PHOTONITA is a high technology Brazilian company which develops, produces and commercializes optical measurement and testing systems for applications in Industrial Quality Control and products and processes development.

Based on more than 20 years of experience in Optical metrology, PHOTONITA develops high value standard and customized solutions that can be found in several companies in Brazil.

We are located in Florianópolis – SC in an advanced company technologies cluster. We count with personnel and lab infrastructure able to develop and apply high end technology to create Brazilian products that can compete in a worldwide level.

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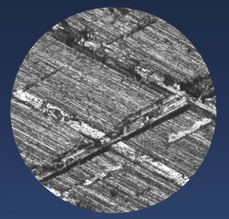

Automated inspection of honed cylinders over its entire surface.
360º honing angle mapping at one touch.

Optical System for inspection and
360º angle measurement in honed cylinders

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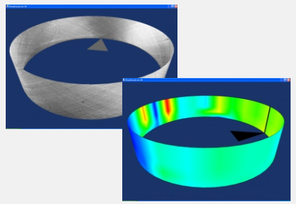
PHOTONITA
BruniTest

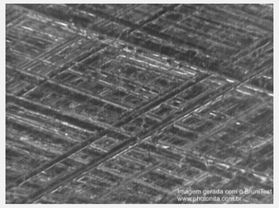
PHOTONITA
BruniTest

BruniTest is an innovative system for quality inspection and measurement of honed surfaces on cylinders surfaces of engine blocks. Using a panoramic optics that can be combined with a lens of high magnification, the system allows a detailed inspection of the entire honed surfaces, making possible automatic measurements of the angles over 360 degrees in the cylinders, distance between honed marks, roughness, as well a detailed visual inspection with high definition.

360º System

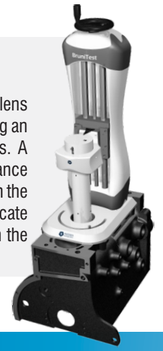
The 360° System uses an innovative panoramic optics to capture with a single shot a complete area in the honed cylinder, all over its circumference. Combined with a powerful software for digital image analysis this system performs a complete and automated mapping of the honing angles over the complete area at the interior of the cylinder, reporting an overview of the quality of the honing process.





100x System

The 100x System uses high magnification optics with objective lens of 100X to a detailed evaluation of the honed surface, performing an evaluation according standards of most engine manufacturers. A image processing software measure honing angle, distance between honed marks and size of defects. This module works on the same mechanic platform of the 360o system making easy to locate and evaluate with high definition an defective area detected on the panoramic image.



Comparing BruniTest and Plastic film method for honed surface evaluation

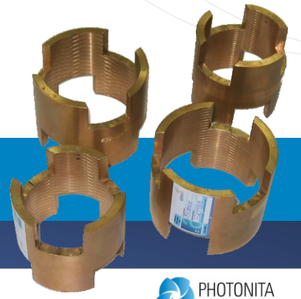
Characteristic	BruniTest	Plastic Film
Methods	**Image in the cylinder is acquired automatically and measured by image processing software. Measurement performed directly on the surface at a single step, with no operator interference.**	Plastic film manually pressed against cylinder wall and viewed by a microscope. Measurement performed indirectly using this plastic film. Dependent of operator skills and influenced by position, pressure and plastic distortions.
Equipment	**BruniTest: Panoramic (360°) and high magnification (100 X) systems.**	Poly acetate plastic film and measuring microscope with photographic camera.
Number of measured points	**1000 points per measurement.**	1 point per measurement.
Visualization of results	**Local and panoramic 360°**	Local only
Time for 20 measurements at different positions	**5 minutes**	2 hours
Area in each measurement	**Complete surface of cylinder.**	1 mm^2
Consumable material	**None.**	Poly acetate plastic film and acetone or other chemical substance.
Parameter measured	**Angle between honed marks. Angle between honed marks and vertical or horizontal axis of the cylinder. Local and full area Finishing appearance. Reversion ratio of tool honing. Full 360° honing angle mapping. Mapping and measurement of wear on the surface. Statistical capability indices measurement: (Cp e Cpk).**	Angle between honed marks. Local Finishing appearance.
Result	**Automatic reporting at different formats (MS Word, MS Excel, pdf and jpg) with no operator interference. Database resources for Storing and importing results. Export of results for QS-Stat and Minitab.**	Manually generated reports.
Measurement uncertainty for honing angle	**± 0,15º**	± 3º

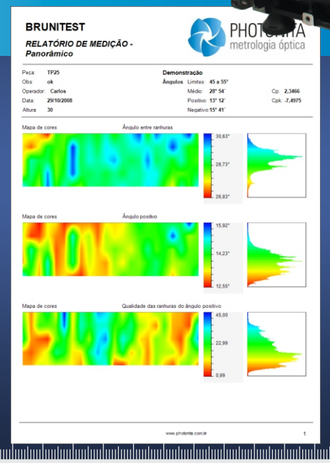
Roughness measurement

The roughness measurement module is a mechanical device attached to a standard roughness tester. Its endoscopic configuration allows a full 360° degree rotation over the complete area at the interior of the cylinder. The roughness tester can be positioned in any part of the cylinder and its position can be easily repeated.

Standards for BruniTest verification

The system includes a set of standards for periodic accuracy verification of the angle measurements, manufactured in brass and dimensioned (diameter and angle) according to the clients requirements. The standards are calibrated and certified at accredited laboratories.

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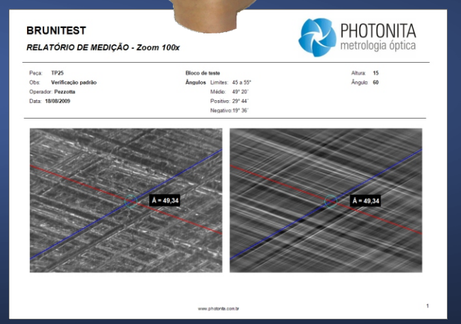
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RELATÓRIO DE MEDIÇÃO - Zoom 100x
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Advantages

- Nondestructive test method
- Automated and computerized noncontact measurements
- Fast and reliable inspection
- Full 360° automatic mapping of honing angle on the entire surface
- Evaluation of honing parameters over the complete 360o cylinder surface
- Detailed inspection with high magnification 100X optics
- One tenth of traditional methods (plastic film)
- No consuming materials or toxic substances
- Measurement directly on the surface, at one touch
- Measurement of distance between honed marks
- Dimensional determination of defects and their position
- Graphic 3D reports with angle histograms and statistic parameters (Cp, Cpk)
- Database resources for storing and importing reports
- Portable and robust for use on the shop floor
- Calibrated with high precision Standards, assuring metrological traceability conforming to ISO9000 and ISO/TS16969 standards
- Option for workbench installing and complete automated operation for 100% inspection of products
- Non contact measurement, Low maintenance

Applications

- Evaluation of honed surface of engine blocks, pumps, compressor, brakes, hydraulic components, bearings, etc.
- Quality control of products
- Evaluation of machining parameters to adjust honing process
- Evaluation of honing tool wear and damage
- Experimental engineering of products and processes