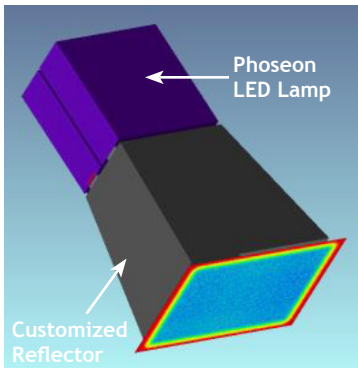


Application Note

Adhesives Curing for Display Bonding



Phoseon's LED solution

LED Curing Benefits:

- Improved display quality
- Higher process yield
- Low maintenance
- Environmentally friendly

Phoseon's FireJet™ System Improves Area Cure Process Reliability

Several precision electrochemical equipment manufacturers have adopted Phoseon's UV LED solution in their Optical Clear Resin (OCR) dispensing and display bonding equipment. The use of Phoseon's UV LED curing system significantly improves process quality and efficiency while also being more environmentally friendly. This equipment has been commissioned successfully to several major businesses for high end display product manufacturing.

The Area Cure Process

The area cure process starts with dispensing OCR on the main display. The cover glass is then fixed by vacuum and placed above the main display with the OCR between them. As the cover glass is lowered down towards the main display the OCR spreads out evenly. The UV LED curing system then moves over the top of the cover glass and is powered on to bond the two surfaces within seconds.

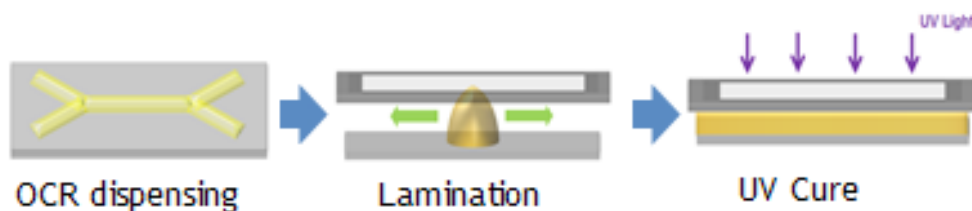


Figure 1: Display OCR Lamination Process

Benefits

By switching from a metal Halide curing lamp to Phoseon's LED solution, the lifetime of the curing system increased by a minimum of five times. The average life span of a metal Halide lamp is about 4,000 hours versus greater than 20,000 hours for Phoseon's LED system. This improvement reduces the cumbersome and time-consuming light source replacement rate and shortens the system downtime, thereby increasing the Return on Investment (ROI) of the equipment.

Another competitive advantage brought by Phoseon's LED solution is consistent UV output over the full curing area.

As shown in Figure 2, Phoseon's UV LED system provides excellent illumination uniformity across the curing area (>90%). The adhesive becomes excellent in adhesion and stronger in bonding after receiving uniform UV energy. The consistent adhesive layer enhances the optical transmission and improves the optical clarity to ensure better image quality.

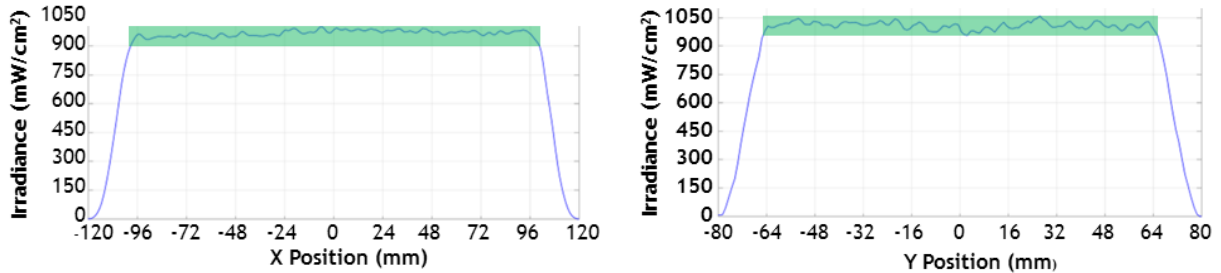


Figure 2: Comparison of Illumination Uniformity

A low temperature process is another key consideration in display manufacturing. Safe curing temperatures are usually less than 40°C at the substrate to avoid pixel damage. While the metal Halide lamp typically has 20% infrared emission generating direct thermal energy, Phoseon's UV LED lamp is a cold light source and does not generate heat itself. This helps reduce the operating temperature significantly, which helps to improve process yield and promote safe operation.

Phoseon Technology: 100% LED Focused. Patented. Innovative. Reliable.