SEE 3-D ®
Three Dimensional Bore Surface Evaluation Equipment

C-K Engineering
Innovative Solutions

IMPROVED SYSTEM TO QUANTIFY BORE SURFACE FINISH
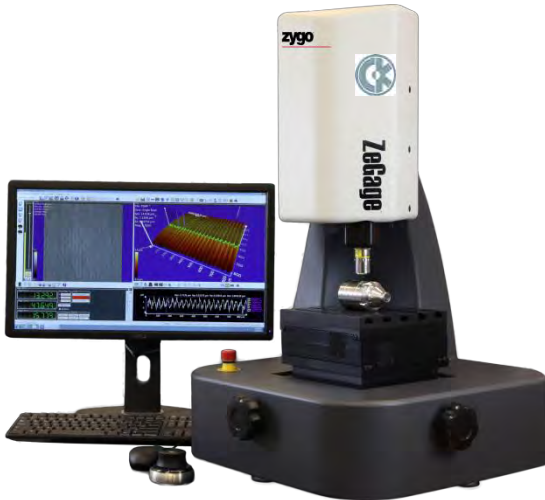
See 3-D® makes a highly accurate 3-D copy of the cylinder's surface by utilizing a unique two-part silicone rubber compound.

The replicate is then scanned by a non-contact surface analyzer to produce all the vital surface finish data you need. Simple, easy to understand data outputs help to control your honing process and produce the best possible product.

SEE 3-D® Interferometer/Analyzer System

Features & Benefits:

- Easy to use with minimal setup time
- Accurate results thru controlled pressure
- Quantifies more than 30 surface finish characteristics
- Measures top ring turnaround wear up to 100μm wear depth
- Accurately measures hone cross hatch angle
- 3-D surface data more predictive of surface finish effects than 2-D profilometer data
- 3-D surface data accurately quantifies voids that can be the cause of increased oil consumption
- Samples are storable indefinitely and available for analysis at any time

Small Bore Replicate Fixture

Large Bore Replicate Fixture

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Software Features:

- Provides both 2-D & 3-D data including R_a, R_k, R_{pk}, and R_{vk}
- Quantifies 30 different 3-D parameters including S_a, S_k, S_{pk}, S_{ci}, S_{bi}
- Expands statistical analysis of surface characteristics
- Quantifies torn & folded material
- Quantifies cross hatch angle

Hardware Features:

- Measures large and small bore diameters:
- Small bores 63.5mm-152.4mm (2.5- 6")
- Large bores 152.4mm+ - 304.8mm+ (6" +)
- Applies uniform pressure for accurate surface replication
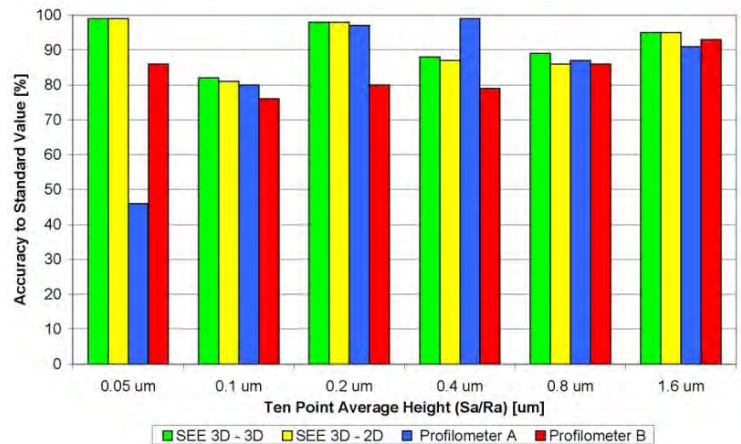- No possibility of probe damage

System Components:

- Replicate head, bars and material
- Interferometer / Analyzer
- Proprietary Software
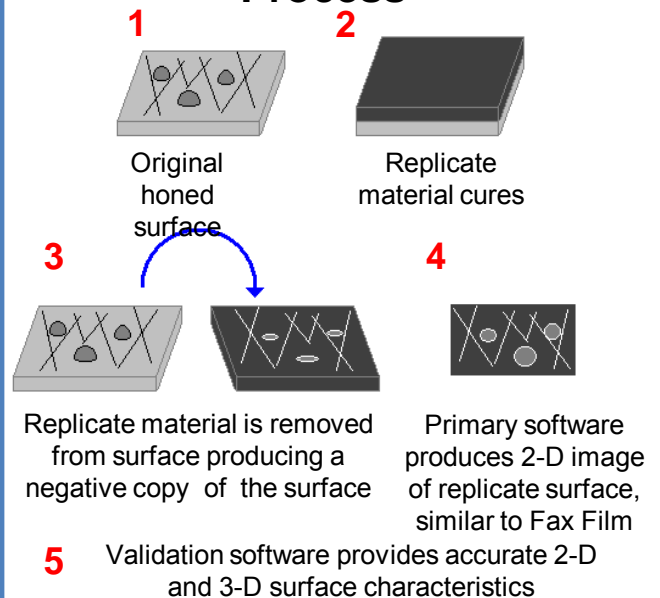- Windows based PC configuration

Definitions:

S_{CI} – Core Fluid Retention Index quantifies volume for fluid retention

S_{BI} – Surface Bearing Index quantifies bearing area of cylinder finish

Accuracy of Various Surface Measurement Equipment

Replication Process

1 Original honed surface

2 Replicate material cures

3 Replicate material is removed from surface producing a negative copy of the surface

4 Primary software produces 2-D image of replicate surface, similar to Fax Film

5 Validation software provides accurate 2-D and 3-D surface characteristics

Software Output