

AIGC Solutions – Robotics & Drones

Case Study: Nationwide Electricity Smart Grid Inspection via Drones

The Opportunity



Electricity is the foundation of modern social development. Timely and effective powerline inspection is essential to ensure grid and power supply security. Asset inspections today require a company's employees or subcontractors to work at height and in dangerous environments. Many injuries and lethal accidents occur every year during asset inspections, exposing power & utility companies to pay out large compensations due to these hazardous work environments. With incredibly high opportunity costs, some asset inspections require at least a partial shutdown of the facility. In transmission line inspection, the traditional method requires typically expensive surveys utilizing helicopter service and highly experienced photographers to take photos and videos from that height.

These traditional inspection activities performed by riggers are dangerous and, most of the time, ineffective, time-consuming, and laborious. Most often, defect and potential defects signs are being overlooked, ignored, and these inefficiencies have caused costly power shutdowns to other industries depending on the reliable power supply.

The critical assets are typically scattered over a large area, such as the nation's backbone. They are often located in hard-to-reach places such as mountains, forests, or deserts. These have caused many towers to be left uninspected and defects unrepaired. Many assets have been overlooked and resulted in catastrophic and very costly failures.

The Approach

Drones are now slowly being adopted for overhead line inspection worldwide. They can cover many areas quickly, take thousands of pictures, and collect gigabytes of video, spectral, and thermal data all during one flight.

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To take advantage of that visual power, AIGC and its partners worked together to provide a service to intelligently collect data via our state-of-the-art drone system. A platform was created to analyze the data in real-time, applying artificial intelligence to inspection data and potential defects to identify risk-based elements and ultimately provide valuable, actionable insights to clients.

The Benefits

- Faster overall inspection process.
- Increased operational efficiency with less manpower required for inspection
- Advanced sensors for accurate defect visualization (visual, thermal & corona)
- Fast and precise defect detection using AI machine learning models
- High data integrity as every pole, grid point can be location-verified via GPS information
- Advanced analytics provides valuable, actionable insights to clients for a more reliable power supply security.