



**World Leader in
Superabrasive
Finishing Systems**

Advanced Polishing of Fused Quartz

INDUSTRY

Photonics/Optical Components

MATERIAL

- Zinc Selenide
- Silicon
- Zinc Sulfide
- Calcium Fluoride
- Germanium
- Magnesium Fluoride

CHALLENGE

- Common process recipe for optical materials of various hardness and fracture toughness.
- Final polishing on pitch plate requiring skilled technicians, plate maintenance and preparation.

ENGIS ADVANTAGE

Unified common process for six optical materials; no process changeover required.

Advanced polishing process utilizing diamond lapping technology combined with composite plate technology. Benefits include:

- Operator level processing – no pitch required
- Reduced visual streaks
- Work piece flatness down to $\lambda/8$ utilizing plate facing technology

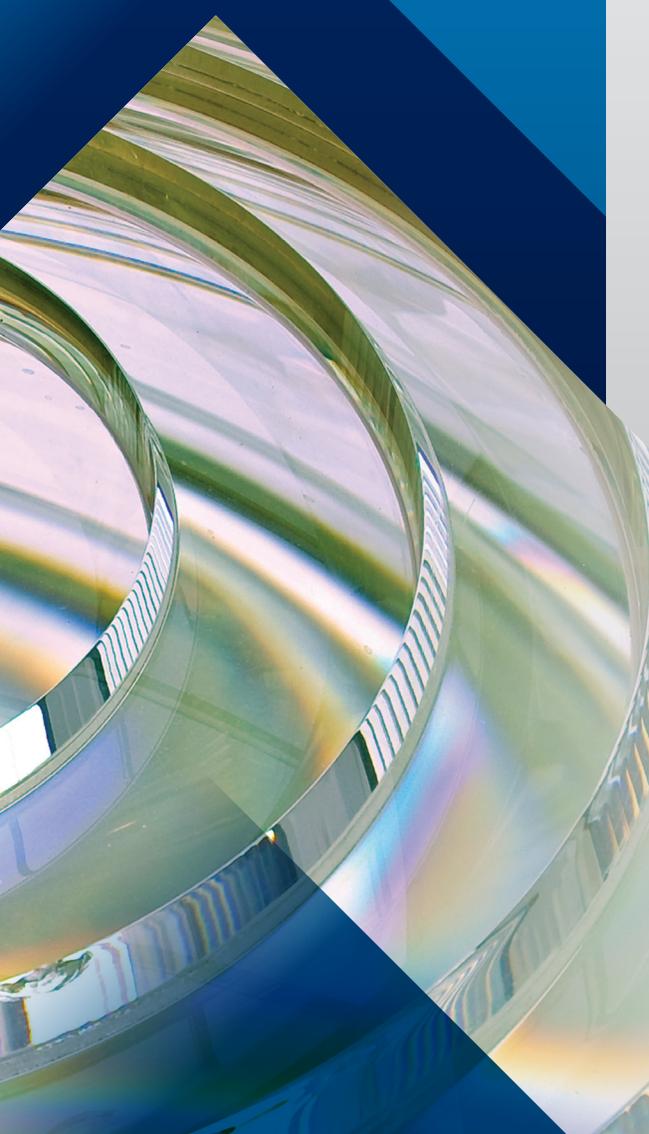
Fused Quartz & Fused Silica, both traditionally lapped and polished with conventional abrasives on pitch plates or polishing pads, now find their way into mainstream manufacturing without the technical know-how. Our approach, utilizing the Engis FastLap™ lapping machine, engineered Hyprez slurries and high precision composite plates, takes the technical challenge out of the processing equation.

| PARAMETER | RESULTS |
|------------------|---------------------------|
| Flatness: | $\lambda/8$ |
| 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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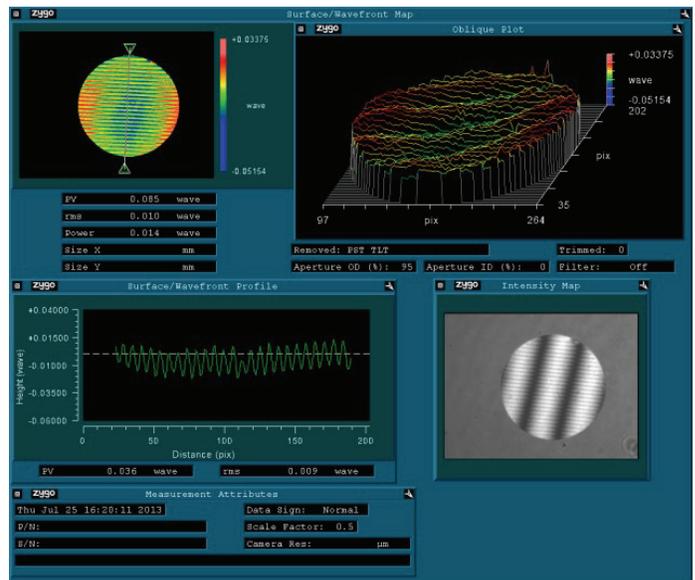
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SMART MANUFACTURING BEGINS WITH SMART PROCESSES

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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