Experion MX will help improve your business performance in today’s challenging economic environment. This fully integrated quality control and process knowledge system provides superior visibility into the papermaking process while it simplifies your operational efforts and is easy and cost effective to maintain and service. Improve paper quality, reduce raw material, energy, services and maintenance costs, and increase production efficiency with a package of solutions that provides the lowest total lifecycle cost available – Experion MX.

**Surface Topography Measurement**

Honeywell’s Surface Topography measurement analyzes surface topography by capturing images of a moving sheet to identify smoothness/roughness profiles which could cause a range of imperfections in paper and board products – and in turn cause printability problems. The sensor allows mill personnel to electronically monitor web surface characteristics throughout the entire production process, facilitating immediate corrective action if the sheet deviates from standards. This increases the yield as less paper/board is rejected, and it also increases paper makers’ customer satisfaction as they experience fewer problems with printability.

The image control unit inside the sensor controls both the camera and the illumination unit for the best possible image quality for varying machine speeds. The camera and illumination are on same side of the sheet. The captured image is analyzed with a proprietary algorithm, producing a numerical value for PPS smoothness and Bendtsen roughness. Additionally several surface quality related variables are reported: variability, impurity and texture scale. All this functionality is executed inside the sensor unit. Numeric values of the measurements are then transferred to the system server for display, profiling and trending. Captured images are periodically transferred to the Experion MX system server for display.

**Features & Benefits**

- The sensor measures the following paper surface characteristics:
  - PPS Smoothness
  - Bendtsen Roughness
  - Variability
  - Impurity
  - Texture scale
- Sensor module camera and illumination automatically adjust to different machine speeds for the best image quality
- Standard sensor modular design allows installation in any slot inside the measuring head
- There are no moving parts in the sensor module, which minimizes maintenance needs and ensures a long lifetime
- Trending and profiling capability is available for all measured variables
- The latest captured images are available for operator observation
- Up to four images per scan are available in Experion MX from predefined profile locations for operator observation
- An “Image Gallery” display shows 8 images each representing reel average surface characteristic. These are displayed around grade dependent reference image
• In single point operation, images are transferred periodically at a fixed rate for operator observation.

• A sample feature allows the measurement of sheet samples. This information can be used for analysis of returned product, process diagnostics, etc.

Description

The measurement is designed for online use in hostile paper machine environments. Fast image capture allows machine speeds up to 2000 m/min without reduction of image quality. The measurement automatically adjusts illumination and imaging parameters for varying speeds. An intelligent operating algorithm mitigates the effect of uneven illumination, ambient light, and dirt/dust buildup. Images are captured and analyzed at the rate of 10 Hz.

Measurement provides surface PPS Smoothness and Bendtsen Roughness analysis derived from captured image using proprietary algorithm. Additionally, several surface quality parameters are reported. Variability is indication of small scale variability of surface, impurity indicates degree of dark or light dots dominance, and texture scale tells average texture size in the image. Sensor reports trends and profiles for all analyzed variables.

The system displays the latest captured surface image to the operator for inspection.

Operating principle of the Honeywell Surface Topography Measurement

This trend shows the correlation to lab air leak PPS measurement over one month.
This image gallery display shows eight images each representing the reel average surface topography. A grade dependent reference image is in the middle for easy comparison.

This trend display shows measured surface smoothness in PPS (blue) and basis weight (purple). Blade changes are clearly visible by increased PPS value, when there is no final coating. Green is Impurity. It shows a dramatic decrease again during blade change as base sheet gets visible thru one coating layer only.
### Specifications: Experion MX Surface Topography Measurement – Model Q4222-50

<table>
<thead>
<tr>
<th>Category</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>PPS Smoothness                         Range 0.5 to 10.0</td>
</tr>
<tr>
<td></td>
<td>Bendtsen Roughness                     Range 5 to 1500</td>
</tr>
<tr>
<td></td>
<td>Variability                            Range 0 to 1000</td>
</tr>
<tr>
<td></td>
<td>Impurity                               Range -200 to +200</td>
</tr>
<tr>
<td></td>
<td>Texture scale                          Range 0.05 to 10</td>
</tr>
<tr>
<td>Measurement area</td>
<td>15 x 15 millimetres</td>
</tr>
<tr>
<td>Measurement speed</td>
<td>10 hz</td>
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<tr>
<td>Maximum ambient</td>
<td>See measuring head enclosure specifications</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
</tr>
<tr>
<td>Machine speed range</td>
<td>0 – 2000 m/min</td>
</tr>
</tbody>
</table>

### More Information
For more information on Experion MX Surface Topography Measurement visit www.honeywell.com/ps or contact your Honeywell account manager.

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