

## OptiGauge Precision Thickness Measurement

### Lumetrics OptiGauge vs. Nuclear Gauge Comparison

Lumetrics OptiGauge System	Nuclear Gauges
<ul style="list-style-type: none"> <li>Provides multi-layer thickness measurement with single system and measures all layers simultaneously.</li> </ul>	<ul style="list-style-type: none"> <li>Only measures mass and converts this measurement to thickness. Using subtractive methods, complex mathematics, and multiple systems can calculate thicknesses for multiple layer measurements.</li> </ul>
<ul style="list-style-type: none"> <li>Measures material online or off-line, or both with one system.</li> </ul>	<ul style="list-style-type: none"> <li>Online measurements only.</li> </ul>
<ul style="list-style-type: none"> <li>Quick setup: measurements are immediate and accurate.</li> </ul>	<ul style="list-style-type: none"> <li>Longer scan times may slow start-up time.</li> </ul>
<ul style="list-style-type: none"> <li>Inherently safe, low-power Class 1 infrared LED requires no administrative support.</li> </ul>	<ul style="list-style-type: none"> <li>Radioactive material is highly regulated, costly &amp; time consuming to support, maintain, and document.</li> </ul>
<ul style="list-style-type: none"> <li>Twenty micron spot size for detailed thickness measurements over large or small area. Can “zero-in” on specific locations.</li> </ul>	<ul style="list-style-type: none"> <li>Measurement area of 1” prevents applications showing presence or absence of streaks and smaller problems.</li> </ul>
<ul style="list-style-type: none"> <li>OptiGauge probe does not require reflector or sensor on opposite side of sample. Can work effectively on rollers, idler arms, and pulleys.</li> <li>Probes can be remotely located up to hundreds of meters from the OptiGauge; uses telecom-grade optical fiber.</li> </ul>	<ul style="list-style-type: none"> <li>Beta gauges require emitter and receiver both located on single scanner system. Limited configuration flexibility.</li> </ul>
<ul style="list-style-type: none"> <li>Small lightweight (3”L x 0.85”D) probes are easily adapted to scanning systems, do not require permanent mounting, and can be individually located at fixed locations using simple fixtures.</li> </ul>	<ul style="list-style-type: none"> <li>Requires large footprint fixed-location scanner bed mounting. Not easily adaptable to changing requirements or configurations.</li> </ul>
<ul style="list-style-type: none"> <li>Can multiplex up to eight probes off one OptiGauge using an optical switch.</li> <li>Provides a cost effective means of gathering data from single or multiple production lines at desired locations along the process.</li> </ul>	<ul style="list-style-type: none"> <li>Separate scanning systems and nuclear sources required for each location within a production line.</li> </ul>
<ul style="list-style-type: none"> <li>OptiGauge is self calibrating using highly accurate internal clock laser. Internal optical components are easily replaced.</li> <li>OptiGauge is calibrated to NIST-traceable standards using proven metrology methods providing 0.1 micron accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>Calibration continuously required while system in operation; nuclear source is continuously degrading.</li> <li>Limited accuracy</li> </ul>
<ul style="list-style-type: none"> <li>OptiGauge probes are passive with no moving parts or electronic components.</li> <li>Intrinsically safe, can be used in all manufacturing and monitoring environments.</li> </ul>	<ul style="list-style-type: none"> <li>Nuclear source with inherent safety issues and social concerns.</li> </ul>
<ul style="list-style-type: none"> <li>OptiGauge probes are located 1”-2” off surface to be measured. Lumetrics can fabricate custom optics to provide variable stand-off space.</li> </ul>	<ul style="list-style-type: none"> <li>Non-contact system measurement requires significant open space for scanner setup. Limited measurement-head stand-off and configuration options.</li> </ul>
<ul style="list-style-type: none"> <li>Provides thickness measurement of each layer no matter what the structure as long as light is able to penetrate material.</li> </ul>	<ul style="list-style-type: none"> <li>Because Nuclear gauge provides mass not thickness measurement it can cause film defects in multi-layer structures where materials of different densities are used</li> </ul>

**Contact Lumetrics for additional information**