

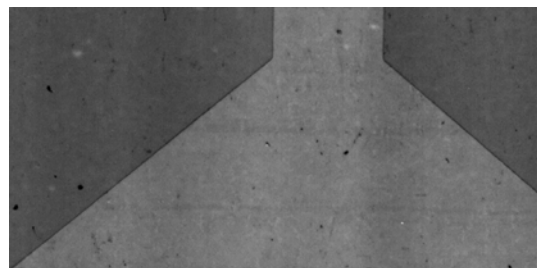
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## **Dainippon Screen Develops Inspection Technology For Transparent Electrodes of Touch Panels**

Kyoto, Japan – June 7, 2012 – Dainippon Screen Mfg. Co., Ltd. has developed a new technology that is able to optically visualize the transparent electrode patterns used in the touch panels of smartphones and tablet PCs, allowing the line widths of circuits and film thicknesses to be measured and inspected. Screen plans to continue development of a measurement and inspection system equipped with this technology, with the aim of bringing a product to market by March 2013.



**Image created using conventional  
optical system**



**Image created using new optical system**

Please download the photos from:  
[www.screen.co.jp/eng/press/nr-photo\\_2012-2013.html](http://www.screen.co.jp/eng/press/nr-photo_2012-2013.html)

In recent years, the touch panel market has expanded rapidly in conjunction with the increasing demand for smartphones and tablet PCs, and has already grown to a value in excess of 13 billion dollars. The production capacity of touch panel manufacturers has also expanded from 5.8 million m<sup>2</sup> in 2010 to 9.6 million m<sup>2</sup> in 2011, and is predicted\* to reach 13 million m<sup>2</sup> in 2012.

A touch panel is equipped with a uniform array of transparent electrode circuits that cover its entire screen, giving it the ability to sense variations in pressure and electrostatic capacity when touched by human fingers or other items. Technology to increase the transparency of these electrode circuits is being continuously refined in order to achieve panel screens with greater clarity and resolution. However, as the transparency of circuits has increased, it has also become more difficult to measure and inspect pattern formats and film thicknesses.

This has led to the current situation in which it is only possible to screen for quality products using conduction testing. As a result, it has become essential to improve the circuit formatting process and feedback based on measurement and inspection results in order to further raise the quality and yield rates for touch panels. This has created an ever-increasing need for inspection equipment that can visualize transparent circuit patterns and measure line widths and film thicknesses.

Recognizing these trends, Screen has applied its optical technology, accumulated over many years, image processing technology, and inspection technology, fostered with PCB inspection systems. This has resulted in the independent development of technology capable of optically visualizing transparent patterns and measuring and inspecting line widths and film thicknesses at random points. The technology detects differences in the level of light reflection between the transparent electrode film that forms the circuit and the underlying support film.

As line widths and film thicknesses can be measured using images displaying the circuits, this system can be used for resistive, projected capacitive, and various other types of touch panel, as well as the transparent electrodes of LCD monitors. It is also able to automatically set optimal measurement conditions for circuit patterns with different materials and film thicknesses, supporting simplified, high-speed measurement and inspection, and allowing the system to be integrated into existing production lines. In addition, the measurement position information in the inspection results can be managed as numeric data. Defect information can also be fed back immediately, facilitating process management at the production site.

Dainippon Screen is planning to bring this technology to market by March 2013, after first assessing related market needs. Following this, Screen intends to extend the range of application to include the production and inspection processes for all types of electronic devices using transparent electrode circuits. At the same time, Screen will continue to address the various needs of the electronic device field and through this, contribute to the ongoing expansion of the overall industry.

\* Source: NPD DisplaySearch news, Touch Sensor Capacity Forecast to Reach 16.4 Million Square Meters in 2014 (Santa Clara, Calif., April 23, 2012)

Note: This technology will be introduced at the JPCA Show 2012 (42nd International Electronic Circuits Exhibition), to be held at Tokyo Big Sight in Ariake, Tokyo from June 13 (Wednesday) to 15 (Friday), 2012.