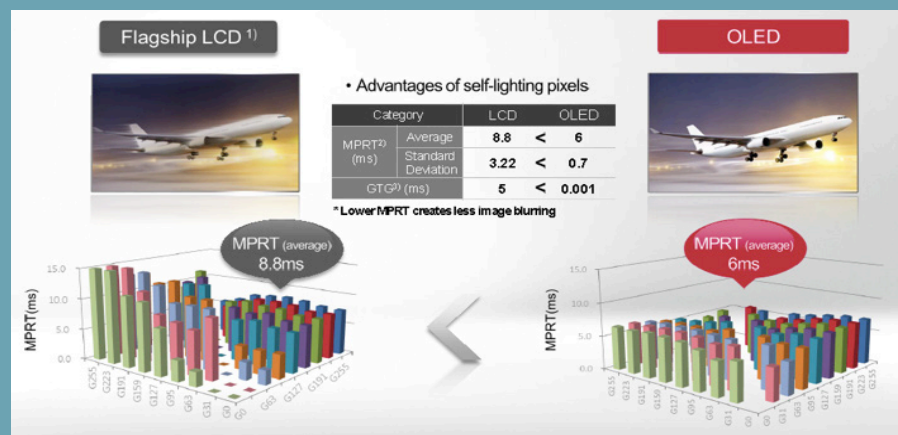
CONCLUSION

OLED is an entirely new display category that uses a revolutionary technology to deliver images with infinite contrast and vastly improved color, even from wide viewing angles. OLED is unlike anything that LCD/LED panels can deliver. OLED technology will revolutionize the use of the digital display market with new solutions. It provides applications that are not served by LCD flat panels and opens up new possibilities of branding and messaging for retail, corporate, educational, museum, and transportation spaces.

INNOVATION IN MOTION

The advantages of OLED go well beyond static image quality. OLED can simultaneously process several moving images. This technology solves the problem of LCD panels in which the liquid crystals that form the image have to literally move and toggle like switches to change the image on the screen. That delayed, slower response time with LCD displays is technically called a slower

refresh rate. A slow refresh rate results in motion artifacts. When an image has motion artifacts, liquid crystals cannot move and reset quickly enough to keep pace with the rapid motion in the content (e.g., a car, airplane, or athlete racing across the screen). With a much faster response time, OLED creates clearer images without blurring, even with fast-moving action on the screen.



OLED is capable of a refresh rate as low as 0.001ms, compared with the much slower refresh rate of 5ms for LCD. OLED processes and changes content 5,000 times faster than a standard LED-backlit LCD panel. Additionally the lower Motion-Picture Response-Time metric (MPRT) (i.e., the time it takes for a pixel to go from black to white to black again) means less image blurring with OLED versus LCD.



THE LG PERSPECTIVE ON OLED—TOWARD A NEW DESIGN PARADIGM

LG Electronics USA is at the forefront of display applications and technologies that address all the needs of retailers, entertainment providers, museums, or any space that needs to have engaging branding or messaging. LG Electronics USA just announced the introduction of its OLED displays. LG is the only manufacturer to offer the new technology for commercial AV and digital signage application. LG is known for and provides full commercial warranties, global service, and customer support.

For full descriptions of the complete line of LG's OLED display offerings, [visit this site](#).

LG's new OLED offerings include the following:

55-INCH DUAL-VIEW FLAT OLED DISPLAY (55EH5C)

The LG Dual-View Flat OLED display offers a space efficient view to provide customers a two-sided media experience in full HD (1920 x 1080) resolution. With

its very slim profile, measuring under 8mm, and three different installation options — ceiling suspension, wall mount, and floor stand—this unique flat OLED commercial display allows for the most efficient use of any space while utilizing a high-end display solution. The 55-inch class display (54.64 inches measured diagonally) has the unique ability to swap and mirror content on either side of the screen with a simple press of a remote control button.

65-INCH DUAL-VIEW CURVED TILING OLED DISPLAY (65EJ5C)

The LG Dual-View Curved Tiling OLED display offers a beautifully curved design that uses slim tiles to form customizable displays that link two, three, or four tiles together. The 65-inch class (64.53 inches diagonally) portrait display offers a paper-thin, eye-catching, dual-sided view. This display option offers customers a multimedia experience while providing retailers a way to utilize their space efficiently. Each screen offers 4K Ultra HD (3840 x 2160) resolution and showcases a bigger, bolder, and more lifelike viewing experience to capture the viewer's attention. The high-performance system-on-a-chip (SoC) and the large internal memory capacity enable perfect UHD-synced playback without the need for PCs or media players.

CUSTOMIZABLE SOLUTIONS

LG can customize beautiful, designed-to-function OLED displays. LG can work with you to develop a solution that transforms an environment and how people interact with it.

[Click here](#) for more information on the new OLED solutions from LG. ■