

APPLICATION NOTE

Engine and Electrical Generator Gearbox Systems – Liquid Level, Temperature and Pressure Sensors for Gearbox Systems



Reliable operation of engine and electrical generator gearbox systems is vital to critical safe operation of commercial and military aircraft. These gearbox systems support the safe operation and early failure detection of fixed wing and rotorcraft aircraft. Maintenance oil level detection and out of range temperature and pressure detection during operation in these key gearbox systems is a challenge due to the harsh operating requirements, including high and low temperatures, high vibration, salt/fog and other difficult qualification requirements found in a wide range of operating environments.



Application Challenges

- Gearbox system maintenance requires the ability to remotely check critical oil level elevation in gearbox sumps and reservoirs between missions to assure safe operation of engines and electrical generators.
- Gearbox system operation requires highly reliable temperature and pressure sensing to signal maintenance and emergency repair requirements to flight operations.
- Liquid Level, Temperature and Pressure Sensors must operate in the harsh, high vibration, frequent duty cycles and unpressurized aircraft environments with minimal maintenance support.
- Commercial and Military flight components meet stringent requirements including shock/vibration, high reliability, Electrical Magnetic Interference (EMI), Radio Frequency Interference (RFI) and salt water/fog environment defined by MIL-STD specifications for rotorcraft operation.

Aircraft Installation Requirements

- **Wide variety of sensor element mounting Configurations:** Internal mounting to gearbox body, external mounting through gearbox housings, and top/side/ bottom mounting in oil reservoirs available
- **Wide Range of Gearbox Fluid compatibility**
- **Fluid Operating Pressures:** 0 to 3,000+ PSIG (0 to 200+ BARG)
- **Fluid Operating Temperatures:** -40° to 350+° F (-40° to 177° C)
- **Environmental Temperatures:** -40° to 250° F (-40 to 125° C)

Solution and Benefits: FCI AS-LLE, Liquid Level Sensors, AS-TE & AS-TT Temperature Sensors/Transmitters and AS-PT Pressure Transmitters

- No moving part technology provides maintenance free operation
- Full Commercial and Military qualifications: DO 160F, MIL-STD
- Wide Range Aerospace Straight Thread, National Pipe Thread (NPT) and Flange Mounting process connections available
- Stainless Steel wetted parts and enclosures resist corrosive salt water/fog exposure
- Factory Calibrated across wide range in specified Gearbox fluids to customer's range requirement
- Resistance Element, Switch and Transmitter Outputs available
- Proven high reliability in commercial and military service: 100,000+ MTBF
- Built under ISO9001 and AS9100 Quality Certification

