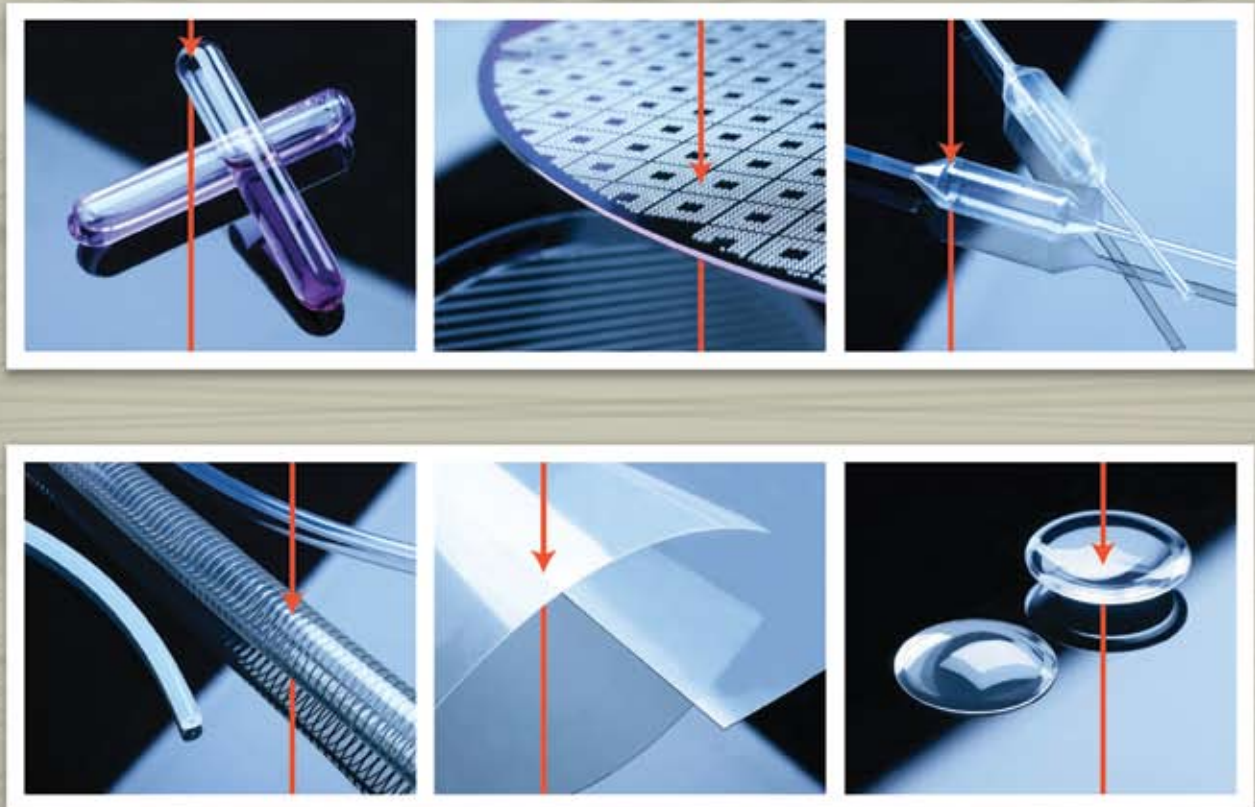


OPTIGAUGE™ BY  LUMETRICS™

DIMENSIONAL MEASUREMENT AUTHORITY



## Precision Thickness Measurement Systems

Non-Contact | Non-Destructive | Repeatable | Accurate | Reliable

[WWW.LUMETRICS.COM](http://WWW.LUMETRICS.COM)

## BETTER MEASUREMENT TECHNOLOGY LEADS TO BETTER MANUFACTURING RESULTS

OptiGauge by Lumetrics Super-Luminescent Technology provides unprecedented accuracy and repeatability for measuring various materials.

OptiGauge revolutionizes on-line and laboratory measurement with patented technology that replaces outdated approaches to material process control. Using innovative non-contact optical measurement techniques, the OptiGauge platform is an ideal solution for increasing quality, lowering manufacturing costs, and growing the bottom line.



## BEST-IN-CLASS TECHNOLOGY GIVES MANUFACTURERS UNPRECEDENTED RELIABILITY & REPEATABILITY

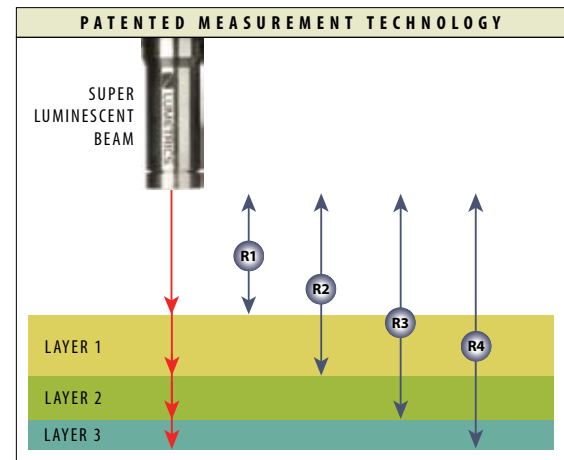
OptiGauge is a patented interferometric system that measures thickness based on reflected light from different materials.

- Non-contact and non-destructive
- Intrinsically safe
- Does not require reflector or sensor under material being measured
- Ideal for lab and on-line installation
- Measures single and multiple layer material

## KEY INDUSTRY CATEGORIES

OptiGauge is deployed in a wide variety of medical, industrial, and consumer goods manufacturing plants worldwide. For example:

- Medical balloons and catheters
- Food manufacturing and packaging
- Contact lens production and QA monitoring
- Semiconductor manufacturing and silicon wafer processing
- Medical and industrial films and coatings



**HOW IT WORKS:** *The optical probe directs invisible 1310 nm infrared light through transparent, translucent or colored materials and sends reflections from each internal surface back to the OptiGauge, where highly advanced software provides instant analysis in an easy to use graphical interface.*



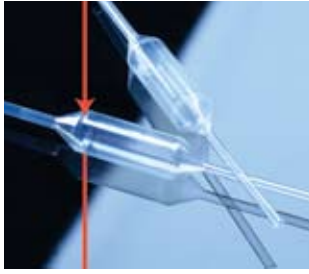
## LUMETRICS DESIGNS & MANUFACTURES ON-LINE AND STATIONARY MEASUREMENT FIXTURES

From medical glass to contact lenses to adhesives to food packaging, Lumetrics works with industry partners to design, fabricate, and test gauging fixtures and hardware for industrial applications. For example:

- Stationary and motion-controlled cross-web scanning for plastics, glass, coated metal, etc.
- Bench-top fixtures for automated catheter and tubing measurement
- X-Y scanners for flat films, silicon wafers, coated metals
- Optical measurement fixtures for contact lenses (SAG, center thickness, power)
- Medical ampoule rotational melt-seal measurement and data logging



OptiGauge Systems are in daily use at Fortune 500 companies in the medical, pharmaceutical, food packaging, eye-care products and consumer product industries.



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**MEDICAL** (*implants, stents, medical balloons*)

Across international markets, OptiGauge by Lumetrics is being used to accurately and reliably measure a diverse range of medical components. For example, a large manufacturer of prosthetics needed a non-contact solution for measurement of multi-layer silicone implants on the manufacturing line. Lumetrics developed a unique robotic system that can inspect multiple locations on the silicone mold in a clean room environment. Result: high speed, 100% non-contact inspection of implants while still on the mold.



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**TUBING** (*catheters, drainage tubes, capillary tubes*)

Medical tubing for catheters and balloons requires precise manufacturing control. OptiGauge brings high-precision, repeatable measurement capabilities to manufacturers of these complex components, replacing outdated snap gauge, pin gauge, and optical comparator “guesstimation” techniques. Lumetrics partners with producers of these critical-tolerance parts to deliver non-contact simultaneous gauging of walls, ID, OD, concentricity, and ovality with high repeatability and reliability.



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**MULTILAYER MATERIALS** (*films, coatings, adhesives, fluid bags*)

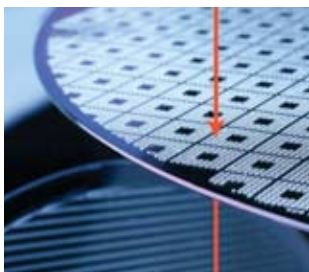
A Fortune 100 medical supply manufacturing company had a major problem with the quality of incoming materials from their supplier. Inconsistent application of critical adhesive on plastic film from the converter was generating unacceptable reject rates. Lumetrics designed a scanning system to verify the accuracy of incoming films for the customer. OptiGauge systems were subsequently installed at the supplier’s adhesive coating machines for real-time inspection and quality monitoring of high value multilayer medical films.



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**GLASS** (*ampoules, vials*)

Medical ampoules are a huge business. A leading manufacturer of glass ampoules was concerned that the melt-seal of their product was inconsistent, leading to breakage and contamination. Lumetrics designed and delivered a unique automated ampoule measurement inspection station for at-line use. OptiGauge software scans the circumference of the seal, providing pass/fail indicators, giving this customer a way to monitor production and to deliver high quality parts to their customers.



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**INDUSTRIAL** (*silicon wafers, flat panel displays, solar cells*)

One of the world’s largest manufacturers of consumer flat panel glass was seeking a non-contact method for reliable thickness measurement of 2 meter x 3 meter sheets on the manufacturing line. Working closely with their engineering team, Lumetrics developed a high speed multi-sensor inspection system that provides accurate and repeatable thickness data used to monitor production and ensure flawless quality for television, computer, and specialized display manufacturers.



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**OPHTHALMICS/OPTICS** (*contact lenses, intra ocular lenses*)

Our customers include some of the best-known names in optics and contact lens manufacturing. Lumetrics developed innovative approaches to on-line inspection of lens thickness and curvature that are generating higher levels of optical quality and uniformity during the molding and curing process. 100% identification of lens geometry before packaging eliminates costly production line down-time, labor, and scrap for our ophthalmics partners.

## LUMETRICS SUCCESS STORIES

**Acclarent, Inc.**, a developer of advanced otolaryngology devices, required a system to quickly and accurately measure multi-layer balloon walls. Lumetrics developed an enhanced OptiGauge that measures layers as thin as 6 microns, then worked closely with Acclarent's engineering team to develop customized hardware and software to scan the length of the balloon, providing precise dimensional measurements.

**NET RESULT:** an enhanced tool for production of Acclarent's new line of medical balloons as well as a development tool for future R&D efforts.

**Advanced Polymers, Inc.**, (Salem, NH) one of the largest and most highly respected manufacturers of precision medical balloons and tubing, wanted a system to automate and streamline thickness measurement of balloon and other medical tubing. Lumetrics worked closely with API's manufacturing and engineering teams to create custom software that measures, records, analyzes, and archives thickness measurements on a range of medical components.

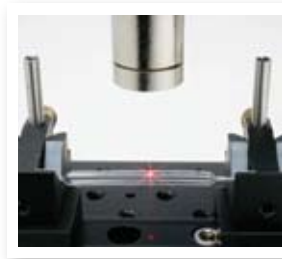
**NET RESULT:** a qualitative measurement system that gives Advanced Polymers a much better understanding of thin-wall plastics performance characteristics.

**TESco Associates Incorporated**, a specialty contract manufacturer of bio-absorbable medical implants was installing a new production system to produce tubing with extremely close tolerances. The OptiGauge, initially intended to be a QC instrument for production, was used to provide very precise dimensions and geometry of the tubing during development. This enabled TESco to track down exactly where the problems were in the equipment and process, reducing the time to produce results that met their customer's specifications.

**NET RESULT:** drastically decreased the time from startup to fine-tuning, and reduced the time to produce qualified product from 4-6 months to just weeks.



AUTOMATED AMPOULE MEASUREMENT FIXTURE



MEDICAL BALLOON MEASUREMENT

## COST-EFFECTIVE SOLUTION

OptiGauge sensors can be multiplexed for increased measurement capability.

- Multiple sensor probes can be used at long distances from the control module
- Ideal for multi-point cross-web scanning, or on different production lines and machines

## PROCESS CONTROL SOFTWARE

Lumetrics has developed unique application software for manufacturing closed-loop process control with a range of products.

- Coater Monitor™ for single and multiple layer adhesives and coated materials for medical and industrial products
- OPC Server and remote control software to integrate OptiGauge into plant monitoring and production feedback systems
- Software to address specific needs for laboratory and manufacturing processes



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