

UniPixel, Inc.

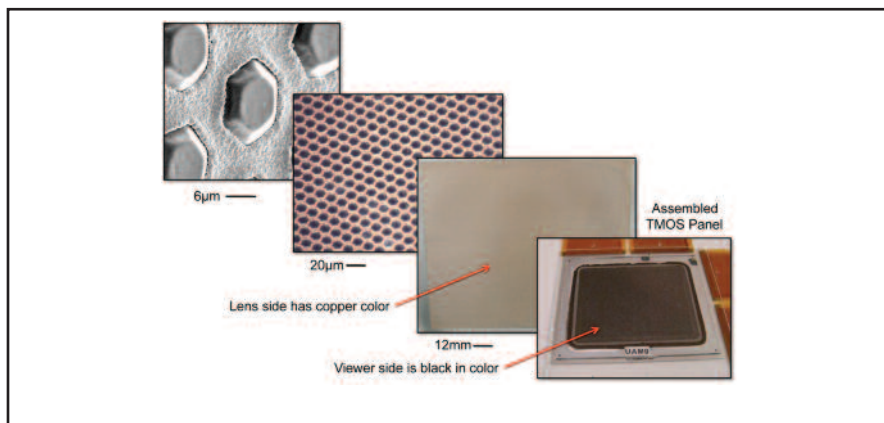
Clearer Than Crystal

BY HENRY TRUC

The market for liquid crystal display (LCD) technology has become ubiquitous in the world of consumer electronics. From big-screen TV sets to hand-held devices, LCD displays have become the backbone connecting consumers and their products. But as impressive as the LCD foothold is, it is only a matter of time before a new technology advances it.

Enter display technology developer UniPixel, Inc. (OTCBB: UNXL). The Company's Time Multiplexed Optical Shutter (TMOS) technology looks to provide manufacturers with the means to produce a lower cost, higher-performing display panel. The firm's representatives see a huge opportunity for TMOS to capitalize in the \$128-billion LCD worldwide market.

"The key to TMOS technology is that it can be manufactured within a subset of a current LCD panel's existing manufacturing facilities, so existing fabrication facilities can be utilized at lower cost," says Reed Killion, CEO of UniPixel. "Add to this the fact that 70% of the cost of an LCD panel is in the bill-of-materials (BOM). By transitioning from an LCD manufacturing process to a TMOS manufacturing process, an LCD manufacturer can reduce the BOM costs for its display production anywhere from 40% to 60%, depending on the size of the display. Because of this, TMOS could affect the LCD supply chain dramatically if the industry were to transition from LCD manufacturing processes to TMOS manufacturing processes. The impact to suppliers could be a reduction anywhere from \$28 billion to \$42 billion in revenues attributable to the BOM cost alone. As a result the transition from LCD to TMOS could represent a major paradigm shift relative to the LCD supply chain and industry's BOM costs."



UniPixel has developed an inkjet patterning process for TMOS Active Layer films that allows conductor materials to achieve trace widths of less than 6 microns.

The major subcomponent of UniPixel's TMOS display system is its Opacity™ Active Layer film. Born out of its efforts to develop the Active Layer film for TMOS, UniPixel developed unique capabilities out of necessity that have become the platform for its Opacity Performance Engineered Films. These capabilities include the methods to create precision geometric micro optic structures, and a thin film conductor patterning process that were not previously available anywhere in the industry. With these challenges solved, UniPixel has found that these particular capabilities have very high value in a broad range of applications and products.

UniPixel's first commercially available product is the most immediate by-product of the Opacity Performance Engineered Film platform. UniPixel has launched its Opacity FPR Film—a fingerprint-resistant film that the Company has developed and patented to protect first surfaces from scratches, fingerprints, and smudges. Opacity FPR's initial target application is the touch screen market. While TMOS display technology remains the Company's primary

focus, it also intends to leverage the Opacity Performance Engineered Film platform to bring other advanced films to market. Killion believes that variations of the Company's films can serve a wide variety of industrial applications, including solar, printed flexible electronics, medical and defense.

"It just so happens that there are other markets that can benefit from the development work that we've done for our Opacity Performance Engineered film platform," Killion added. "We have the ability to design and manufacture thin films that combine precision optics in microstructure technologies, with state of the art inkjet processing capability to intricately pattern conductor lines and spaces, and to surface engineer the films with performance materials. The combination of some or all of these elements into thin film solutions can benefit the display market, as well as solar and flexible electronics systems as well.

UniPixel's highly advanced thin film design work has not exclusively been the basis for its advances. The Opacity FPR Film came about through a serendipitous moment. Dr. Robert Petcavich (UniPixel's VP

& GM of Opcuity Films) was handling an Active Layer film in the lab, and realized that when he touched it, he did not leave fingerprints on it. So the team analyzed the phenomenon to understand why, and then proceeded to optimize the microstructures and surface characteristics of the film to develop what the Company believes is the industry's only truly fingerprint-resistant film. The analysis determined that the film's surface features served to break up the fingerprint pattern, and the valleys between the structures create a capillary action that wicks the fingerprint oil away from the top surface. In this way it becomes a mechanically oleophilic film. When you touch the film, the fingerprint oil dissipates and does not remain visible on the film's surface.

By bringing its fingerprint-resistant film to market, UniPixel is transitioning from a development stage company to a commercial manufacturing business. Company officials expect to begin generating revenue from its fingerprint-resistant films and TMOS development licenses as early as this year.

"Leveraging our leading edge technology advancements like we have with the fingerprint-resistant film, we plan to continue developing film products that are differentiated and benefit from our capabilities. We have designs in process for other films that are performance-driven that we'll be releasing in the near future. UniPixel is moving aggressively forward with designs that commonly utilize the production processes that we have worked to create," Killion says. "We expect to start taking orders in the third quarter, and to begin shipping products in the fourth quarter. We plan to begin generating revenue in 2009, and to be cash-flow positive by the second half of 2010."

The Company is also able to leverage its portfolio of intellectual property as an advantage. With 126 patents filed and 38 already issued, Killion says working at UniPixel is "like being at innovation station." The Company eventually plans to begin licensing its TMOS display technology to current LCD panel manufacturers and to supply them with its Opcuity Active Layer film.

While he acknowledges the headway LCD has made in terms of lowering operational and manufacturing costs, Killion says that the technology is very mature and is close to maxing out its efficiency potential.

"LCD technology owns about 98% of

the flat panel display market," he says. "They have done an exceptional job of driving out all the costs from the operations and manufacturing standpoint. The only place to pull more costs out of an LCD panel today is not by generating higher yields or operational efficiency; it's by beating down the supply chain. They've hit the bottom relative to what they can do on some of the cost-reduction measures."

This bottom provides an opportunity for UniPixel to capitalize on its TMOS technology. Killion says, "that because TMOS can use a subset of the existing LCD manufacturing infrastructure, LCD panel manufacturers do not have to build any new infrastructure to support TMOS manufacturing. Thus, the switch from LCD to TMOS would not be a capital-intensive issue."

Another benefit that TMOS offers is the optical efficiency of the system, which leads to greater brightness at a substantial reduction in power consumption. OEM manufacturers and consumers should find the design and performance advantages of the TMOS display very attractive.

"We have a theoretical max of about 61% optical efficiency from our TMOS display technology that we design to, whereas an LCD offers about 5% optical efficiency," Killion says. "Every layer in an LCD panel is optically subtractive, and by the time the light gets to the viewer, out of the 100% that's available from the LCD's backlight, only about 5% makes it to the viewer. We have a substantial advantage in the efficiency of our system, which ultimately equates directly to power savings." According to Killion, "if all televisions and monitors in the United States in 2009 were TMOS televisions or TMOS panels—instead of LCD, plasma, or cathode ray tubes—the savings would equate to about \$5.7 billion in the US power grid alone."

In addition, UniPixel's Joint Development Agreement (JDA) with Samsung Electronics and an exclusive license agreement with Targus, Inc. help to validate the Company's vision with TMOS and its Opcuity Performance Engineered Films. The Company entered into a JDA with Samsung in February 2009 to advance the TMOS technology development and commercialization effort, and entered into an exclusive license and distribution agreement with Targus in August 2009 for specific products that leverage its Opcuity Film technology. With the ability to deliver a

more cost-effective, energy-efficient, and higher-performing alternative, it may be only a matter of time before additional manufacturers catch on to UniPixel.

"We have developed a platform with our Opcuity Performance Engineered films that is absolutely world-class," Killion says. "The core platform that we developed to support our display technology is an integral part of UniPixel's business focus and provides the opportunity for our team to develop products for a wide range of additional market segments while we continue to advance TMOS toward production." **E**

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MAKE CONTACT



OTCBB: UNXL

COMPANY

UniPixel Inc.

8708 Technology Forest Place, Suite 100
The Woodlands, TX 77381
Phone: (281) 825-4500
Fax: (281) 825-4599
www.unipixel.com

CONTACT

Investor Relations

Laura Guerrant-Oiye
Guerrant Associates
Phone: (808) 882-1467
lguerrant@guerrantir.com

SHARE DATA

52-Week Price Range: \$0.33 - 1.15
Shares Outstanding: 22.9 million
Market Cap: \$10.3 million

BALANCE SHEET DATA (as of June 30, 2009)

Total Assets: \$1.49 million
Long-Term Debt: \$0.63 million
Shareholders' Equity: -\$17.29 million
Book Value per Share: -\$0.76