Eldim Deploys Speed, Feedback System in Display Measurements

Test and measuring equipment plays an increasingly important role in the pre-production, post-production and after-sales stages of manufacturing. Measurement speed is crucial: fast and accurate testing holds the key to effective yields and to customer satisfaction. Now, swift changes in technology, and rising complexity and sensitivity in digital systems hinder efforts to achieve the necessary speed and accuracy.

The display industry is at its strongest point in 25 years. Worldwide, it stands at about US$40 billion. The sector for flat-panel displays is growing about 20 percent per year. In contrast, the CRT industry is growing about 5 percent annually. LCD technology has reached a mature level, and attention now focuses on quality. Panel manufacturers are studying new proposals, especially those that promise to take quality control to the next level upward.

Speed and Quality

Eldim Co. has been working for 10 years to bring affordable measurement instruments to the display market. The company positions its products for use in the research and development (R&D) departments and quality control departments of display-related operations. Distinctive features of Eldim tools include measurements that are 100 times faster than those possible with goniometers, and feedback using the company's knowledge of production lines and processes.

Eldim's EZContrast calibrated colorimeter features a unique, patented system that derives from optical Fourier transform (Fig. 1). It can conduct angular measurements of color and luminance in less than 1 minute. It will measure more than 100,000 angles, and works with any kind of transmissive or reflective panel. EZContrast enables exhaustive tests on each panel coming off the line — a more thorough and less time-consuming method than merely sampling panels with a mechanical goniometer.

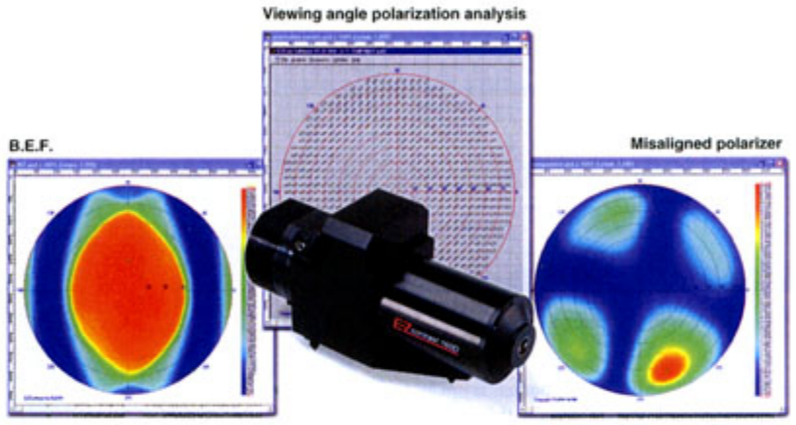

Fig. 2: The EZContrast tests polarization, color and luminance.

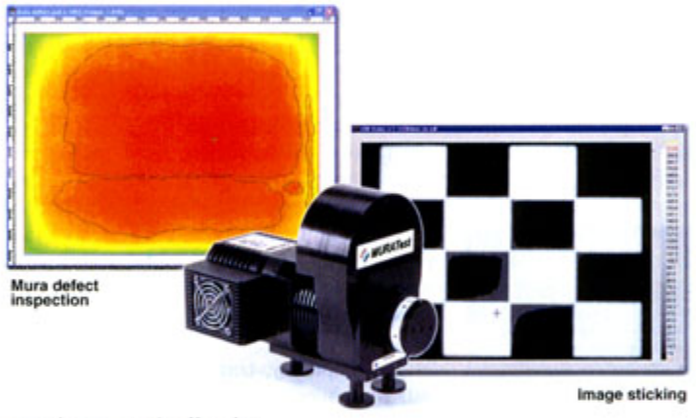

Fig. 3: The MuraTest evaluates panel uniformity.

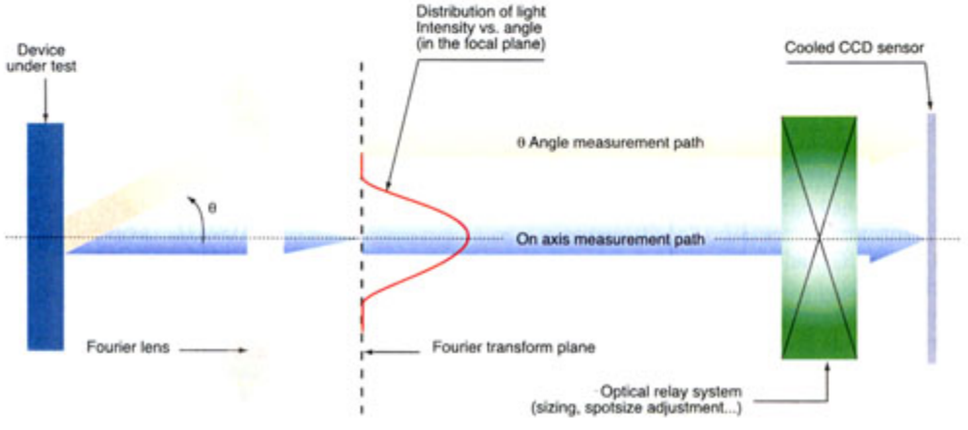

Fig.1: Basic principle of optical Fourier transform operations

Additionally, it helps detect deviations in the production process more quickly than in the past. The EZContrast' measuring speed allows detection of polarizer misalignments on the thin-film transistor (TFT) displays (Fig. 2). This provides feedback about the polarizer alignment process.

Another Eldim product, the MuraTest CCD-based video colorimeter, can replaces human visual inspection of panel uniformity (mura defect inspection, Fig. 3). It integrates a 14-bit analog-to-digital converter with a scientific-grade CCD. The combination offers excellent efficiency when evaluating display uniformity. MuraTest applies standard tests, and offers substantial savings in labor.

Other instruments for electro-optical qualification of displays include the AX160RH and AX120RH. These offer temperature control, driving units, X-Y-Z stages, and all the necessary tools for control of display specifications. Eldim tools feature fully automatic testing for quality standards. Optionally, the company can supply tools for tilt angle measurement, polarization analysis, and LCD temporal measurements. ❑