



# Aircraft: Rotary Wing

Helicopters play an indispensable role in defense and rescue missions. They provide agility, rapid deployment, and field landing availability.

Helicopter maintenance specialists deliver thorough helicopter inspections from the engine and rotor to the fuselage and landing components to help ensure a well-executed flight at any location.

This section introduces remote visual inspection solutions for helicopters used for defense and rescue.

**Visual Inspection Solutions: Defense and Security**

Olympus Scientific Solutions

# Helicopter Engine Inspection

## Application

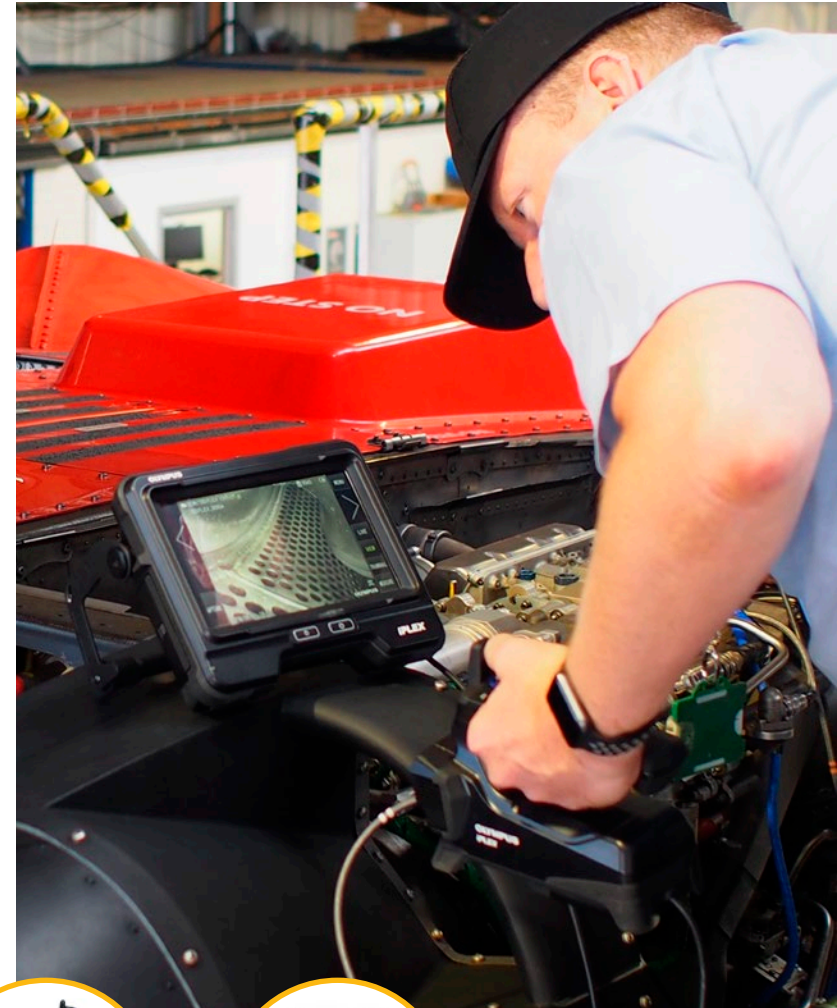
The helicopter engine can be potentially damaged from exposure to harsh environments, such as high temperatures, sand, sea water, and bird strike during flight. For safe flight operations, the engine is regularly inspected with a videoscope to detect damages such as cracks, dents, nicks, and erosion. This remote visual inspection method can show the interior condition of the helicopter engine without disassembling it.

## Challenges

- Inspectors in the military must deliver reliable inspections
- A quick engine check is required to get the helicopters ready for the mission
- The engine is located at the top of the helicopter, so portable inspection equipment is preferred
- A 4 mm (0.16 in.) scope is often required
- Bright illumination is needed during combustion chamber inspection

## Solutions

- IPLEX™ GX/GT and IPLEX G Lite videoscopes offer high-quality imaging with intelligently adjusted brightness to clearly expose the condition inside the engine in its actual colors
- User-friendly system enables you to quickly and easily make image adjustments, manipulate the scope, and take defect measurements
- Military-grade ruggedness (MIL-STD) and IP-compliant design offers reliable performance, even in harsh outdoor environments
- Lightweight, portable videoscopes are easy to carry on the top of the helicopter
- Thin 4 mm (0.16 in.) diameter insertion tube with bright illumination is useful for inspecting hard-to-reach, large spaces



## Recommended Products

IPLEX GX/GT and IPLEX G Lite videoscopes





# Helicopter Rotor— Strap Pack Inspection

## Application

The strap pack is the mechanical component that attaches helicopter rotor blades to the main hub. This critical component absorbs in-flight rotor stresses and is exposed to harsh environmental conditions. Catastrophic failure of the strap pack because of material cracks and corrosion causes in-flight rotor separation, leading to an aircraft crash. Frequent defect inspections are conducted to keep the strap pack in good condition. Industrial videoscopes are used to discover defects hidden between the parts.

## Challenges

- Inspection is required even in tough environments to help ensure the aircraft is ready to fly on a mission at any time
- The strap pack is located on the top of the helicopter body and tail
- The gap between the strap-pack parts is narrow and intricate

## Solutions

- Durable IPLEX™ G Lite videoscopes can withstand harsh environments such as sand, dust, and rain, as well as physical shock in compliance with MIL-STD-810 and IP65
- Lightweight and portable videoscopes are easy to carry on the top of the helicopter
- Thin 4 mm (0.16 in.) diameter insertion tube fits into confined spaces
- Close up focus with near-focus optical adaptor offers precise observation of suspected defects



## Recommended Product

IPLEX G Lite videoscope



# Helicopter Rotor— Drive Shaft Inspection

## Application

The drive shaft connects the main rotor and the tail rotor to transfer torque and flex couplings to handle the vibration and geometry of the aircraft. The weight of the helicopter and the air resistance lead to a high workload on both of these rotors. The shaft supporting the rotors is also heavily loaded. The aged deteriorations on the shaft, such as corrosions and cracks, can potentially cause fatal damage and catastrophic accidents.

## Challenges

- Disassembly of the helicopter body is required to perform the shaft inspection
- Light reflection on the metal shaft prevents a clear view
- Even tiny discoloration of corrosion cannot be overlooked
- It's difficult to reach the shaft from the top of the helicopter body and tail
- Very small defects, such as hair cracks, are difficult to find

## Solutions

- Videoscopes can access the shaft through the gap of the helicopter frame, enabling you to observe the condition of the shaft without disassembling the helicopter body
- IPLEX™ videoscopes with intelligent brightness adjustment through PulsarPic™ technology can deliver clear images and eliminate halation
- High-quality imaging with rich color reproduction shows the discoloration caused by corrosion
- The IPLEX G Lite ultra-portable videoscope can be easily carried to the elevated areas
- With the interchangeable UV light source on the IPLEX GX/GT and G Lite videoscopes, fluorescent penetrant inspection can be performed during the videoscope inspection, while the IPLEX NX videoscope with a working channel enables you to spray fluorescent dye on the shaft



## Recommended Products

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



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