

OptiGauge by Lumetrics *Dimensional Measurement Authority*

Lumetrics OptiGauge for Industrial Applications

The OptiGauge is a versatile precision measurement system that improves product yields and can be integrated into many manufacturing systems and processes. Lumetrics has designed and installed gauging systems for a range of industries to allow real-time production monitoring of coating, laminating, and component assembly machines.



In many industrial manufacturing and quality assurance operations, the requirement for gauging the thickness of materials and coatings is critical to product performance.

OptiGauge by Lumetrics is fast becoming the industry standard for high speed non-contact measurement of a variety of components in both the on-line and laboratory setting.

OptiGauge Features

- Non-contact precision gauging
- Super luminescent infrared optical measurement beam
- Single or multiple layer material
- Repeatable measurements from 12 microns to 8mm thick
- Does not require sensor or reflector under web or glass
- Lightweight probes can be used up to hundreds of feet from controller
- Multiple points can be measured using Lumetrics' optical switch
- High speed data acquisition 50Hz – 200Hz
- Ethernet ready

The following examples of on-line measurement systems illustrate the software and hardware integration capabilities that Lumetrics can bring to bear on a variety of customer applications.

Food Manufacturing

A global food manufacturing company had a need for precision thickness measurement of extruded three-layer packaging material in the on-line environment. Because of the constantly increasing cost of petroleum based plastic resin, this company had the financial incentive to "stop wasting money on quality" or, in other words, more tightly control the thickness of critical barrier layer films. Because many manufacturers err on the side of safety, they are spending millions of dollars annually to produce packaging that goes well beyond established performance specifications.

Manufacturers that recognize the opportunity to tightly control packaging resin costs by integrating OptiGauge into their operations can realize significant material and manpower savings.



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Working with our manufacturing integration partner, Lumetrics designed an automatic scanning system for six separate multiple-layer inspection stations on three packaging lines. The system was installed and qualified by plant management and operations teams and determined to be faster, more accurate, and stand-alone than the older methods of cutting a piece of film from the line and inspecting it under an optical comparator.

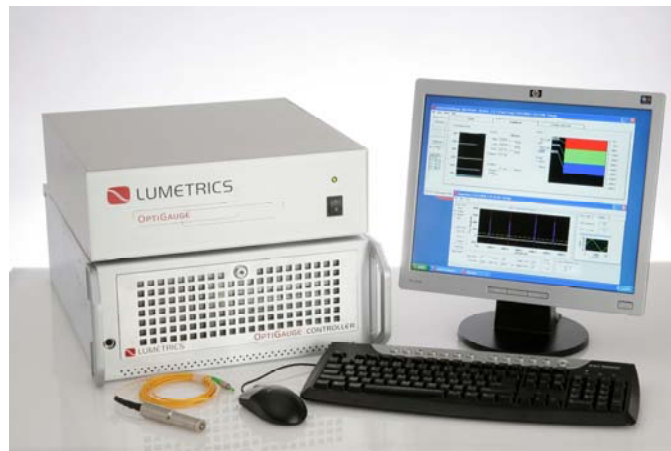
Concurrently, Lumetrics developed an integrated standalone closed loop inspection and control system that streams data through the plant PLC and manufacturing monitoring system to automatically control the thickness of each of the three layers of extruded film. Operators and managers now plan on expanding OptiGauge thickness measurement systems to additional facilities and product lines.

Flat Panel Display Glass

With the exploding popularity and consumer spending on flat panel and plasma display televisions and monitors, OptiGauge by Lumetrics is being used for on-line high speed measurement of large glass panels during the manufacturing process.

OptiGauge has unique features and benefits that are very attractive to glass manufacturers: high speed measurement rate, real time data stream for process control, and the ability to multiplex up to eight lightweight measurement OptiGauge sensors on one control module.

The OptiGauge also has an available feature that virtually eliminates data smear due to Z-axis (vertical) flutter of glass panels. This overcomes the need for FPD manufacturers to slow production and totally restrain vertical movement of the panels.



For additional information please e-mail Lumetrics at sales@lumetrics.com

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OptiGauge Specifications

OptiGauge

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|-----------------------------|--|
| Model | OptiGauge DI-340 |
| Measurement Method | Low Coherence Interferometry |
| Target Materials | Single or Multi-Layer Glass, Plastic, Tubing, Silicon, Coated Metals |
| Maximum # of Layers | Up to 20 |
| Thickness Measurement Range | 12µm to 8mm Mechanical Thickness (Refractive Index - ≈1.5) |
| Accuracy | ±0.1µm |
| Repeatability | 0.1µm 1σ |
| Measurement Scan Rate | 50Hz - 200Hz |
| Power Requirements | AC 110V - 240V 50/60Hz |
| Light Source | 1310nm SLED |
| Dimensions | 419mmW x 457mmD x 133mmH/16.5"W x 18"D x 5.25"H |
| Weight | 20lbs./9kg |
| Operating Temperature Range | 15° to 30°C (59° to 86° F)* |
| Non-Operating Temperature | -15° to 60° C (5° to 140° F) |
| Operating Relative Humidity | 10 to 90% (non-condensing) |
| Maximum Altitude | 2000 meters (6560 Ft.) |
| Data Outputs | RS-232, Ethernet via .NET Remoting |

* Published accuracy at temperature range 20° to 30°C

OptiGauge PC Controller

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| Operating System | MS Windows XP, Microsoft Dot Net Remoting |
| Processor | Intel Core-2 Duo |
| RAM | 1GB |
| Hard Disk | 80GB SATA |
| Power Supply | 500W Universal Input |
| Video | ASUS EXP1600PRO w/256mb DDR RAM |
| Software | Lumetrics OptiGauge Control Center |
| Dimensions | 432mmW x 533mmD x 178mmH/17"W x 21"D x 7"H |
| Weight | 28Lbs./13kg |

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OptiGauge Measurement Probes

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|---------------------------------|---|
| Focal Length (Working Distance) | 25mm and 50mm |
| Optical Fiber Length | 8M standard, up to 1000M Maximum |
| Vertical Z-Axis Tolerance | ±5mm |
| Angular Tolerance | 25mm Probe - ±2° 50mm Probe - ±1° |
| Probe Dimensions | 25mm Probe - 21.6mm Diameter X 108.7mm Length 50mm Probe - 21.6mm Diameter x 78.2mm Length |
| Operating Temperature Range | 0°C - 100°C |
| Optical Fiber Bend Tolerance | 50mm Minimum Bend Diameter |

Optical Multiplexer Switch

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|-------------|--|
| Capacity | Up to eight probes on one OptiGauge system |
| Switch Time | ≈100ms |
| Dimensions | 432mmW x 254mmD x 45mmH/17"W x 10"D x 1.75"H |
| Weight | 4.2lbs./1.3kg |