Online Thickness Gauge

WEBFREX NV

An online thickness gauge is placed at the final stage of a production line to control the quality of its sheet products (webs) such as films and metallic foils, and its sensor scans the products in the cross-machine direction and measures their thicknesses. Yokogawa's systems can perform automatic control also to make the thicknesses uniform.

The latest model WEBFREX NV is a successor of the WEBFREX3. The WEBFREX NV system includes a sensor which measures the thickness, a frame which drives the sensor mounted on it, an operator station (OPS) as a human machine interface (HMI) for operation and monitoring, a controller for calculation and control, and a profile stack server which analyzes data regarding product quality and keeps the results for a long time.

**MAJOR FEATURES**

- **A wide variety of sensors**
  A sensor using β-rays which can be used for various materials, a sensor using X-rays which is highly sensitive to metals, and a sensor using infrared light instead of radiation are available. Furthermore, a multilayer thickness gauge which can simultaneously measure the thickness of each layer of a multilayer film is provided. The most suitable sensor can be selected for the application.

- **Control functions**
  A function that can control product quality in the cross-machine direction and in the machine direction can be attached. Diverse control methods suitable for various processes and purposes are offered, and various tuning tools are provided, enabling optimal system tuning without requiring expertise.

- **Quality management functions**
  A Windows 7-based PC is used as an HMI. The profile stacking server which analyzes and keeps thickness profile data for a long time, and software installed in the server for viewing and analyzing 3D profiles, ensure quality assurance processes to a great extent, including after product delivery.

- **Upgrade from old models**
  Systems based on old models (WEBFREX, WEBFREX II, and WEBFREX3) can be upgraded to that based on WEBFREX NV. Users can keep their systems up-to-date and continuously utilize the latest functions by partial upgrade of their hardware and software.

**MAJOR SPECIFICATIONS**

**Frame**

<table>
<thead>
<tr>
<th>Measurement width</th>
<th>0.3 to 10.0 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement interval in distance</td>
<td>0.5 to 10.0 mm</td>
</tr>
<tr>
<td>Scanning speed</td>
<td>1 to 20 m/min</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 to 45°C (Frame)</td>
</tr>
<tr>
<td>Sensor</td>
<td>0 to 50°C (Sensor)</td>
</tr>
</tbody>
</table>

**Sensor**

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Applicable materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>β-ray type</td>
<td>0 to 5000 g/m²</td>
</tr>
<tr>
<td>X-ray type</td>
<td>0 to 4000 g/m²</td>
</tr>
<tr>
<td>Infrared type</td>
<td>0 to 2000 µm</td>
</tr>
<tr>
<td>Optical type</td>
<td>0.5 to 200 µm</td>
</tr>
</tbody>
</table>

**Control**

- **Machine direction (MD) control**
  - Sampled data PI control
  - Finite time setting response control

- **Cross-machine direction (CD) control**
  - Sampled data PI control
  - Finite time setting response control
  - Expert fuzzy control
  - Model predictive control
  - Adaptive control
  - Roll shape control

**MAJOR FEATURES**

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