Optical bonding of e-paper displays

Optical bonding enables the connection of touch sensor, cover glass and display into one unit by means of different technologies and processes. Just as with optical bonding of TFT LC displays, this finishing process can also be applied to e-paper displays.

Advantages of the technology

E-paper displays are a display technology that reflects incident light and is easily readable from any viewing angle. The image content is permanently displayed without a power supply. One advantage of these e-paper displays over conventional LC displays is that there is no continuous image build-up and therefore no flickering. A small current pulse is only required to change the image content. However, this is associated with relatively slow switching times. E-paper displays are therefore predestined for use as static information displays.

Integration with coverlens

The integration of e-paper displays into an application always requires additional mechanical protection. An increase in stability is achieved through full-surface bonding with a Coverlens. Optical bonding thus increases mechanical protection and enables functionality for applications with extreme temperature fluctuations and increased humidity.

Elimination of reflections

The relatively smooth surface of an e-paper display causes scattering of the incident light and creates reflections. Integration behind a protective glass via air-gap bonding (adhesive frame) would further intensify these optical effects with the resulting air gap. Only the construction with optical bonding eliminates these reflections and thus enables a reliable use of e-paper displays for the demanding industrial sector.

Component selection

The respective application and its environmental conditions define the requirements for the bonding materials, the housing and the mechanical stability. Different protective glasses with frame printing, touch sensors and plastic
E-paper displays are used. Compared to the optical bonding of TFT LC displays, the processes for the extremely thin e-paper bonding are considerably more demanding and irreversible. The bonding of e-paper displays requires stable process parameters and a very high degree of automation.

**Lighting option**

E-paper are passive, i.e. non-self-illuminating displays. Due to their reflective properties, e-paper displays are therefore very easy to read even under sunlight, but not at all without incident light. In the dark, e-paper displays require additional lighting. Light distribution from the back, as with TFT displays, is not possible with e-paper displays.

The technology used by SCHURTER for this is realised with a special structure of highly transparent adhesives, the variation of material thicknesses and a light introduction. The light from LED strips is coupled in laterally and distributed homogeneously over the superstructure layers. This lighting option enables the use of e-paper displays in the dark.

**Fields of application**

E-paper displays are used in various application areas, both outdoors and indoors. They are used as digital static information displays (e.g. timetables at bus stops) as well as passenger information displays or advertising panels.

**Customised**

SCHURTER works with you to develop an e-paper display solution that is tailored to your specific application requirements. Each e-paper project is developed on a customer-specific basis. Various designs, materials and integration options with lighting option are available.

**Qualified and ready for series production**

The optical bonding of e-paper displays with different material combinations such as glass, PMMA, OCA and light guides has been extensively qualified for industrial requirements. Several projects with e-paper diagonals from 9.1" to 32" are successfully in production at SCHURTER.

**About SCHURTER**

The SCHURTER Group is a globally successful Swiss family business. With our components ensuring the clean and safe supply of power, input systems for ease of use and sophisticated overall solutions, we impress our customers with agility and excellent product and service quality.