

Fact sheet

UAS Services for Transmission Line & Substation Inspections

Smarter, safer inspection solutions for critical grid infrastructure

Providing advanced Unmanned Aerial Systems (UAS) inspection services that help transmission and distribution asset owners assess the condition of critical infrastructure safely, efficiently, and cost effectively



Why Drone Inspections Matter

Using specialized drones equipped with high-resolution optical, thermal infrared, and LiDAR sensors, Intertek delivers comprehensive inspections of transmission lines, substations, towers, conductors, insulators, transformers, and associated assets.

These solutions reduce the need for manual climbing, helicopter inspections, equipment outages, and other traditional inspection methods, while improving data quality and reducing operational risk.

Electric utilities operate thousands of miles of transmission and distribution lines and maintain extensive networks of substations and electrical assets.

Ensuring these systems remain reliable requires regular inspection and condition assessment.

Traditional inspection methods can be:

- Time consuming and labor intensive
- Costly to perform across large geographic areas
- Dependent on difficult site access
- Associated with working-at-height and electrical safety risks
- Limited by outage requirements and operational constraints

Intertek's UAS solutions provide rapid, high-quality data collection while minimizing safety exposure and operational disruption. Our drone inspection programs help utilities improve reliability, optimize maintenance planning, and extend asset life.

Advanced Inspection Technologies

Thermal Infrared Imaging

Thermal cameras identify abnormal heat signatures that may indicate:

- Loose or deteriorating electrical connections
- Overloaded conductors
- Failing insulators
- Transformer hot spots
- Equipment deterioration before failure occurs

Early identification enables proactive maintenance and helps prevent costly unplanned outages.

High-Resolution Optical Imaging

High-zoom RGB cameras capture detailed visual imagery of critical assets, allowing inspectors to assess:

- Insulator condition
- Conductor damage and strand deterioration
- Corrosion and structural degradation
- Missing hardware and cotter pins
- Tower and pole component integrity

LiDAR & Digital Twin Solutions

LiDAR-equipped UAVs collect highly accurate spatial data used for:

- Right-of-way mapping
- Vegetation encroachment analysis
- Asset modeling and clearance assessments
- Structure measurements
- 3D point clouds and digital twins

Substation Inspections

Detailed inspection of:

- Power transformers
- Circuit breakers
- Disconnect switches
- Buswork and connectors
- Insulator systems
- Structural components

For more information



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Emergency Response & Condition Assessment

Rapid deployment capabilities support:

- Storm damage inspections
- Post-event assessments
- Outage investigations
- Asset condition verification
- Priority maintenance planning

Operational Capabilities

Visual Line of Sight (VLOS) Operations

Intertek's experienced UAV pilots perform targeted inspections to conduct detailed surveys of transmission and substation assets. VLOS operations are ideal for focused inspections, engineering support, and rapid assessment activities.

Beyond Visual Line of Sight (BVLOS) Ready Solutions

As BVLOS regulations and utility applications continue to expand, drone technology enables efficient inspection of extended transmission corridors and remote infrastructure.

Long-range aerial data collection increases coverage, enhances operational efficiency, and supports large-scale asset management programs.

Key Benefits

Enhanced Safety

Reduce employee exposure to:

- Working at height
- Tower climbing
- Difficult terrain
- Energized infrastructure environments
- Helicopter-based inspection risks

Improved Efficiency

- Faster inspection cycles
- Reduced field time
- Minimal service disruption
- Accelerated data collection and reporting
- Greater asset coverage per deployment

Better Data & Smarter Decisions

- High-resolution visual records
- Thermal anomaly detection
- Repeatable inspection methodologies
- AI-enabled data analytics
- Predictive maintenance insights

Reduced Costs

- Lower access equipment requirements
- Reduced helicopter utilization
- Fewer outage-related expenses
- Optimized maintenance planning
- Improved asset lifecycle management

Integrated Asset Management

Intertek's drone inspection services can be seamlessly paired with our Aware - Asset Performance Management (APM) Software Suite, providing a single source of truth for inspection data, asset condition information, and maintenance planning.

Utilities gain secure access to historical records, inspection findings, thermal imagery, LiDAR data, and actionable analytics that support smarter asset management decisions and improved network reliability.

Delivering Actionable Intelligence for Grid Reliability

Intertek combines industry-leading inspection expertise with advanced drone technologies to provide utilities with accurate, repeatable, and actionable asset intelligence.

Our UAS inspection services help transmission and distribution operators improve safety, enhance reliability, support regulatory compliance, and make informed asset management decisions, all while reducing the cost and complexity of traditional inspection programs.

For more information



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