

**Problems  
with  
DISTORTED  
GLASS?**



**Architects  
Requiring  
improved  
optical quality?**



**LiteSentry  
SOLVES  
the  
PROBLEM**



**Need  
MILLIDIOPTER  
Measurements?**



## The Osprey®5 Distortion Measurement System for Glass and Plastic

### Customer Testimonials

“We achieved 15% to 20% throughput increase after installing the Osprey. The operators tended to run hot to decrease quench breakage. With the Osprey the operators are a lot more conscious of quality. They see the quality of all the glass and keep cycle times optimized. This results in lower cycle times and increased throughput.”

*Joel Wrenn, Plant Manager, Trulite Glass & Aluminum Solutions - Cheswick, Pennsylvania, 2009*

“We have experienced a significant improvement in lamination (due to improved flatness of tempered glass entering lamination). Historically, our tempering loss (discarded laminated units with tempered glass) was 35 times that of annealed glass loss. Now the difference is not measurable.”

*Rick Sands, Quality Technician, Oldcastle Glass - Perrysburg, Ohio, 2008*

“The Osprey is a great piece of equipment. We don't need to go through a physical gauge measurement every hour. We make adjustments as we go to improve quality. And we don't have to sort through an hour's worth of glass if a physical gauge measurement is out of specification.”

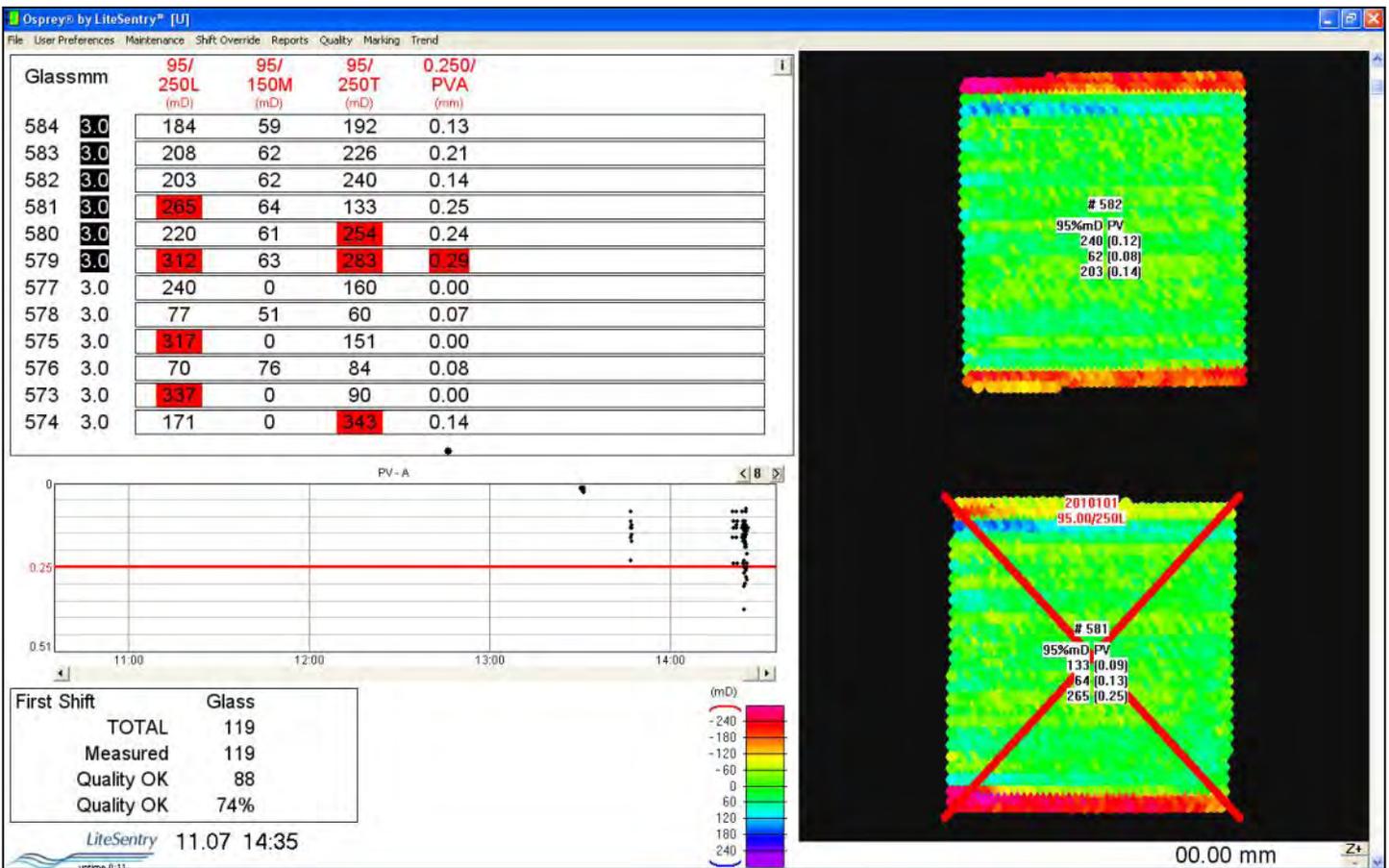
*Process Engineer, Glass Processor - Utah, 2010*

“The Osprey gave us far more than expected. During the first two weeks of use we increased throughput by optimizing recipes. We get better optics and increased throughput!”

*Doug Sampsel, President, Trulite Glass & Aluminum Solutions - Atlanta, Georgia, 2007*

“The Osprey helps us after furnace maintenance. Recently maintenance left a roller mispositioned on a saddle bearing. We saw the problem immediately upon startup on the Osprey and corrected the problem before making lots of bad glass.”

*Tempering Process Engineer, Glass Processor - Minnesota, 2012*



↑ Osprey Output Screen

Specifications ↓

**Application:** Batch or continuous tempering lines, lamination lines, float lines, plastic sheet manufacture

**Substrate:** Glass or plastic, 2 to 19 mm thick; clear, hard or soft coat low E, tinted, or reflective

**Inspection area/glass width:** 500 to 3,500 mm (20 to 138 inches)

**Operator Interface Display**

- Distortion in optical lens power in mD (millidiopters) and peak-to-valley (inch) or local bow (mm)
- Pop-up 3D visualization shows optical topography and 2D view of side profile
- Color-coded distortion mapping
- Statistical results for each sheet or section of web
- Quality and throughput statistics by shift
- Trend graph shows performance over time

**Outputs**

- Local and remote displays provide immediate feedback to operators
- Database of all results by piece. Open-source 'XML' output supports all databases
- Report writer for data analysis. Sort by date, time, thickness, sheet area, and location on conveyor
- Direct feedback to furnace may provide closed-loop adjustments

**Optical system**

- High resolution area scan cameras
- Lighting and optics provide dynamic measurement of optical distortion
- Measurement resolution: 0.005 diopter (5 mD) at 300 mm/second (700 ipm) substrate velocity
- Measurement range: -550 to + 550 mD
- Measurement accuracy: bias <= 10 mD at -200 mD to +200 mD\*
- Measurement repeatability: +/-20 mD over -200 mD to +200 mD range with confidence interval of 99.7%\*
- Thickness sensor accuracy: +/- 0.1 mm (+/- 0.004 inch)

\* Dynamic measurements with moving substrate. Reference Osprey Accuracy Test Report.

**Environmental**

- NEMA 12 enclosure with integral air conditioner for severe industrial environment
- 4-50 deg C (40-122 deg F)
- Vibration isolated



## FEATURES

- Measures Optical Distortion in heat-treated glass and plastic
- True optical measurement in lens power (diopters) as seen by the customer
- Measures all types of optical distortion including roll wave, edge kink, local bow, pocket, side kink, hammer, bird's eye, picture framing, belly banding, edge lift and others
- Rugged, production-ready measurement tool replaces off-line inspection
- Complies with ISO EN 12150-1 and ASTM C14 standards

## BENEFITS

- Correct distortion problems before adding value in IG or lamination
- Real-time inspection with results displayed immediately allows for improved process control
- 100% inspection assures compliance to specifications
- Improves quality and reduces field returns
- Increases throughput 10% to 33% with improved load utilization
- Improves yield and decreases quench breakage.
- Reduces costs

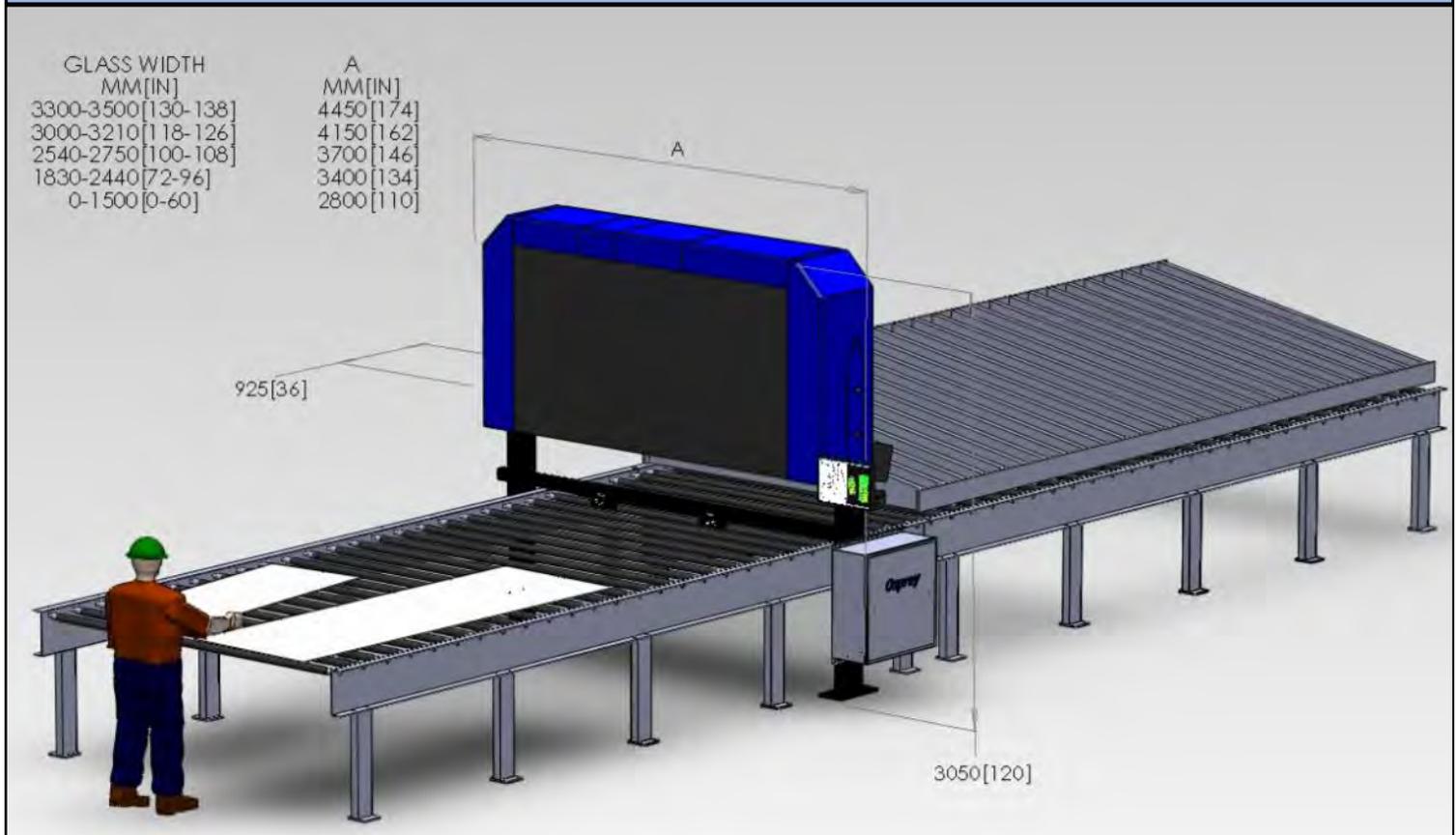
## APPLICATIONS

- Tempering /Heat Treatment
- Lamination
- Float
- Solar
- Plastics

## MEASUREMENTS

- mD (millidiopter)
- PV (Peak to Valley)
- Local Bow
- Roll Wave
- Glass dimensions
- Thickness
- Low E Coating-presence & side
- Overall Bow
- Edge Kink, Edge Lift

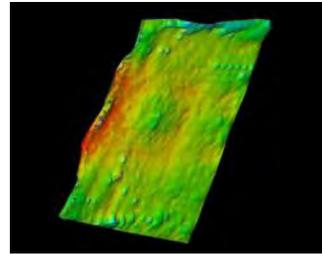
## The Osprey<sup>®</sup>5 Distortion Measurement System for Glass and Plastic



**Images of Distorted Glass**

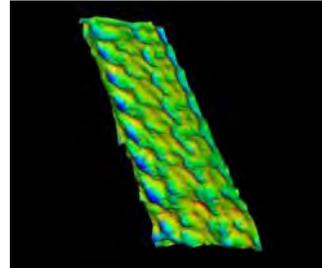


**LiteSentry Osprey  
Image of Distortion**

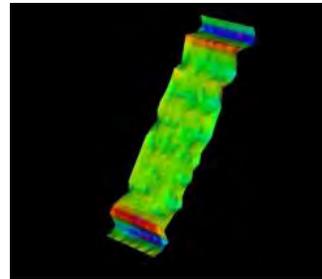


**Type of Distortion**

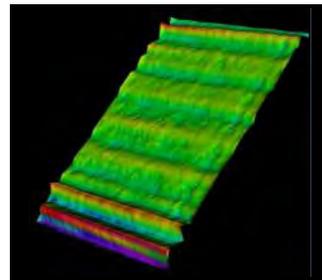
**Oil can or Bi-Stable Distortion \***



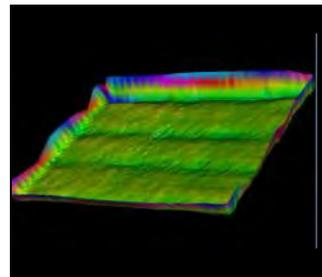
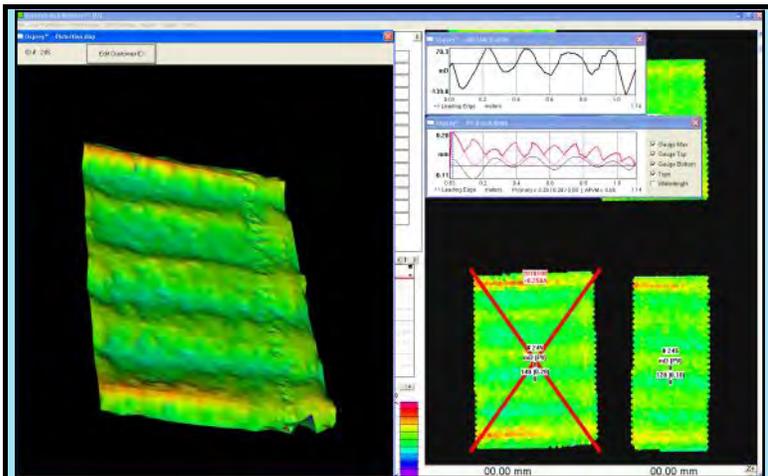
**Hammer or Pocket Distortion \***



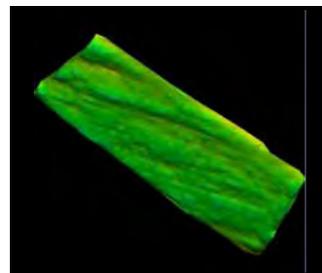
**Edge Kink Distortion  
Edge Lift**



**Roller Wave Distortion**



**Picture Framing \***



**Edge or Corner Lift \***

Screenshot of Osprey showing a pop-up window



**PATENTED**

**\* Only Osprey by LiteSentry measures this distortion**