intetics
The Remote In-Sourcing® Company

"The transition to a new technology of pipelines monitoring was justified not only because of economic efficiency. Cooperation with Intetics and using UAVs opened up entirely new opportunities for us."

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OIL TRANSPORT COMPANY IMPROVES OPERATIONS EFFICIENCY BY 250% WITH LOCAL UAV SURVEYS AND INTETICS DATA ANALYSIS

OBJECTIVE

To implement continuous monitoring of a pipeline network using UAVs for an oil pipeline operator.

CHALLENGE

For an oil pipeline operator, pipeline monitoring accounts for a significant portion of their operations costs. Their pipeline network stretches for hundreds of kilometers through hard-to-reach areas that are often inaccessible to terrestrial vehicles. For a long time, the only available way to monitor the pipelines was with foot patrols and helicopters. These monitoring processes, however, were not comprehensive enough, as many sections of the pipeline were still located in swampy and wooded areas and could not be inspected.

Irregular monitoring meant that accidents were frequent on the line, causing big environmental and economic damage. The oil transport company was looking for a partner who could help them improve their monitoring process using the latest technology.

SOLUTION

The oil transporter contacted Intetics, based on its expertise in geospatial technologies. After studying the problem, Intetics concluded that the most progressive and effective solution is regular pipeline monitoring using UAVs (Unmanned Aerial Vehicles). Not only can drones completely replace traditional small aircrafts and helicopters, but they also have a number of advantages over them. First, UAVs allow shooting at low altitude (100m above ground or less) with high resolution. Unlike manned helicopters, drone flights can also be performed at night. Compared to traditional helicopter patrols, drone flights are significantly cheaper. Finally, UAV flights are much safer.

To take full advantage of drone technology, Intetics suggested that all surveys are carried out by local UAV operators. These operators then transmit records to the Intetics cloud-based data center, where Intetics specialists can process the data as soon as it is received. Modern software performs automated processing, but quality control

OIL TRANSPORT COMPANY MODERNIZES 60 YEAR OLD INFRASTRUCTURE WITH DRONE SURVEYS AND DATA ANALYSIS

(and data adjustments as needed) is performed by Intetics engineers at every stage of the process. A comprehensive quality control process achieves the highest quality results, while providing high speed and low cost of data processing. The results of processing are digital surface and terrain models, orthophoto and a 3D-model of the pipeline. This data provides an accurate representation of the pipeline's current state, making ongoing monitoring, analysis and maintenance planning much easier.

Thanks to regular infrastructure surveys, which occurs few times a week during day and night and uses cameras with optical and infrared ranges, Intetics engineers are able to deliver a number of insights to help improve oil delivery. The information analyzed includes but is not limited to:

- Up-to-date information about the state of the pipeline.
- Explore the space around the pipes.
- Identify oil spills.
- Identify points of unauthorized connections.
- Detect unauthorized persons and vehicles in protected areas.

RESULTS

Thanks to working with Intetics, the oil transporter received up-to-date information to help maintain pipelines, while also reducing the costs of surveying.

The pipeline operator was able to reduce number of illegal taps on its lines. By analyzing thermal images Intetics found even minor violations on the pipelines. The thermal imager "sees" the pipeline at a depth of 2-3 meters, so Intetics can identify illegal taps leading from it.

Regular inspections also allowed the pipeline manager to plan for future maintenance, not just identify existing problems. Each drone flight creates a lot of data, which is collected and analyzed by Intetics. Using the collected data, Intetics engineers and programmers created an information base for predictive analytics and accident forecasting. With the forecasts, the oil transporter was able to reduce the number of accidents while also reducing maintenance costs.

Drone usage completely modernized the operator's existing operations. Most of their infrastructure was created 40-60 years ago. As it often happens with industrial enterprises, some of the documentation, plans, maps and drawings are lost or damaged. 90% of existing documents are on paper and require digitization. The process of digitizing paper maps and plans is laborious and expensive and even digitized documents can quickly become outdated. Using data collected by UAVs, Intetics can create highly accurate 3D models and topographic maps for engineering, surveying, and geological departments of the company. This process is more accurate, faster and cheaper than digitizing old blueprints. As a result, the oil transporter gets accurate and up-to-date infrastructure documents without significant additional investment.

As a result of this engagement and using UAV surveys, the oil operator reports that their operational efficiency increased by 250%, compared to conventional methods. It is now possible to examine objects previously unseen because of wetlands. They can now identify places of fire and leakage in the earliest stages. A number of attempts of cable theft and illegal tapping of oil has been prevented. Finally, predictive analytics helped reduce the overall number of accidents on the pipelines.

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