Pole-top Inspection

Introduction

In recent years, climate change and extreme weather events challenge infrastructure durability and push assets beyond conditions they were originally designed to withstand. Combined with already aging and difficult to maintain structures, this can result in outages and wildfires that threaten millions of lives and result in devastating environmental damage. In an effort to mitigate and prevent these risks, GEO1 offers an asset management solution to help utility companies inspect, modernize, and reinforce their assets.

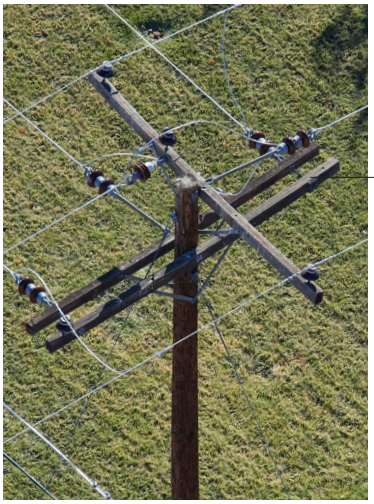
We begin with acquiring high resolution lidar of utility infrastructure, which provides unprecedented levels of detail for further inspection and engineering analytics if needed. The coordinates sourced from the lidar data inform aerial photographers on where to fly and what to capture — creating airborne efficiency when searching for assets.

Why Aerial Inspections?

GEO1's Pole-top Inspection involves a helicopter and/or UAS acquisition of lidar and high-resolution imagery of each asset. While ground-based inspections are common in the utility industry, they can be enhanced with aerial surveys. The majority of structural threats surrounding utility poles aren't visible from the ground but can be clearly identified from the air, such as cracked crossarms, birds nests, or flashed-over insulators.

Data

Structure locations, which are sourced from lidar, are integrated within the metadata of high-resolution images taken of each structure. Each photo set includes two to four different angles of the pole-top, as well as the base, allowing for a 360° view of each asset. Remarkable detail in every photo offers the ability to inspect the structure for potential failures. Each image includes metadata specifying the name and precise coordinates of the structure, expediting any action that may be required to address potential issues.



Pole ID
Coordinates
Flight Date
Photo Count
Region

Deliverable

The geolocated and renamed images are then delivered as a geodatabase with the subsequent coordinates, names, and additional metadata. The data is presented as GIS files, as well as a CSV linking relevant data to each structure. This innovative solution allows us to present and deliver datasets for thousands of assets that can easily be cross-referenced, edited, searched, and archived.