



SOUTHWEST RESEARCH INSTITUTE

Precision Analysis

Rapid 3-D Scanning & Laser Scanning Microscopy

Southwest Research Institute® (SwRI®) offers advanced evaluation capabilities using rapid 3-D optical scanning and laser scanning microscopy. Our rapid scanner, powered by our double telecentric macroscope, provides 3-D measurements that can be interrogated for micron-level analysis in a matter of minutes. Our laser scanning microscope provides precise non-contact profile and roughness measurements at scanning electron microscopy (SEM)-level resolution.

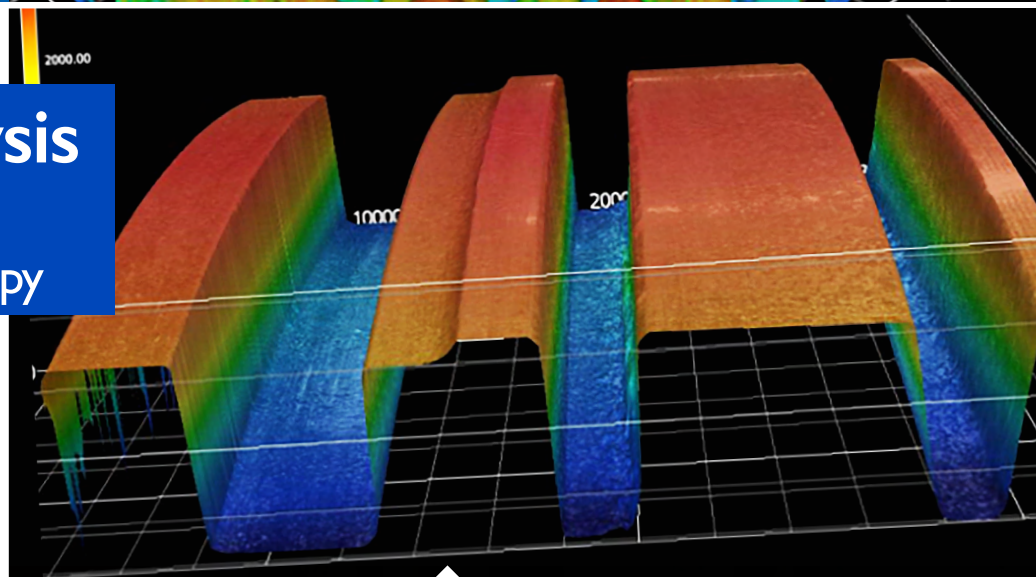
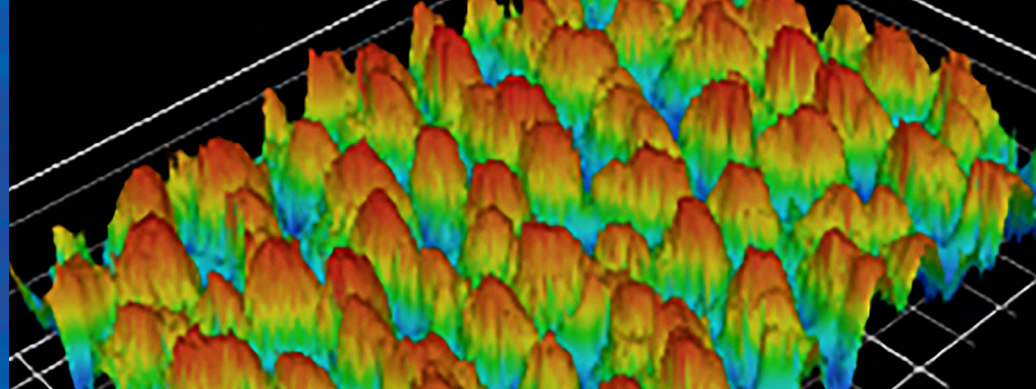
3-D Rapid Scanner

Features

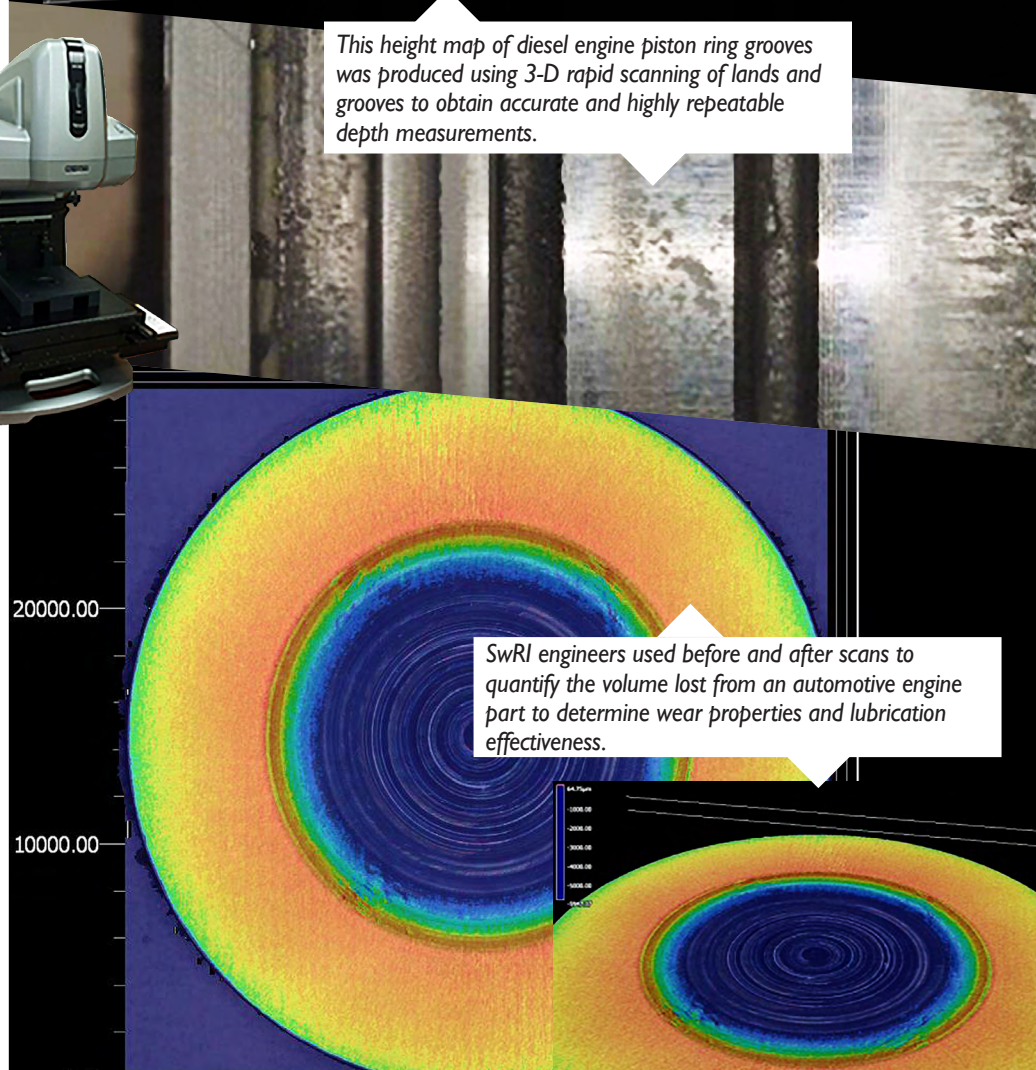
- Surface roughness measurement
- Profilometry
- 3-D measurement with solid model interrogation
- Material wear analysis
- Volume/surface area quantification
- Complex geometry evaluation
- Scans completed in minutes instead of hours

Benefits

White light optical scanning allows for fast and complete analysis of corrosion investigation, surface finish quality assurance (QA), part comparison, part feature quantification, and many more production QA requirements. The scans can be exported for direct use in a CAD program, or can be used to obtain geometric dimensions for quantitative analysis.



This height map of diesel engine piston ring grooves was produced using 3-D rapid scanning of lands and grooves to obtain accurate and highly repeatable depth measurements.



SwRI engineers used before and after scans to quantify the volume lost from an automotive engine part to determine wear properties and lubrication effectiveness.

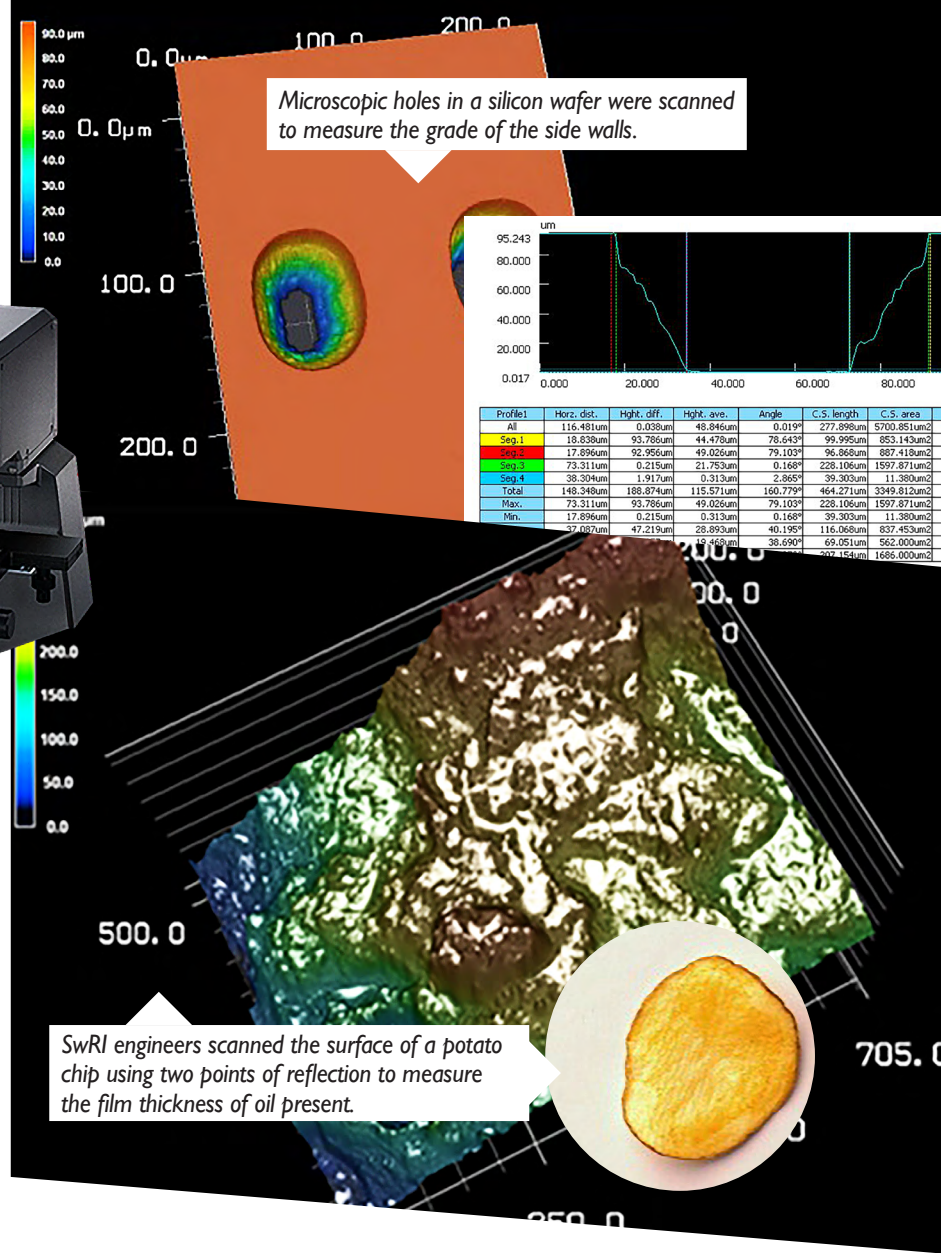
Laser Scanning Microscope

Features

- Measurement of height, width, angle, cross-section, volume, and surface area
- Upper and lower measurement limits that allow for greater depth of field even at high magnification
- Full color images
- Data capture from top, bottom, and intermediate layers of transparent surfaces irrespective of substrate characteristics

Benefits

This powerful tool can acquire SEM resolution (5 nm at 16,000X magnification) images in color. The software stitching capability allows the instrument to generate information from samples of several square inches. Laser scanning avoids use of a contact profiler, which does not produce color images and has a stylus that may not be able to penetrate steep angles or could damage delicate surfaces.



We welcome your inquiries.
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Southwest Research Institute is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world's most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies 1,200 acres, providing more than 2 million square feet of laboratories, test facilities, workshops, and offices for nearly 2,700 employees who perform contract work for government and industry clients.

swri.org

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Benefiting
government,
industry and the
public through
innovative science
and technology