

# OPTIPRO

## The Machines Behind Precision Optics



## PARTNERSHIPS

US Navy

US Army

NASA

Laboratory for  
Laser Energetics at the  
University of Rochester

Penn State  
Electro-Optics Center

Rochester Institute  
of Technology

Monroe Community  
College

Prime Contractors

## 001: LEADERSHIP STATEMENT

### OptiPro Systems excels at developing cutting-edge machines for precision optical fabrication.

OptiPro's advanced optical manufacturing capabilities along with our partnerships with universities and U.S. Government agencies provide an unprecedented engineering team. This innovative group is focused on producing a clear path towards solving the difficult problems associated with grinding, finishing and measuring precision optics in the defense, aerospace and medical industries.

The most rapidly growing demand in precision optics is the production of aspheric and freeform optics. OptiPro's fabrication breakthrough was the development of the patented UltraForm Finishing (UFF), a machine capable of polishing a variety of crystalline and glass materials in even the most difficult of shapes, from the tangent ogive to aspheric and freeform surfaces.

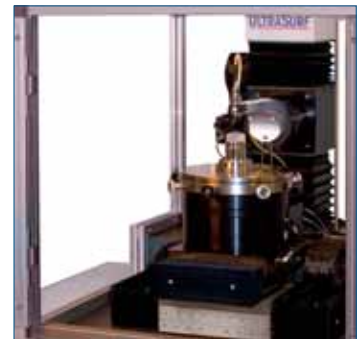
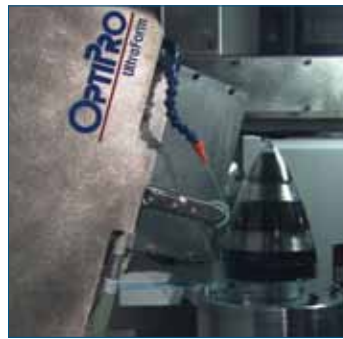
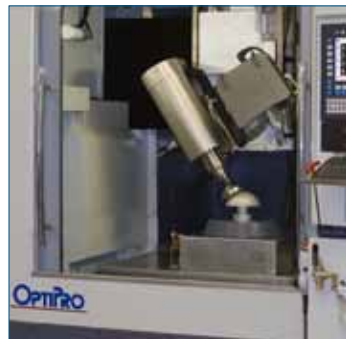
The fabrication solution must include the metrology of complex precision optics. UltraSurf is OptiPro's newly developed high precision, computer controlled, 5-Axis non-contact surface metrology scanning system which can be used for measuring complex aspheric and freeform surfaces. The flexibility of these new products has resulted in unique and exciting solutions for polishing and measuring challenging optical components.

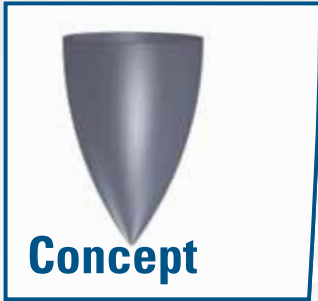
OptiPro offers a wide variety of CNC grinding, polishing, and metrology devices. Collaboration with the University of Rochester, Penn State Electro-Optics Center and the Department of Defense SBIR program were instrumental in the extensive research and development of our new products. With this alliance, we carefully scrutinize our development efforts to ensure focused and successful results. Current customers utilize OptiPro's grinding and polishing machines for the production of military night vision, missile dome components, medical devices, and commercial optics. Our commitment to develop and implement advanced fabrication and metrology systems enables our customers to achieve their most complex production goals.

## 002: HISTORY

In the early 1980's, the rapid advancement of computer technology created significant changes in the manufacturing world, which led to reinventing the entire industry. It was clear that the technological growth would be fast and furious and would require extensive technical service and support. This evolution was the motivation in 1982 behind OptiPro Systems' newly developed business concept: to create a technical solutions company consisting of skilled engineers, technicians, and machinists supplying the industry with the best possible manufacturing methods available. This included Computer Numerically Controlled (CNC) machines, CAD/CAM software, training, service, and support. Today, OptiPro continues designing and manufacturing machines, processes, and software solutions for the metalworking and optical fabrication industries.

The Ultramill CNC machining centers, along with other custom machines developed by OptiPro Systems, became technological stepping-stones that carried the firm into the world of precision optics. In 1991, the release of the OptiPro product line (formerly Opticam SX) made OptiPro synonymous with world-leading computer controlled machines and equipment for deterministic fabrication of precision optics.





**Concept**

**A** Advanced

**P** Process

**D** Development



**Solution**

## 003: ADVANCED PROCESS DEVELOPMENT

OptiPro Systems has been developing and producing machines for precision optical fabrication since 1989. Due to customer request and the demand for shorter lead times, tighter tolerances and non-standard optical components, we have created an Advanced Process Development (APD) laboratory. This laboratory is an extension of our Small Business Innovative Research projects developed for the U.S. Department of Defense. OptiPro develops cost effective process solutions for prototype optical components. The APD department, consisting of a team of engineers, scientists, and opticians concentrates on developing fabrication solutions involving new materials and production cost constraints. These machines and process solutions are easily transferred and implemented at the customer's facility. This method of collaboration enables our customers to test new markets and services with minimal costs and no upfront capital equipment investment, until it is a viable opportunity for your company.

State-of-the-art OptiPro machines and our optical fabrication techniques provide the pathway for your company to revolutionize your manufacturing capabilities, enabling the fabrication of complex optical components. This has proven to be a cost effective method to develop turnkey solutions optimized for your requirements. OptiPro Systems APD department is here to demonstrate our machine capabilities for the fabrication and metrology of optical components and help you develop robust and cost effective manufacturing solutions. Solving your manufacturing problems is our commitment, let us prove it!

### PROCESS CAPABILITIES

- Contour Shaping
- Core Drilling
- Grinding
- Polishing
- Contact Metrology
- Non-Contact Metrology

### FABRICATION EQUIPMENT

- eSX Series CNC Optical Grinding Machines
- ePX 200 CNC Optical Polishing Machine
- UltraForm Finishing
- SXL 500
- UFF 500
- PRO SERIES fabrication equipment
- UltraCURV electronic spherometer
- OptiTrace 5000 contact profilometer
- UltraSurf 5-Axis non-contact measurement platform
- CMM
- Master3DGage Portable CMM
- Zygo 4 inch GPI Interferometer
- Zygo 6 inch Verifier Interferometer
- Zygo NewView





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## 004: CORE ADVANTAGE

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Our team of engineers embraces the challenges presented by new customer requirements in today's world of changing technology. We have a uniquely creative and intelligent team of engineers, technicians and support staff that believe walls are to be broken down and obstacles are to be overcome. Conceptualizing, designing and then building machines involves a very diverse group of individuals who must all share the same vision and desire to "play" together. A research team with this shared vision and attitude succeeds in providing cost effective solutions and lasting relationships with our customers. The energy we have at OptiPro drives the innovation which breeds our customer's success.

### INNOVATIVE MANUFACTURING SOLUTIONS FOR PRECISION OPTICS

#### PROCESS

Grinding  
Polishing  
Centering  
Measurement

#### SHAPES

Spheres  
Aspheres  
Cylinders  
Freeforms  
Prisms  
Toroids  
Cones



### CUSTOM ENGINEERING AND DESIGN FOR SPECIAL MACHINE BUILDS

"Award Winning R&D Engineering Team"  
Ideas taken from Concept to Design to Reality  
Mechanical, Electrical, Process and Software Engineering

### PRECISION OPTICAL FABRICATION PROCESSES FOR NON-TRADITIONAL COMPLEX SHAPES IN GLASS, CERAMICS AND OTHER BRITTLE MATERIALS

Custom tooling and fixturing. Production automation and implementation.



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## 005: EDUCATION

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OptiPro U is a one week study of current processes, machinery, and tools employing the latest CNC technology that is shaping the methodology in manufacturing optical components. The course is designed to be very interactive, providing laboratory experience on the following subjects: CNC grinding, polishing, and metrology of spheres and aspheres. The lectures include all current technologies and practices utilized in the fabrication of precision plano, spherical, aspherical, and freeform optics.

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## CONTACT INFORMATION

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