
# VEGETATION ENCROACHMENT MONITORING OF POWER LINES

| LINEAR INFRASTRUCTURE | UTILITY | INDUSTRY |

## THE CLIENT

EDF

EDF (Electricity of France) is a French electric utility company who, with a portfolio of 120,000+ megawatts, is the largest producer of electricity in the world.

**Associated UAV packages:**

- ✓ Big Mapper
- ✓ Big Mapper XL
- ✓ Crop Mapper
- ✓ Crop Mapper XL
- ✓ Ultimate

## THE NEED

VEGETATION CONTROL

EDF spends the majority of its maintenance budget on pruning vegetation that is near power lines. Vegetation that is too close to live electrical cables can cause network outages or fires. To avoid this, they must assess the presence of trees and vegetation in critical areas. Today, these assessments are made by people on foot and observers on helicopters. These methods are expensive, unresponsive, and inefficient. EDF asked Delair-Tech to deploy its next-gen acquisition solutions and image processing techniques to identify vegetation encroachment hotspots.

*"We are studying the enormous potential of this new technology … in terms of monitoring [and] the rapid identification of incidents."*

Marc Brudigou, ErDF

## THE SOLUTION

Delair-Tech advised employing its Crop Mapper drone package equipped with photogrammetric cameras in the NIR (near infrared) and RGB (red, green, blue) bands. Equipped with these sensors, both DT-18 and DT-26 airframes performed the routine 2D and 3D mapping of the power transmission line corridor. In order to model the power line itself and calculate the distance from the vegetation to the power line, Delair-Tech proposed using its proprietary image processing solutions and displayed this information in a report. The information was also integrated directly into EDF's GIS software.

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## THE OPERATION

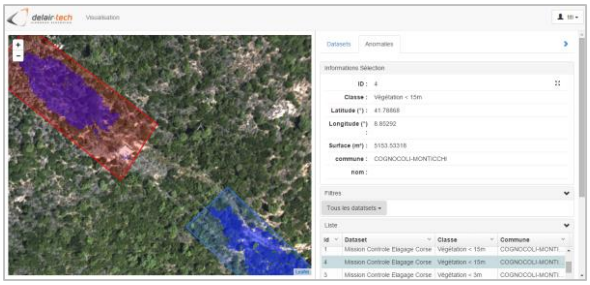
EDF commissioned Delair-Tech to inspect their entire power transmission line network in French Guiana. 150km of network was flown with the DT-18 in 2 days. Wet weather and periods of light rain were no issue for the DT-18 as it mapped the infrastructure and its vegetative surroundings. For some hard-to-reach areas, autonomous ground antenna relays were used to maintain the communication link with the drone when it was 50km away.

## DATA ANALYSIS

Putting the data to work. 40,000 images were captured by the DT-18 during the 4 flights in French Guiana. The images were analyzed by Delair-Tech's Data Center which uses proprietary algorithms developed specifically for the needs of large, industrial end-users:

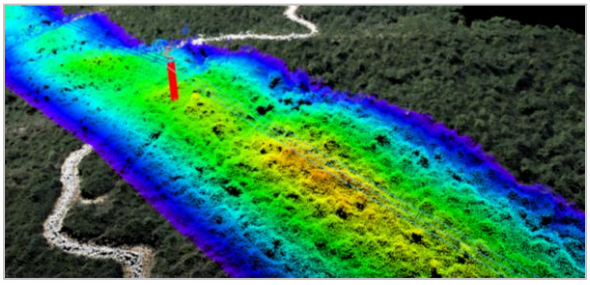
- Creation of the 2D orthophoto and the 3D vegetation model
- Distinction between vegetation and man-made structures using data from the NIR sensor (DT-4Bands)
- Modeling the power line with data from EDF and integration of the model in the 3D point cloud of vegetation
- Displaying locations of detected anomalies (according to specific thresholds) on our web visualization tool
- Integration of the final data into EDF's own GIS software

## DELIVERABLES

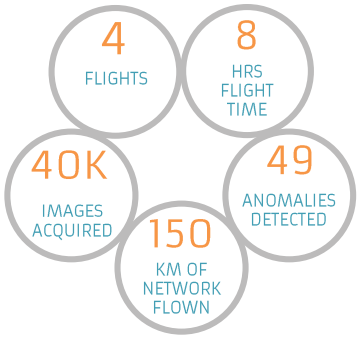


- A report that indicates the GPS coordinates of trees to be cut, identities of the transmission towers in the vicinity of the anomalies, and estimates on the quantity of vegetation to be cut
- A web visualization tool for viewing and archiving past results
- Integrating the data into EDF's own GIS software

## CONCLUSION



- The endurance of Delair-Tech's UAVs make this an economically profitable service
- The results helped EDF plan their vegetative maintenance program by introducing automation
- Delair-Tech's UAV + data solution is ready for large-scale, worldwide deployment on electric transmission lines




*"Delair-Tech DT-18 UAS … are key for the topographic long-term monitoring of these facilities."*

Jean-Pierre Roche, EDF

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