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Analysis

OLED - Vitex Systems Seals a Deal and Flexes Its Strength

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March 7, 2003 *iSuppli/Stanford Resources* - Vitex Systems has been developing a thin-film encapsulant called Barix™, and has now made two strides forward in its commercialization. The company has sealed a deal with Samsung SDI for Barix' use in products, and it has demonstrated a flexible panel with development partner UDC.

The last step in OLED processing has proved to be one of the most vexing. The delicate OLED materials must be protected against water vapor (and to some degree, oxygen), which requires some form of encapsulation of the device. The significance of a thin-film barrier is clear: only one glass substrate will be needed, halving the display's thickness and weight. This is an enormous advantage compared to an LCD, which requires not only two substrates but also a backlight.

The Barix development program with Samsung SDI will proceed in two stages. The first is called the Barrier Engineering Program. Samsung has allotted a fixed, unspecified sum of money to be used during the remainder of 2003 for Vitex to tune its barrier material to work with Samsung's process for manufacturing active matrix OLEDs. This work will be performed by Vitex, and the films must meet strict performance criteria specified by Samsung.

If the technology successfully passes this stage, Samsung SDI will incorporate Barix into its full-scale production facility as it rolls out AMOLED products. This will entail new machinery. Vitex has a partnership with equipment maker Tokki, who is already designing a system in anticipation of selling it to Samsung SDI.

It is worth noting that this agreement involves no exclusivity. Barix is intended to be sold widely within the OLED industry so that the barrier step can never be a barrier to progress.

The endorsement by a major player like Samsung SDI is of tremendous value. Barix is not yet a proven technology--Samsung has specified that it has no obligation to proceed beyond the Barrier Engineering Program if Vitex cannot meet its requirements-- but nonetheless, the panel maker has judged that this is a risk worth taking. It will serve to spur the industry toward adopting thin-film barrier technology. And concomitantly, it will enhance OLED's value compared to LCD.

Looking farther to the future, a thin-film encapsulant will be needed for flexible displays. Obviously, a solid metal can or glass plate cannot work in this case. Vitex has also been developing a product called Flexible Glass™, which is a PET (polyethylene teraphthalate) substrate with a variety of functional films on it, including Barix.

UDC has recently unveiled flexible OLED panels fabricated on Flexible Glass. The displays, which are passive matrix and use red or green emitting material, are less than 0.7 mm thick. They can be flexed to a radius of curvature of less than one inch (approximately the size of a golf ball). The prototypes have 4,096 pixels (64 x 64) with 80 dpi and 32 levels of grayscale. The companies plan to

keep working together to further develop the technology.

Overall, Vitex' recent successes enforce the notion that OLED players will overcome the technical hurdles still hindering OLED's growth.

This article is excerpted from Emerging Displays Review, a monthly report written by Dr. Kimberly Allen - Director, Technology and Strategic Research for iSuppli/Stanford Resources - covers new and exciting developments in display technology including OLED displays.