Setting the Standard in Glass Inspection
• Since 1999.
• Automated inspection systems for glass + plastic
• 100% on-line production equipment => add value to process
• 170 systems installed => N.America, S.America, Asia, Europe, Australia / NZ
• Customers include most major glass fabricators
Osprey Distortion Measurement System

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Roller wave
Pocket or Hammer Distortion
Problem: Optical quality in tempered & laminated glass

- Poor process control: Heat profile, Quench
- Maintenance of tempering furnace
- Distorted incoming material to lamination
Hong Kong Airport 2003
Delamination at edge from excessive kink

6600 panels replaced

~US$ 5 million
Distortion in transmission in a laminate
Techniques for On-line measurement:

1) Zebra board
Subjective = ineffective
Edge Kink
Techniques for On-line measurement:

2) Osprey® Automated Distortion Measurement
Example: Oil Can or Bistable Distortion
Example: Edge Kink Distortion
Example: Hammer or Pocket Distortion
Example: Roll Wave or Local Bow Distortion
Example: Picture Framing of LowE
Example: Edge Lift of Solar PV Panel
<table>
<thead>
<tr>
<th>Customer</th>
<th>Problem</th>
<th>Result</th>
<th>Cost of defects &amp; savings reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saint-Gobain</td>
<td>Bubbles in Lami</td>
<td>Increase in Yield</td>
<td>€ 4,000 / month</td>
</tr>
<tr>
<td>Flachglas</td>
<td>Delamination</td>
<td>Replacement</td>
<td>US$ 5,000,000</td>
</tr>
<tr>
<td>Solar F</td>
<td>Edge Lift</td>
<td>Improve Process Control</td>
<td>US$ 100,000 per container</td>
</tr>
<tr>
<td>Berkowitz / Guardian</td>
<td>Vertical Wave</td>
<td>Replacement</td>
<td>US$ 400,000</td>
</tr>
</tbody>
</table>
Problem: Architects specifying flatness

- Osprey measures in millidiopters (mD), local bow (mm), peak-to-valley (inch)
- Complies with EN 12150, ISO TC 160, BS6206, ASTM C14, JIS-R 3206
The Value of the Osprey

- Control the process
- Measure what you make = Immediate, Quantifiable feedback
- Observe and React in real-time, before adding value in double glaze or lamination
- Decrease Variance in Process, Product & People
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