

Optronics solutions —

HIGH-INTEGRITY OPTICAL SOLUTIONS FOR ALL DOMAINS

Count on reliably precise
performance in extraordinarily
hostile environments



MANUFACTURING CORE COMPETENCIES

When customization is critical, count on Collins Aerospace. Some of the world's most demanding, specialized missions have relied on our ability to design and manufacture customer-specific optical assemblies.



OPTICS FABRICATION

- CNC glass shaping
- Spherical and aspherical
- Truncated and off-axis segments
- 0.25-inch diameter up to 12 inches
- Precision optical components
- Sub-20th wave capabilities
- Optical coatings
- AR IR, bandpass and reflective in visible-MWIR spectrum
- Lightweight mirrors
- Super polish for metallic mirrors
- Diamond turning, including hybrid diffractives



ASSEMBLY

- Precision opto-mechanical assembly
- Precision electro-optical assembly
- Clean-room facilities
- Electronic assembly



TESTING

- Visible/IR interferometry
- MTF/automatic test equipment
 - Visible and infrared
- Profilometry
 - Surface contour
 - Surface roughness
- Environmental
- Micro display calibration and test
- Night-vision/thermal imager dark room

WEARABLE DISPLAY INTEGRATION

- Advanced, see-through optics
- Revolutionary, near-eye display
- Uniquely large eye box and eye relief
- Ultra-thin, see-through lens
- Ideal transmission for augmented vision, tactical and training applications



GLASS FABRICATION

- CNC work centers for:
 - Grinding and shaping
 - High-speed polish
 - Asphere polish
 - Ultrasonic sawing and truncation
 - Lightweighting
- Conventional spindle polish

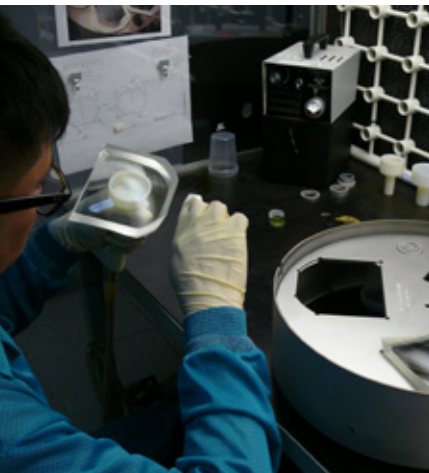
INFRARED GLASS FABRICATION

- CNC shaping
- CNC spherical polish
- Single-point diamond turning
 - Aspheres
 - Diffractives
 - Off-axis and free-form
- Materials
 - Silicon
 - Germanium
 - Multispectral zinc sulfide
 - Zinc selenide
 - Chalcogenide glasses
 - Al, Cu and nickel



THIN FILM COATING

- Deposition of dielectric and metallic materials
 - Evaporative ebeam and resistive sources
 - Ion assist
 - Optical and crystal monitors
 - UV to MWIR
- Precision AR, filters, mirrors and beam splitters



OPTICAL ASSEMBLY

- Retention
 - RTV/epoxy
 - Conventional retainers
 - Flexures
- Thermal metering
- Precision alignment
 - Air bearings
 - Mechanical and optical runout
 - Interferometric
 - DT tooling for precision mirror and lens positioning
 - Compensator adjust
- Sensor and microdisplay integration
- Autocollimating telescopes
- Assembly clean rooms and flow benches

METROLOGY AND TEST

- Metrology
 - Visible and infrared interferometers
 - Aspheric profilometry
 - Optical profilometry
 - Spectrophotometry/FTIR
- Optical test
 - Visible and infrared MTF
 - Encircled energy
 - Transmission
 - Distortion/EFL
 - Thermal focus and boresight
 - Null testing

ENVIRONMENTAL TEST

- Thermal and humidity
- Vibration
- Coating witness testing
 - Salt fog
 - Adhesion
 - Durability
 - Solubility

ADVANCED SOLUTIONS FOR EVERY MISSION



Optical innovations that provide critical awareness and expand your capabilities.

SURVEILLANCE AND RECONNAISSANCE

Our optics can meet your day and night vision requirements for sustained surveillance and reconnaissance across platforms in air and space.

Collins Aerospace designs, develops and produces precision optics for distributed aperture sensors on the F-35 program. These sensors enable pilots to “see through” their aircraft for 360-degree, spherical situational awareness. The sensors also provide a range of capabilities, including missile detection and tracking. Over our 10-year program involvement, we provided more than 1,600 optical assemblies to the customer.



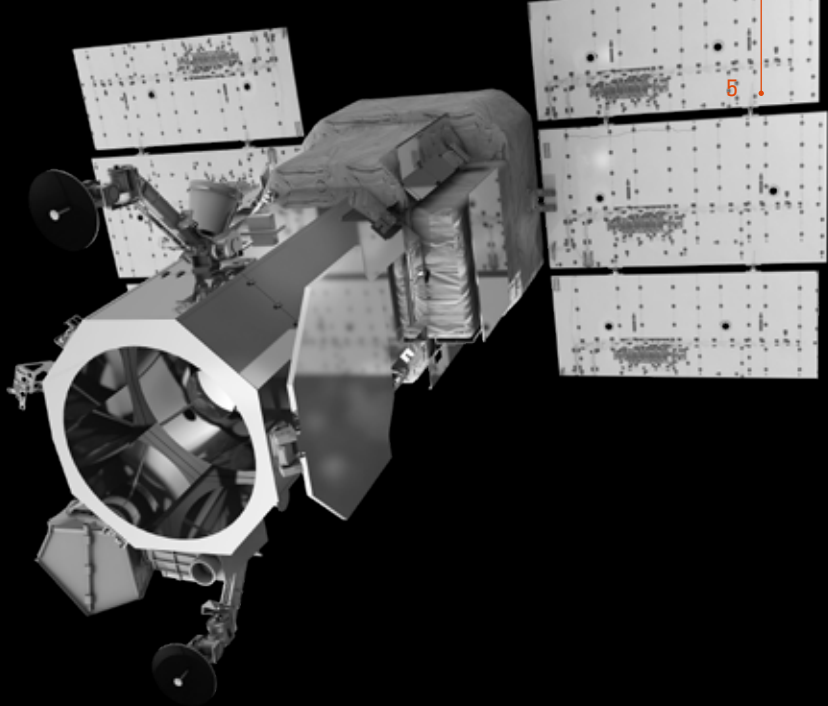
INFRARED COUNTERMEASURES

Because they can thwart increasingly common attacks by confusing the guidance systems of surface-to-air missiles, airborne countermeasures are becoming must-have technology for fixed- and rotary-wing aircraft. Collins Aerospace has more than 20 years of experience in this field.

We develop and produce the critical optical assemblies for the Miniature Pointer Tracker used in its Large Aircraft Infrared Countermeasures (LAIRCM) system.

HIGH-PRECISION NAVIGATION

Space demands flawless performance – the first time and every time. It's why we design, develop and produce star tracker optical assemblies to the most stringent standards in the industry. See why civil, commercial and defense satellite systems rely on our optical solutions for their precision navigation.

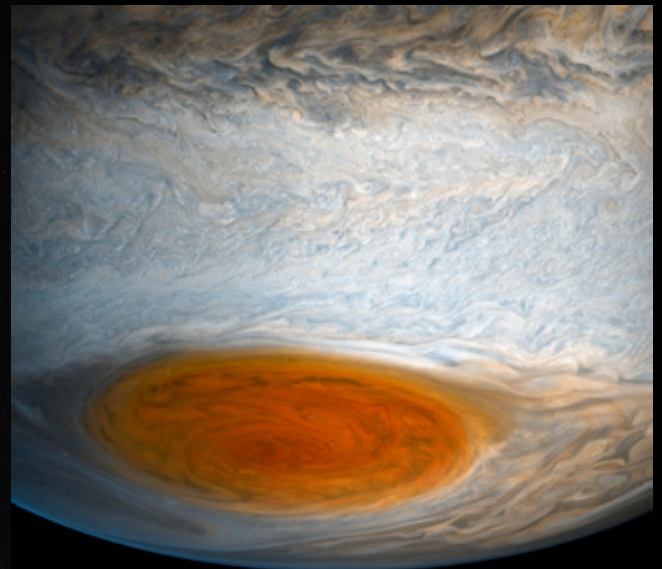


SPACE EXPLORATION

Collins Aerospace has been playing a crucial role in the exploration of Mars. Our lens assemblies have been part of every Mars rover. The NASA rover Curiosity has traversed parts of the planet, beaming back scientific data.

Assisting in the rover's movements are eight hazard-detecting cameras, as well as four navigation cameras used to provide broad landscape images that help Curiosity maneuver to points of interest. Our lens assemblies serve as the "eyes" on all 12 cameras, and are one of the few features on the rover that haven't undergone major design changes from one mission to the next.

When NASA launched its Juno Jupiter Orbiter 2011 mission, its spacecraft's on-board camera (called Junocam) featured a wide-angle lens that Collins Aerospace designed and built. Withstanding intense radiation along the journey through space, the lens has captured stunning color images with unprecedented clarity.



WEARABLE DISPLAY SOLUTIONS

Prepare your warfighters more effectively with wearable display technology that immerses trainees in high-fidelity augmented and mixed reality.



HIGH-FIDELITY TRAINING SOLUTIONS

Collins Aerospace reliably delivers the unmatched optical realism and seamless integration that enable pilots to train with the same visual experience as in the real aircraft helmet.

F-35 Lightning II pilots can train with the world's most advanced fighter training system, which includes our StrikeEye™ Gen III simulation helmet-mounted displays.

Our commercial wearable products are suitable for use in the highest-fidelity mission training, fast-jet and rotary-wing cockpit simulation applications.

Pilots on F-15, F-16 and F/A-18 aircraft train with our simulated Joint Helmet Mounted Cueing System (JHMCS), providing the most realistic training experience.



BATTLESPACE-PROVEN SOLUTIONS

Warfighters operating in the world's most hostile and visually degraded environments are using Collins Aerospace wearable vision systems for greater situational awareness.

Our Integrated Digital Vision System (IDVS) fuses multispectral and night vision sensors with other data sources to provide head-up, eyes-out augmented visualization. IDVS provides the ability to "see through" visually degraded environments and improves the warfighter's mission effectiveness, survivability and lethality.



To learn more, go to
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