

ATE5000 UAV Fluorescence Imaging Oil Pollution Remote Sensing System

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Description

The significant impact of oil spills on Marine ecosystems has attracted worldwide attention. Offshore drilling platforms and ship accidents are the main source of oil spills.

ATE5000 UAV fluorescence imaging oil pollution remote sensing system is a new generation of oil pollution remote sensing detector launched by Optosky. ATE5000 using the world's most advanced high-frequency modulation Laser-Induced Fluorescence high-speed imaging remote technology. It provides a new and more powerful technique for environmental monitoring to study water pollution by studying the fluorescence characteristics of algae and oil spills. Laser-induced fluorescence method uses specific spectral characteristics to provide identification of different types of release effects of oil and weathering.

The ATE5000 has fast scanning speed and long flight time.

Applications

- ▲ Remote sensing of oil spills in rivers and lakes
- ▲ Remote sensing of oil spills in the ocean
- ▲ Chlorophyll remote sensing detection in rivers and lakes

Features

- ▲ High accuracy, fluorescence is the fingerprint spectrum of material, there will be a spill of oil fluorescence, will not misjudge.
- ▲ High frequency modulation fluorescence, high speed imaging.
- ▲ Long flight time, up to 1.5 hours.
- ▲ Flying altitude, about 50 meters.
- ▲ Scanning area: 1-20 km²
- ▲ Can work during the day and night without interference from background light such as sunlight.
- ▲ High precision GPS navigation planning.
- ▲ Wireless data transmission.
- ▲ Transfer download and display measurement data in real-time.



1. Principle of remote sensing detection

ATE5000 adopts the ultraviolet fluorescence oil measurement method, which is one of the standard methods of oil measurement in the environmental protection field. It uses ultraviolet light of a specific wavelength to irradiate oils on the water surface, and polycyclic aromatic hydrocarbons in the oils absorb them. After being excited, the fluorescence of a specific wavelength is generated, and the intensity of the fluorescence is directly proportional to the intensity of excitation light and the amount of substance to be measured. Therefore, according to the fluorescent effect of this oil substance, it is possible to detect oil pollution on the surface. This method is especially applicable to mineral oils, which are heavier components. Oil, for example, works better; It is sensitive enough to detect sub-ppm level (ppm: the solute mass accounts for one million parts of the total solution mass), it is one of the most common methods to detect oil on water surface because of less interference factors.

ATE5000 UAV fluorescence imaging oil pollution remote sensing system, the laser and spectral analysis system are loaded into the UAV, and the laser is fired from the air to illuminate the oil pollution on the water surface (sea surface, river surface). After absorbing ultraviolet light, the oil pollution on the water surface will emit fluorescence of specific wavelength. The fluorescence signal collected by the UAV can be analyzed to obtain oil pollution on the water surface.

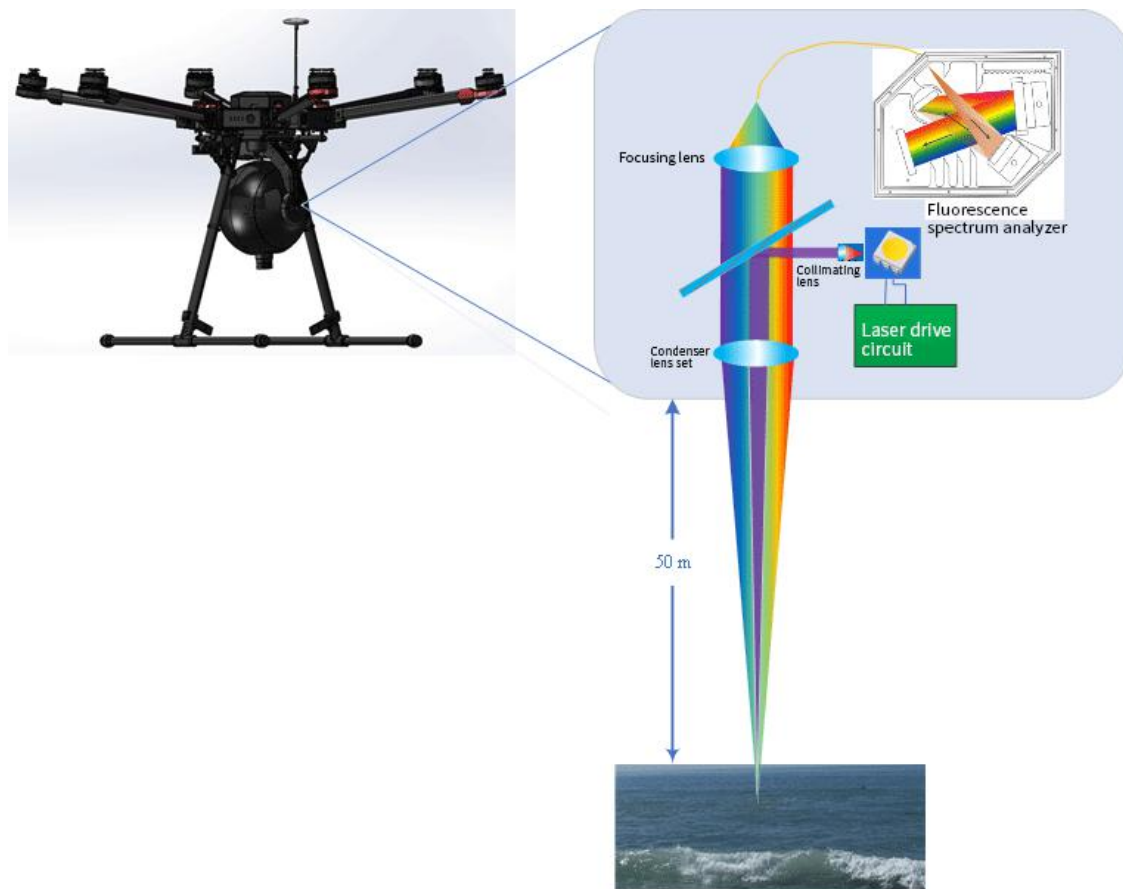


Figure 1. The working principle of the UAV fluorescence imaging oil pollution remote sensing system

2. Specification

Measuring host	
Measurement object	petroleum, motor oil, diesel oil, gasoline, kerosene, etc
Measuring principle	Laser induced fluorescence technique (LIF)
Measure oil film thickness	The thickness of 1 um can be measured
Maximum endurance flight	1.5 hours
Scanning area	1-20 km ²
Single measurement area	Round, 10 mm in diameter
GPS positioning accuracy	1m
Working time	Work day and night
Remote control distance	10 Km
Data transfer download distance	1 Km
Data transfer download speed	1Mbps/s
Environmental requirements	-5—45°C; Relative humidity < 90%, No condensation
size	152mm*143mm*115mm
Load weight	1.5 Kg
The UAV' s own weight	6 Kg

3. Selection guide

Model	Explanation	Advantage
ATE5000-DXY	With a 6-rotor UAV, the flight time is up to 1.5 hours and the scanning area is 1-20 square kilometers	
ATE5000-GDY	With fixed wings, the flight time can be up to three hours and the scanning area can be 5-500 square kilometers	Long endurance and large scanning area



Figure 2. Oil pollution on the sea



Figure 3. In-flight ATE5000 and its pulse laser to the sea (b)



Figure 4. ATE5000 structure



Figure 5. Oil pollution detection system with fluorescent scanning imaging



Figure 6. Scanning track plan of a fluorescent oil pollution detector

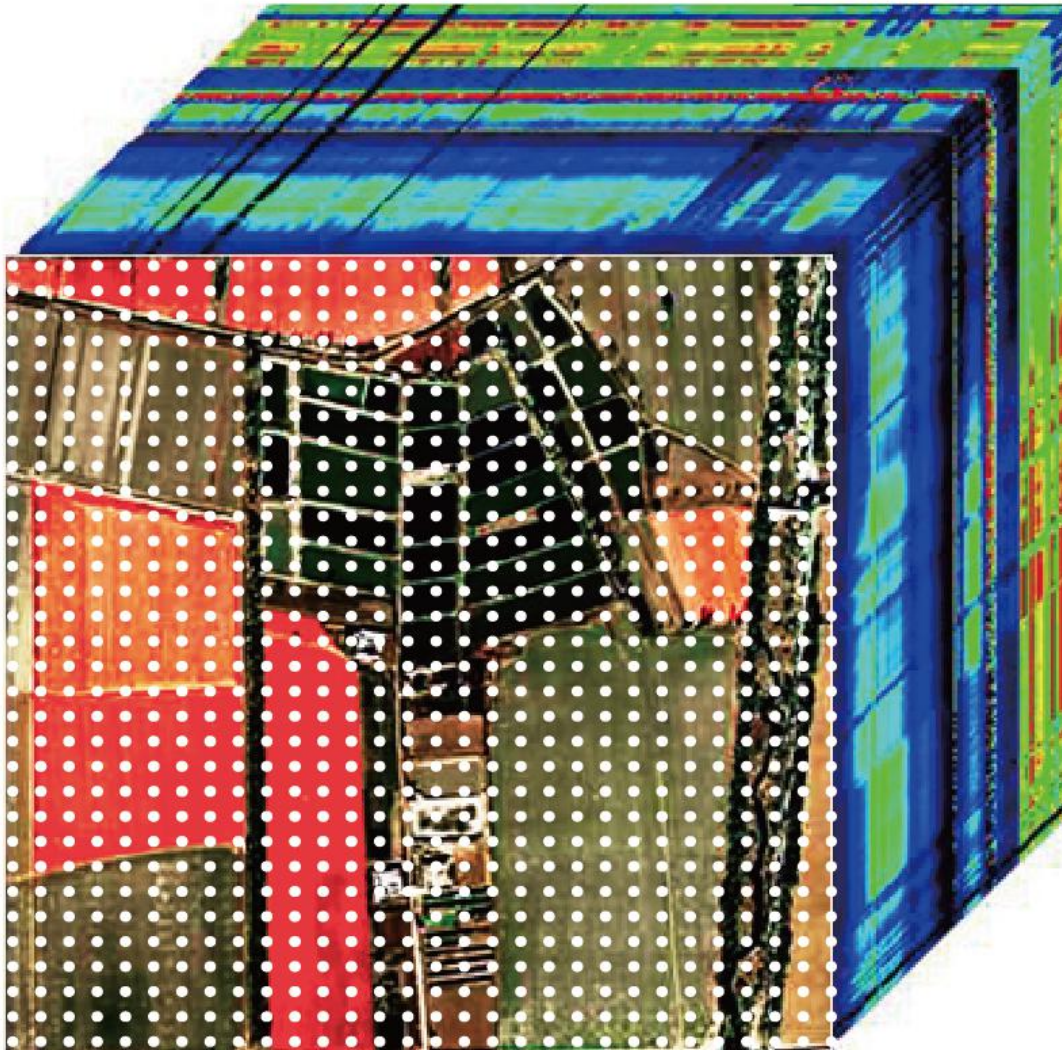


Figure 7. ATE5000 Point scanning is used to detect oil in the area

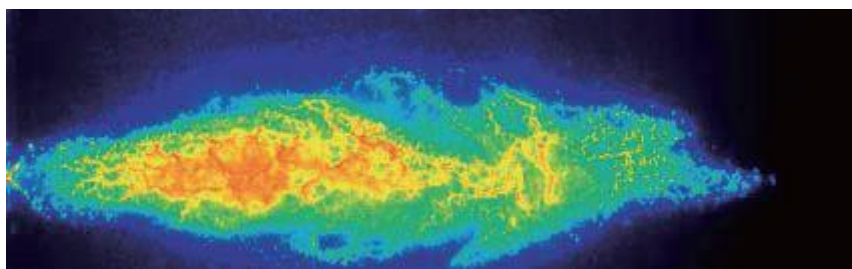


Figure 8. Remote sensing of the time of an oil spill off Jinmen clearly shows that the oil is carried downstream by the current, flying at an altitude of 50m and a speed of 5Km/ h.