



World Leader in
Superabrasive
Finishing Systems

Single-Step Polishing of Sapphire

INDUSTRY

Optical Components

MATERIAL

Sapphire

CHALLENGE

- Very dense material - slow stock removal with conventional abrasives.
- Multi-step, long processing times to remove wire saw marks and avoid sub-surface damage.
- Final polishing on pad generates work piece edge dubbing and lensing effect.

ENGIS ADVANTAGE

Single-step process from "as sawn" to "final polish" utilizing diamond lapping technology combined with composite metal plate technology resulting in:

- Excellent edge-to-edge flatness control
- Low slurry usage, easy to clean
- Superior cut rates with minimal sub-surface damage
- Visually scratch-free solution

Sapphire, the second hardest material known to man, can now be processed in one lapping/polishing step to exacting flatness and finish requirements using Engis FastLap™ lapping machines, Hyprez HY Pro-1 composite plates and DMP2000 engineered slurries. Reduced process steps, coupled with aggressive stock removal and reduced sub-surface damage, allows for a quick transition to polishing in a minimum amount of time.

PARAMETER	RESULTS
Flatness: Typical of 2" diameter components	$\lambda/5$
Stock Removal:	~2 $\mu\text{m}/\text{minute}$
Surface Finish (RMS):	< 40 angstroms
Cleaning Method:	detergent & water/alcohol

ENGIS® HYPREZ® LAPPING & POLISHING SYSTEMS

Engis is known throughout the world as a leader in the design and manufacture of precision flat lapping and polishing systems. Our Hyprez name, representing **Hyprez Precision**, is recognized as a mark of excellence and quality for a wide range of capital equipment, machine accessories and consumables.

At Engis, we engineer the right solution to any lapping and polishing application utilizing our in-depth knowledge of industrial diamonds, our process development laboratories and our end-to-end full system approach.

Engis is a global leader in the design and manufacture of complete lapping and polishing systems that offer the highest quality finished components, processed in the quickest cycle times while minimizing manufacturing costs.



Hyprez Lapping & Polishing Complete Systems



Our Hyprez® System Offers a COMPLETE SOLUTION—Machine, Accessories, Consumables and Process Development – For the Most Demanding Surface Finishing Needs

Our systems are suitable for processing a vast range of materials: metals, ceramics, glass, semiconductor substrates, plastics, and other advanced materials. We have developed solutions for many industries, improving quality, efficiency, and cost.

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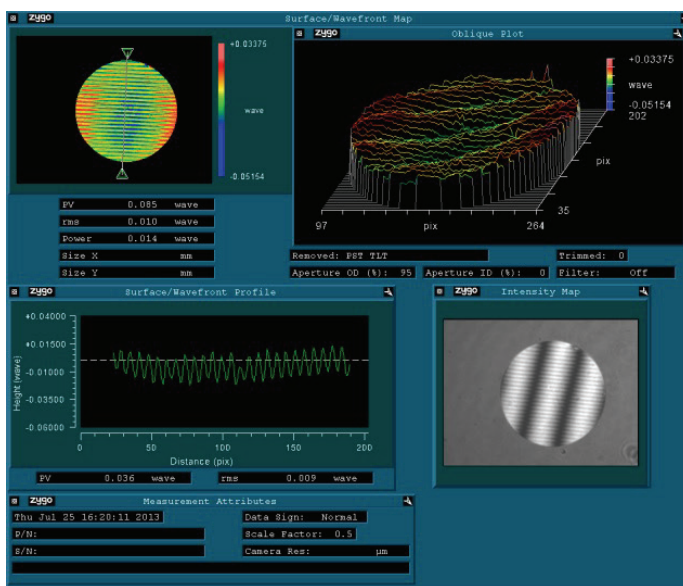
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SMART MANUFACTURING BEGINS WITH SMART PROCESSES

One of the unique features of Engis is our ability to provide technical and engineering assistance to our customers through our three Process Development Laboratories. This is where we work with customers to:

- Improve part quality
- Reduce cycle times
- Lower overall costs

The technicians in our Labs have decades of experience solving the most challenging polishing applications, and in most cases, Engis provides this service at no cost to our customers. Let the Engis Process Development Labs show you how the cutting and polishing power of diamond can be the key to achieving your manufacturing objectives.



Interferogram of a sapphire wafer processed with the Engis Hyprez System exhibiting superior edge-to-edge flatness control with no edge roll-off.

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