Owens Design
Capital Equipment Design & Manufacturing

SOLUTION SETS

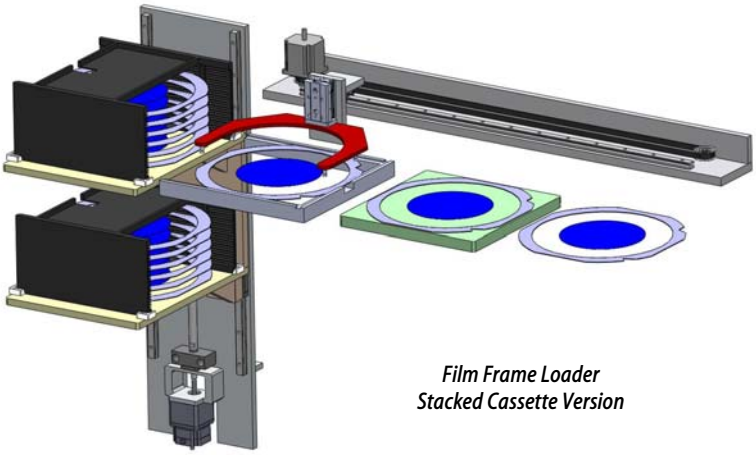
HBLED INDUSTRY

HBLED COMPLETE AUTOMATION SOLUTIONS

The dramatic growth of the HBLED market is requiring the rapid adoption of automation solutions. Reducing cost while increasing LED efficiency and yield impacts every facet of manufacturing: MOCVD, patterning, scribe, inspection, and test. Owens has deep experience with HBLED automation with proven solutions in wafer handling, film frame handling, carrier handling, inspection, and system manufacturing.

Frontend Substrate Handling

The unique processing requirements for HBLED wafers require customized handling solutions. Owens has developed specialized end effector designs that meet the stringent handling and cleanliness requirements of the next generation LED fabs.



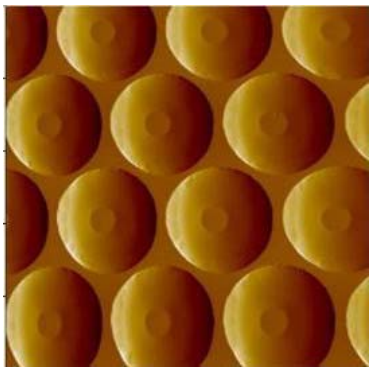
Film Frame Loader
Stacked Cassette Version

Backend Film Frame Handling

Light extraction and die packaging typically require handling the LED wafer on film frames. The automation of the film frame, film frame cassettes, and integration of film frame magazines is an important factor to improving the reliability of these process steps. Owens has developed proven solutions for film frame and film frame cassette automation including side by side and stacked cassette layouts.

Proven Solutions

Owens works closely with your engineering and marketing teams to develop a customized solution that enables a rapid market introduction of your tool. We help your team evaluate cost and performance trade-offs to ensure you have the optimal system architecture and feature set.



Close-up of Patterned Sapphire Substrate

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HBLED Automation Solutions (Cont'd)

Wafer Handling:

- Wafer Sizes: 100, 150, 200, 300 mm
- Wafer Types: Single & Double Polish, PSS, Thinned
- Wafer Bow: 100 um typical
- Substrate Types: Sapphire, Silicon
- Alignment: +/- 25 um

Film Frame Handling:

- Film Frame Sizes: 150, 200, 300 mm
- Film Frame Material: Metal or Plastic
- Film Frame Cassettes: 13 slot x 300 mm; 25 slot x 200 mm
- Sensors: Mapping, protrusion, cross & double slot

Cassette Handling:

- Types: Open Cassette, SMIF, FOUP
- Sensors: Wafer mapping, protrusion, cross & double slot
- ID Tracking: OCR, RFID, Barcode

Cleanliness

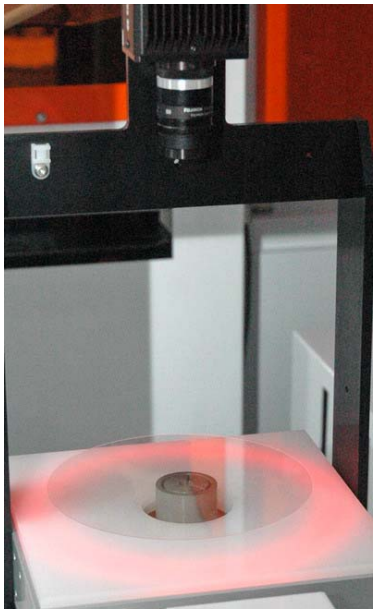
- ISO Class 2 Environment

Reliability:

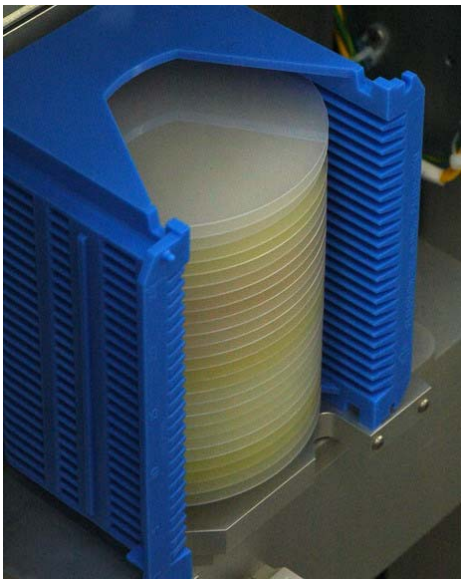
- MTBF > 5000 hours
- MTTR < 4 hours

Regulatory Compliance

- SEMI, CE, NFPA, UL, FMRC, ROHS



Transparent Substrate Alignment



100 mm Cassette Handling