

# Massive 5-Axis Grinding System

In response to industry demand and our customer's needs, Rayotek has created a separate grinding facility dedicated to massive grinding operations. Our 5-Axis Grinding System was built after a 3-year engineering project to design the ultimate system for precision grinding and polishing large workpieces. Rayotek's customized 5-Axis Grinder produces diamond-ground glass, borosilicate, fused quartz, alumina and glass-ceramic materials to virtually any shape.

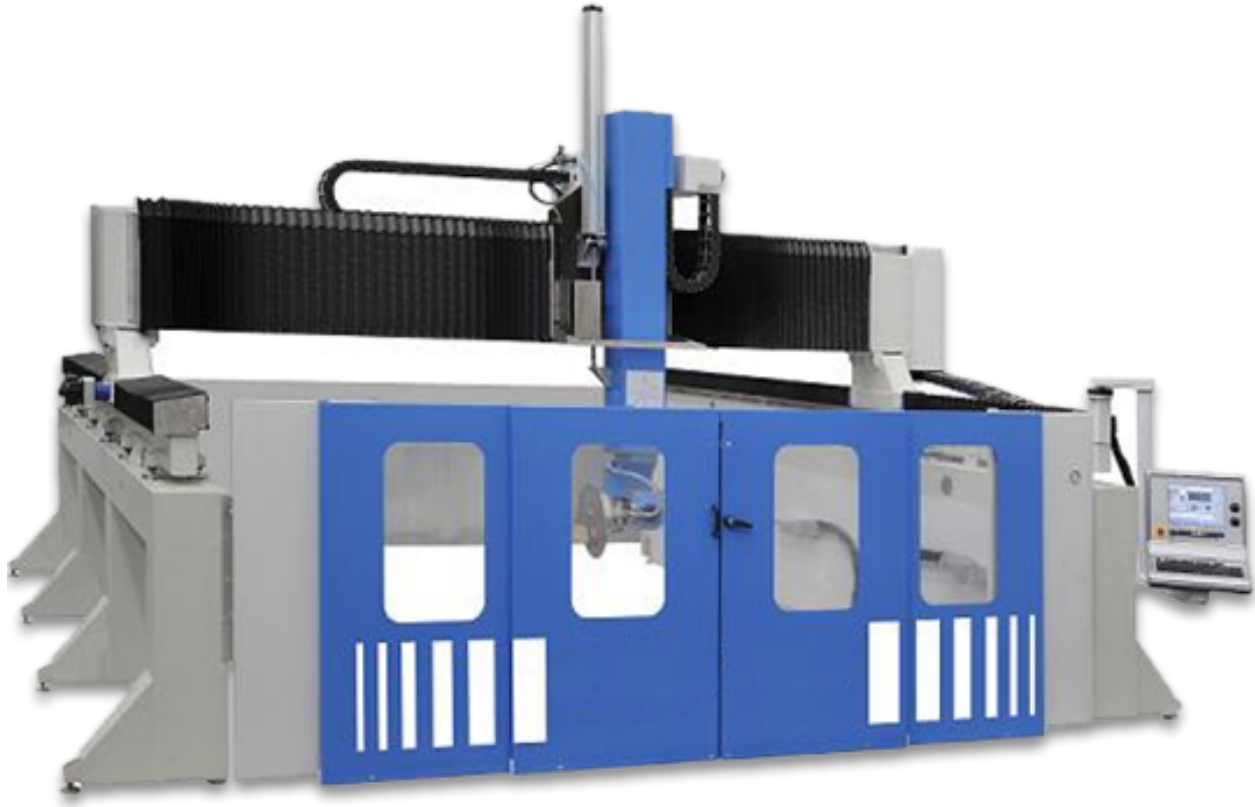
Rayotek's massive 5-Axis Grinder turns dreams into reality. Rapid production times along with high precision completely eliminates the need for slower, more traditional grinding methods. In addition, Rayotek's massive 5-Axis Grinding System can generate shapes and sizes not achievable with other systems.

## Typical materials that can be easily ground and polished on our massive Grinding System:

- Alumina, zirconia, silicon carbide & other refractory materials
- Heraeus TSC series fused quartz & Spectrosil® 2000 fused silica
- Schott Zerodur® glass-ceramic & BK7 optical glass
- Astrosital® glass-ceramic
- Ohara Clearceram® (CCZ) glass-ceramic & BSL7 optical glass
- Corning 7980 fused silica & 7972 ULE® glass-ceramic
- Momenite 124 and 144 fused quartz

## Applications that benefit from Rayotek's Massive 5-Axis Grinding solution:

- **Large Optics Blanks** – for fast, low-cost large optics, molded and/or precision ground to near net shapes for master opticians
- **Finish Grinding on Cast & Pressed Blanks** - for precision, finish grinding on cast large blanks made of alumina, silicon carbide & other ceramics & refractories
- **Massive Optics & Mirrors** – for massive astronomy telescopes
- **Large Diameter Domes & Spheres** – for deep sea submersible, ROVER & lighting
- **Large-size Ceramic & Fused Quartz Dies** - for metal forming & superplastic metal forming
- **Ceramic Nozzles** – rocket & missile applications
- **Large Thermally Stable Lithography Bases** - low expansion materials precision ground to support lithography systems
- **Inspection & QA Tables & Bases** – Massive, thermally & mechanically stable inspection tables, tooling & fixturing
- **Large scale models** – for large-scale size models made from stone, glass, ceramic & stone



**What makes our Massive 5-Axis Grinding System capable of achieving so much more than any other service available:**

- Unprecedented accuracy for such a large working envelope:

**5-Axis Grinding System Work Envelope**

Maximum Grinding	X-axis	163in	4150mm
Maximum Grinding	Y-axis	197in	5000mm
Maximum Grinding	Z-axis	55in	1400mm
Maximum Outside Diameter		159in	4030mm

- Onsite laser mapping of the entire machine for higher accuracy
- In-situ touch probe for establishing and adjusting toolpath.
- Delcam Software System to generate highly accurate G-code for even the most complex curved, facet free surfaces
- An in-house master 5-Axis grinding engineer
- An in-house, world class master optician
- 21 years of experience with diamond grinding complex, optical surfaces