

Aircraft: Fixed Wing

In the defense field, safe and efficient operation of aircraft is critical. Aircrafts must be ready to fly anytime and anywhere.

Routine aircraft maintenance is essential to make sure aircrafts stand up to the rigors of daily operations.

This section introduces remote visual inspection solutions for the aircraft engines and bodies used for defense and security.

Visual Inspection Solutions: Defense and Security

Olympus Scientific Solutions



Aircraft Engine Inspection

Application

Military aircraft require both good flight performance and durability to operate in harsh environments. Routine engine maintenance is vital for daily flight operations.

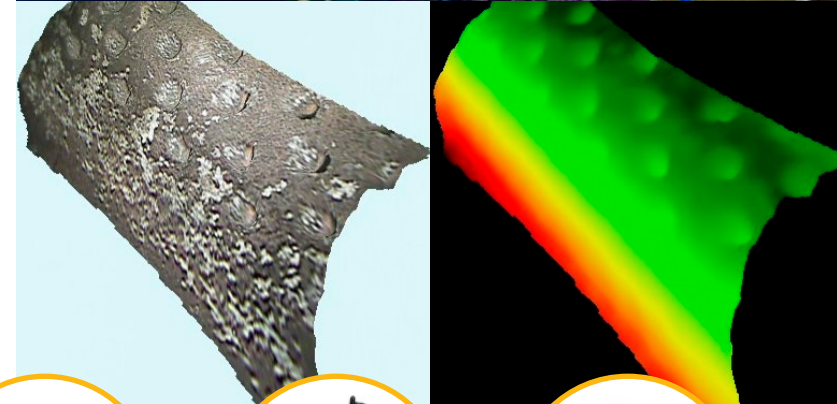
For engine maintenance at the base, a reliable, durable videoscope is important for effective support of flight operations.

Challenges

- Maintainers must deliver reliable videoscope inspections
- Even small defects must be quickly found so that the aircraft is in good condition for an urgent mission
- Videoscopes must be durable to perform in any weather and environment

Solutions

- The IPLEX™ videoscope series is chosen by defense organizations all around the world due to its reliability for engine inspections
- User-friendly system makes it simple to quickly and easily make image adjustments, manipulate the scope, and take defect measurements
- High-quality imaging with intelligently adjusted brightness clearly exposes the condition of blades and combustion chambers in their actual colors
- Military-grade ruggedness (MIL-STD) and IP-compliant design offers reliable performance, even in harsh outdoor environments
- Wide selection of videoscope models from handheld to large screen options with advanced functionality enables you to find the right videoscope for your inspection needs



Recommended Products

IPLEX NX, IPLEX GX/GT, and IPLEX G Lite videoscopes



Aircraft Corrosion Detection

Application

The airframe is constantly exposed to harsh environments, including freezing or high temperatures, wind, and rain. It sometimes faces corrosion, cracks, and structural fatigue. Airframe inspections are mainly performed with non-destructive inspection equipment such as ultrasonic and eddy current flaw detectors. However, inspections of the airframe interior, which cannot be accessed directly, are conducted with an industrial videoscope.

Challenges

- Bright illumination is needed to inspect areas with large or dark spaces
- Accurate detection of discolored points is required
- Damage severity must be assessed through measurement
- Corrosion preventative treatment cannot be performed inside the airframe

Solutions

- IPLEX™ NX videoscopes offer intelligent brightness adjustment through PulsarPic™ technology to enable a higher probability of detection
- Renders colors reliably to show defects in their actual colors
- User-friendly 3D stereo measurement helps maintainers get reliable measurement results with intuitive visualization of flaws, such as corrosion and other defects
- With a working channel scope, corrosion preventative compounds can be sprayed in confined areas



Recommended Products

IPLEX NX videoscope with working channel and stereo measurement



Bulkhead UV Inspection

Application

Due to high acceleration forces caused by in-flight maneuvers, certain critical areas of the airframe may show signs of fatigue. For instance, the fastening holes in the upper bulkheads close to the wing mounts are key locations for nondestructive visual inspection of microcracks. If not detected early, the material strength around the wing area can degrade and lead to catastrophic failure of the airframe.

Challenges

- Difficult to visually identify microcracks in white light conditions
- The location of microcracks adds complexity to the inspection

Solutions

- IPLEX™ GX/GT videoscopes offer easy switching of LED modules to enable visual inspection under ultraviolet (UV) light conditions as part of fluorescent penetrant inspection (FPI)



Recommended Products

IPLEX GX/GT and IPLEX G Lite videoscopes with the UV LED module



Foreign Object Debris (FOD)

Application

Even very small foreign object debris (FOD) in the engines and airframes can potentially cause critical damage and catastrophic accidents. At military sites, FOD must be swiftly removed without disassembling the aircraft components in case of an emergency flight mission.

Examples of foreign objects:

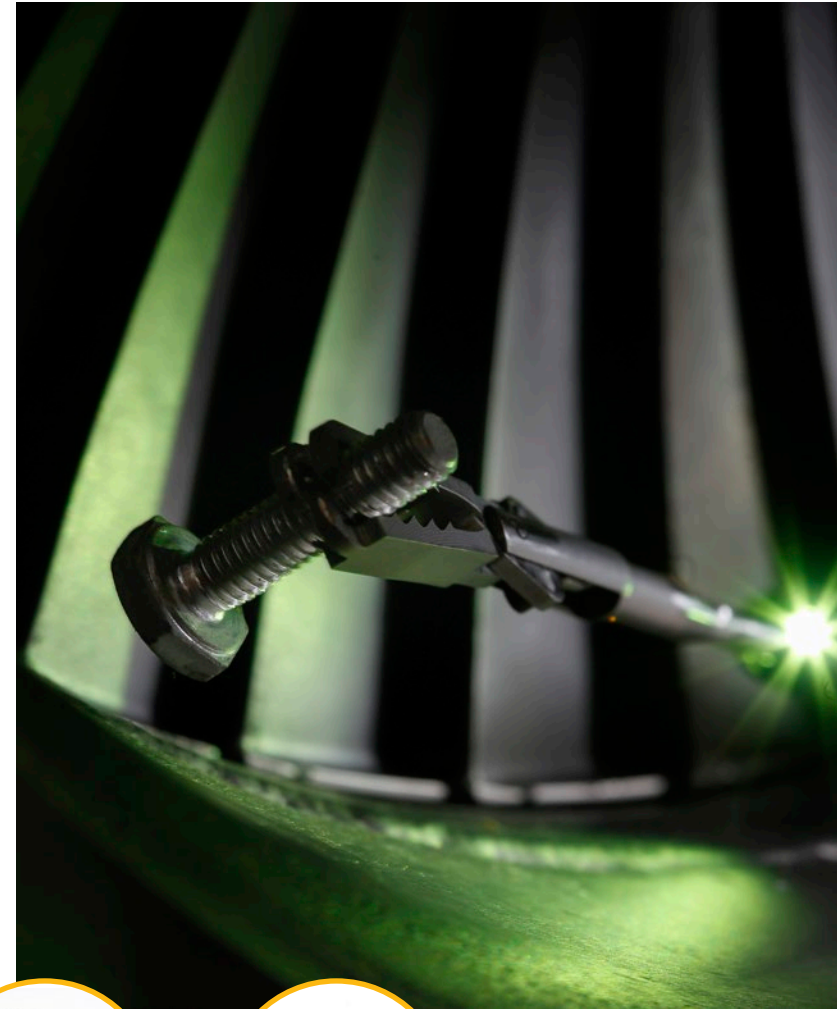
- Bolts or screws dropped into panels or under the ejection seat of the cockpit
- Debris or wildlife vacuumed into the engine

Challenges

Identifying and removing FOD is especially challenging when access to the object is limited.

Solutions

The IPLEX™ NX videoscope can be combined with a working channel scope to enable remote visual inspection and FOD removal using various internal retrieval tools.



Recommended Products

IPLEX NX videoscope and working channel with a full selection of internal retrieval tools



Landing Gear Inspection

Application

Aircraft landing gear is subjected to extreme stress during takeoff and landing. The stress can cause tiny cracks on the cylinder wall of the landing gear, which can lead to potential component failure.

The area is normally inspected with magnetic particle and fluorescent penetrant techniques that require you to disassemble the landing gear, including paint and plating removal.

Challenges

- Disassembly of the landing gear requires downtime and adds costs
- Light reflection on the metal shaft prevents a clear view
- Even tiny discoloration from corrosion cannot be overlooked
- Very small defects, such as hair cracks, are difficult to find

Solutions

- Videoscopes can directly access the target in a narrow space, enabling you to observe the condition of the landing gear without detaching the helicopter body
- IPLEX™ videoscopes offer intelligent brightness adjustment through PulsarPic™ technology to deliver clear images and eliminate halation
- High-quality images with rich color reproduction shows discoloration caused by corrosion
- With an interchangeable UV light source on the IPLEX GX/GT and G Lite videoscopes, fluorescent penetrant inspection can be performed during the inspection, while the IPLEX NX videoscope with a working channel enables you to spray fluorescent dye on the shaft



Recommended Products

IPLEX GX/GT and IPLEX G Lite videoscopes with the UV LED module; IPLEX NX videoscope with a working channel



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