

## Environmental Monitoring Aircrafts SmallGIS





#### **SkyFoton 2**

#### SF 2 components:

- Manned ultralight aircraft;
- SkyFire 2 communication system;
- Ground-based control station;
- Set of optical and thermal sensors;
- GNSS and IMU measuring devices;
- Flight Management System (FMS);
- Data Processing System (DPS);
- Data distribution system.

**Ultralight** single-pilot aircraft for **patrol and environmental monitoring missions**. The majority of **key economic and environmental phenomena** can be also recorded. The aircraft is equipped with **optical and thermal cameras** capturing images in **visible, near infrared and far infrared wavelength ranges**. The aircraft is used for fire propagation monitoring, wildlife and livestock population counting, vegetation condition assessment, near real-time phenomena mapping, making land surveying maps and terrain models.

The aircraft is equipped with the **SkyFire 2** system transmitting data to groundbased equipment to enable the preparation of studies in the form of a photo sketch or georeferenced image mosaic and distribute the studies to the ground-based personnel involved in the mission. The **two-way communication system** makes it possible to manage the flight plan, control the sensors working parameters and provide information support for the pilot.



#### SkyLaser 1

#### SL1 components:

- Manned ultralight aircraft;
- SkyFire 1 communication system;
- High performance airborne laser scanner LIDAR;
- Optical and thermal sensors;
- Ground-based control station;
- GNSS and IMU measuring devices;
- Flight Management System (FMS);
- Data Processing Systems (DPS);
- Data distribution system.

Ultralight single-pilot aircraft for large-area cartographic and measuring missions or infrastructure and equipment inspections. The aircraft is equipped with a high performance laser scanner, optical and thermal cameras capturing images in visible, near infrared and far infrared wavelength ranges. The aircraft also makes it possible to prepare the majority of specialized studies in the field of terrain topography, infrastructure and cartography modelling.

The aircraft is equipped with the **SkyFire 1** communication system that makes it possible to manage the flight plan, control the sensors working parameters and provide information support for the pilot.



# SKYLASER1

TERRAIN TOPOGRAPHY, INFRASTRUCTURE AND CARTOGRAPHY MODELLING

> LARGE-AREA CARTOGRAPHIC AND MEASURING MISSIONS

INFRASTRUCTURE AND EQUIPMENT INSPECTIONS

### **Aircraft parameters**

Component	Parameters	SF1   SL1 Aricrafts
Aircraft	Maximum flight time	7 h
	Maximum range	1250 km
	Operational altitude	150 – 3000 m
	Imaging perfomance	up to 2 000 km2 per day
Sensors	Imaging strip width	150 - 3500 m
	Ground sample distance (GSD)	0,01 - 0,25 m
	Spectral ranges	RGB, NIR, TIR, others
	In-flight measurement of photo projection centre	yes
Communication System	Transfer DataLink	up to 8 Mb/s
Flight management	Mission planning	yes
	Navigation	yes
	Sensors operation control	yes
	Communication with flight control station	yes
	Weather situation view	yes
	In-flight detection of registration errors and reacquisition plan creator	yes
Data processing	Geolocation of photos and generation of a multichannel orthomosaic	yes
	Counting and modeling wildlife populations	yes
	Analysing degree of vegetation damage	yes
	Spatial data services repository	yes

\*Approximate imaging-related performance parameters. Precise parameters depend on assumed flight plan.

# TRANSMISSION SYSTEMS

## SkyFire2

mounted on SkyFoton2 aircraft, makes it possible to prepare studies in the form of a photo sketch or georeferenced image mosaic during the flight and distribute the studies to the ground-based personnel involved in the mission.

Two-way communication system enables to managing the flight plan, controlling the sensors working parameters and providing information support for the pilot.

### SkyFire1

mounted on SkyLaser1 aircraft makes it possible to manage the flight plan and control the sensors working parameters.

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#### **Office:**

Wadowicka 8a Entrance C, Floor 2 30-415 Krakow Aviaton Technology and Remote Sensing Department: +48 12 425 06 25, ext. 106 teledetekcja@smallgis.pl

www.teledetekcja.smallgis.pl



