

ThunderFly *TF***-ATMON**:

Atmospheric monitoring made easy

Thunder*Fly TF*-ATMON is a system for performing in-situ atmospheric measurements. It provides our customers with a tool to increase the effectiveness of their measurements, makes pre-flight preparations easier, and improves the quality of measured data.

TF-ATMON consists of a drone carrying a suitable sensor (able to measure humidity, gases, airborne particles, ionizing radiation, etc.) and a ground station. The ground station makes it possible for an operator to see the data in real-time, and it also enables smart trajectory planning during the flight based on the actual data that has been measured.

The system's uniqueness lies in its universality and a minimal need for operator interventions. This reduces the dependence on a human factor and it is performed with a trajectory optimized for detailed measurements of the area of interest.

Examples of use



Measuring emissions in the vicinity of their sources



Measuring of scattering in

the atmosphere



Carrying out experiments

ThunderFly offers the *TF*-ATMON system as a complete solution including an autogyro carrier platform. This option is especially advantageous for customers planning to carry out their measurements in poor meteorological conditions, in which comparably large multicopters or airplanes are not able to perform.

If desired by the customer, we are also able to install the *TF*-ATMON system onto its own unmanned drone, if equipped with compatible avionics and a suitable telemetry system. Thanks to the platform's independence, the measurements can be carried out with a higher spatial resolution or can cover larger areas of interest.

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TF-ATMON system features

Supported platforms

The system is standardly installed on an autogyro-type UAV platform. It is possible to install it on other types of platforms, eg. multicopter, fixed-winged airplane, helicopter, airship, or even a stratospheric balloon. It is advisable to choose the platform according to what and how the measurements will be carried out. When the minimal technical equipment is met, our system can be integrated into a customer's UAV.

Measured quantities

Temperature, Humidity, Airborne particles ($PM_{0.5}$ - PM_{10}), Ionizing radiation, Gases (CO_2 , O_3 , SO_x , NO_x ...), Electric field intensity. We are able to develop and integrate additional types of sensors if necessary.

Ground control station

Real-time visualization, Operator terminal, Smart trajectory optimization algorithm

Planning algorithm

The planning algorithm is a key part of *TF*-ATMON's ground control station. It decreases the dependency of the measurement on a pilot and makes it possible to perform it optimally with respect to quality and duration.

UAV Pilot, Operator

A standard license for UAV operation, according to country/location and depending on type and range of measurements.



In case of interest or to obtain more information about the *TF*-ATMON system or Thunder*Fly* services, please contact us via the email provided.