SET INDUSTRY STANDARD FOR
DISTORTION INSPECTION

100% REAL-TIME INSPECTION OF EVERY GLASS SHEET

PROCESS CONTROL TO IMPROVE TEMPERING AND LAMINATION YIELDS

INCREASES THROUGHPUT

REDUCES DEFECTS AND WASTE

INCREASES PROFITS

"After installing our Osprey systems, quench breakage dropped from 4% to 1%! The Osprey gives us the process control we lacked before installing the systems."

— T. MOORE, GENERAL MANAGER, GLASS & MIRROR CRAFT

Osprey®9 Distortion
Distortion + Flatness Inspection System for Tempered and Laminated Glass or Sheet Plastic

LiteSentry
Setting the Standard in Glass Inspection
OSPREY® 9 DISTORTION
Distortion + Flatness Inspection System

Designed for Tempering Lines, Lamination Lines, Float Lines, and Plastic Sheet Manufacturing

The Osprey® 9 Distortion by LiteSentry™ is the industry standard for real-time inspection of tempered glass. Designed and manufactured in the U.S. to the highest standards of precision and durability. The Osprey® is the only system meeting the requirements of leading architects, Vitro (formerly PPG) Certified Fabricators, Guardian Select Fabricators, and suppliers to U.S. government contracts.

Using patented optics, high-speed cameras, and powerful algorithms, the Osprey® 9 Distortion provides precise measurement of all types of optical distortion in every orientation, with true millidopter (mD) optical measurement accuracy:

- bi-stability
- saddle bow
- local bow
- roll wave
- edge kink
- center kink
- pocket
- vertical kink
- hammer
- belly banding
- picture framing
- bird’s eye
- edge lift

The Osprey® 9 Distortion is a rugged, production-ready inspection system designed to improve quality and provide process control from day one.

- Inspect for distortion, flatness, size, and thickness
- Certified to ASTM, ISO, EN requirements for optics
- Meets or exceeds Vitro CF, Guardian SF, U.S. government, and leading architectural fabrication specifications
- Improves process control by giving operators real-time data on distortion and flatness

Screen shot of Osprey® display showing a 3D view of glass distortion
**Standard Features**

The Osprey® system comes in a self-supporting, rugged enclosure with an integrated cooling system for use in industrial environments.

The Osprey inspects any flat glass or plastic sheet:

- 2-19 mm thick
- Clear, hard or soft coat low-E
- Tinted or reflective

**Optical System, Displays, and Data**

- High resolution visible light cameras inspect sheets from 500-3500 mm (20-138 inches) wide
- Patented reflected white LED lighting and optics provide accurate dynamic measurement of optical distortion in mD (millidiopters) and peak-to-valley measurement in millimeters or inches
- Local and remote displays for immediate operator feedback
- Pop-up 3D visualization shows optical topography and 2D side profiles
- Color-coded distortion maps for immediate problem recognition and operator interpretation and action
- Quality and throughput statistics by sheet area, location on conveyor, shift, date, time
- Trend graphing to evaluate line and operator performance over time
- XML open source data integration with customer databases

**Technical Specifications**

- Dynamic measurement resolution: 0.010 diopter (10 mD) at 400 mm/s substrate velocity
- Measurement range: -550 mD to +550 mD
- Measurement accuracy and precision*: 10 mD over -200 mD to +200 mD range
- Thickness sensor accuracy: +/- 0.1 mm for glass thickness of 0-8 mm and +/- 0.2 mm for glass thickness of 9-25 mm
- Operating environment: 4-50°C (40-122°F)

*Actual dynamic accuracy of 0.004 diopters at 99% confidence interval (Osprey Accuracy Test Report 2016).

“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 measurement is out of specification.”

— C. ECKBERG, PROCESS ENGINEER, VIRACON
Features in the Osprey® 9

The Osprey® 9 features upgrades to optics, lighting, measurement specification, user control, and data handling. Operators have even better real-time process control!

» NEW Additional quality analysis tools
  » Pocket distortion analysis
  » Perimeter and center analysis
» NEW Supports Windows 10 LTSC
» NEW DXF file for tracking shapes
» NEW Enhanced TemperQC™ integration capabilities
» NEW Available Touchscreens
» NEW Ability to measure any size glass
» NEW PDF load reports
» NEW Remote access to live throughput data
» NEW Process Control Advisor (OPCA) recommends real-time process adjustments
» User-defined quality thresholds for coated and non-coated product
» LED lighting for longer operational life

Size measurement capabilities:
  » +/- 3 mm (.125 inches)
  » multiple peak-to-valley traces in direction of glass travel
  » vertical kink of peaks or valleys in the direction of glass travel
» Energy-saving automatic shutoff when system is idle
» New browser-based application to allow monitoring from tablets or smart phones
» New data management tools, including a 3D distortion detail file (DDF) for each sheet
» Built-in barcode scanner to track each part in the quality database

Osprey® Distortion + Flatness Inspection System

Economic benefits realized by existing customers

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<tr>
<th>BENEFIT</th>
<th>IMPROVEMENT</th>
<th>VALUE</th>
<th>ANNUAL COST SAVINGS</th>
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<tr>
<td>Quality Improvement</td>
<td>Reduce product returns</td>
<td>Avoid expense of $1,000-$20,000 per incident for repair or replacement</td>
<td>Typical $20,000</td>
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<tr>
<td>Improved Yield</td>
<td>Reduce losses in downstream fabrication (IG and laminating)</td>
<td>Avoid losses of $50 per IG, $150 per laminate, 10 each per month</td>
<td>$24,000</td>
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<tr>
<td>Improved Throughput</td>
<td>Better process control increases furnace efficiency</td>
<td>Up to 5% production gain of 630 sq meters (6,775 sf) = $4,750/month</td>
<td>$57,000</td>
</tr>
<tr>
<td>Decreased Quench Break</td>
<td>Better process control decreases loss due to quench break</td>
<td>1% production gain of 125 sq meters (1,355 sf) = $950/ month</td>
<td>$11,400</td>
</tr>
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<td>Reduced Labor</td>
<td>100% machine inspection replaces off-line human inspection</td>
<td>Save up to 25% FTE (2 shift production)</td>
<td>Up to $25,000</td>
</tr>
<tr>
<td>Greater Customer Satisfaction</td>
<td>Higher quality product; more positive market perception of company</td>
<td>More competitive bids; opportunities in new, high-margin markets</td>
<td>$$$$$</td>
</tr>
</tbody>
</table>

Total ANNUAL Cost Savings, not including new business opportunities: $137,400+

Assumptions based on data from current Osprey users:

» Typical replacement costs reflect a mix of residential, commercial, and industrial products
» 12,500 square meters (134,000 sf) per month typical production through tempering plant
» Average total value of tempered product (including glass and tempering cost) = $10/square meter ($9.55/sf)
» Labor cost including salary and benefits = $50,000/year

The Bottom Line

» Eliminate costly rejects before coating and lamination processes
» Eliminate costly field replacements
» Improve process control and increase yield
» Delight your customers
» Win new business by demonstrating and delivering quality!

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» OSPREY® 9 Complete » Anisotropy, Distortion + Flatness Inspection
» OSPREY® 9 Distortion » Distortion + Flatness Inspection
» TemperQC™ » Complete Tempering Quality Control System
» HAWK® 4 » Scratch + Defect Inspection
» OWL® 3 » Recipe Selection + Fault Detection
» RAVEN™ 12 » Thickness + Coating Sensor
» FALCON® » Precision Size + Geometry Inspection
» LOAD VALIDATOR™ » Load Geometry + Fault Condition Detection