

# Unmanned Long-Range Helicopters

## Aerial Surveillance for Border Security & Public Safety



**SWISSDRONES** 

# Agenda

- SwissDrones at a glance
- SDO 50 unmanned helicopter platform
- Sensor solutions for surveillance
- Sensor solutions for maritime surveillance & SAR

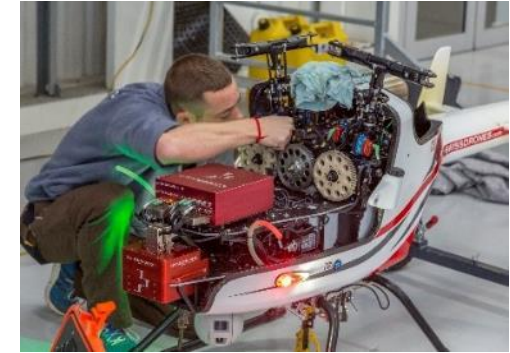


# SwissDrones at a glance



- Founded in 2013
- Dedicated to Swiss Aerospace Quality
- Customer base across 12 countries
- Manufacturer of unmanned helicopters for long-range operations

# SDO 50 Unmanned helicopter platform



- Multi-purpose unmanned helicopter system for operation **beyond visual line of sight (BVLOS)**
- Up to **20 kg useful payload** capacity; operational **range of 40+ km**
- **Autonomous flight** patterns, including take-off & landing capability
- Precisely programmable flight path executed by **autopilot**
- Typical **payloads** include high-resolution optical cameras, IR, multispectral, LIDAR, radiation sensors

# Value Proposition

Effective & environmentally friendly replacement of manned aircraft for operations under difficult or dangerous conditions



**90%+ CO<sub>2</sub> REDUCTION  
VS. USE OF  
MANNED AIRCRAFT**



**70%+ OPERATIONAL  
COST SAVINGS VS. USE  
OF MANNED AIRCRAFT**



**SUPERIOR PAYLOAD  
UP TO 43 KG**



**ENDURANCE >3H,  
RANGE OF 40+ KM**



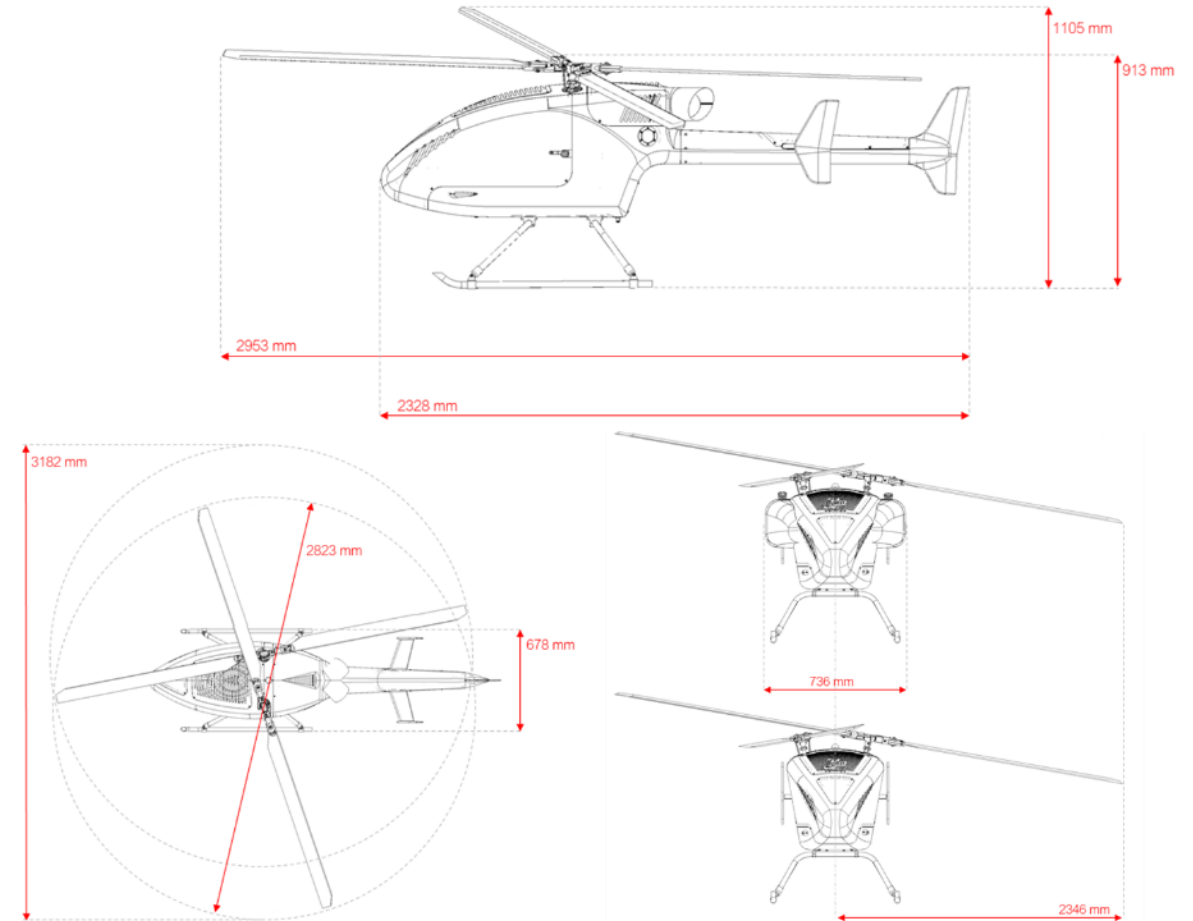
**VERSATILE OPERATIONS  
(VAN OR PICK-UP, 2 CREW,  
SET-UP IN 15 MINUTES)**



**FLEXIBLE INTEGRATION  
OF SENSORS & CAMERA  
SYSTEMS**

# SDO 50 Technical data

Rotary system	Flettner double rotor system (4 blades)
Rotor diameter	2 x 2,82 m
Engine	High performance turbine
Fuel	JET A1 (optional Diesel)
Fuel consumption	approx. 15l / hour
Dimension l/w/h	2,32 m x 0,7 m x 0,92 m
Empty weight	45 kg
<b>Max payload</b>	<b>42 kg</b>
MTOW	87 kg
Max fuel capacity	Main tank 13 l (auxiliary tanks up to 17l)
<b>Max flight time</b>	<b>3.1 hours</b>
Max service ceiling	up to 3000 m AMSL
Max indicative air speed	39 kn (20 m/s)
<b>Operational range</b>	<b>40+ km</b> (depending on data link)





# Mobile Deployment





# Operational setup in the field





# Key applications

## Aerial surveillance

UAVs equipped with video or infrared cameras, heat, radiation & multispectral sensors or radar to provide airborne information to decision makers on the ground or to gather raw data for further processing and analysis.

## Search and rescue

Payloads such as high-end cameras and professional sensors to locate missing people, animals or objects in inaccessible or hazardous areas (land or water), including in difficult weather conditions. Once target persons/animals and objects are located, emergency gear can be airlifted and dropped to support their recovery and rescue (e.g. survival kits, medical devices, food, rafts) or valuable tactical data of objects is retrieved.

## Inspections

The aerial unmanned platform is integrated with a variety of gimbal cameras, such as hyper and multispectral imaging and LiDAR laser scanning for aerial infrastructure and asset inspections in critical, remote conditions and/or with the need for longer endurance and heavier payloads.



# Use cases

## Aerial Surveillance

### **Natural disaster support**

Wildfires and hot spots detection, floods, hurricanes, etc.

### **Police Surveillance**

«Eye in the sky»

### **Border Patrol**

Detection of illegal immigration, terrorist intrusion, smuggling, etc. (land and maritime)

## Search & Rescue

### **Finding & locating missing people**

Including locating mobile phones

### **Operation over land and water**

Including automated AI search payload

### **Dropping life-saving equipment**

Self inflatable jacket, blanket, etc.

## Inspection

### **Powerlines**

Defect identification, vegetation encroachment analysis, 3D modelling/digital twin

### **Pipelines (O&G)**

Leak detection, oil spills, illegal tapping, change detection

### **Railways**

RGB, LiDAR, Multispectral cameras, vegetation monitoring

### **Civil protection**

Nuclear power plants, radiation sources survey/inspection



# Aerial surveillance



## REQUIREMENTS

- ☒ Live streaming
- ☒ Target tracking
- ☒ Laser range finder
- ☒ High zoom options
- ☒ Infrared sensor
- ☒ Phone catching
- ☒ Bad weather circumstances

# Aerial surveillance

Flexible integration of best-in-class camera systems & sensors





# Aerial surveillance

## Example of optical/IR gimbal video output



# Aerial surveillance - Maritime

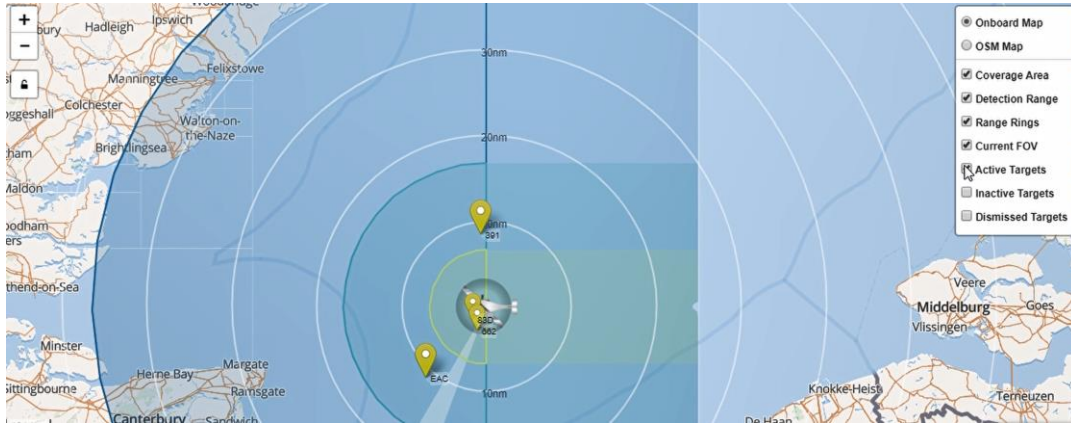
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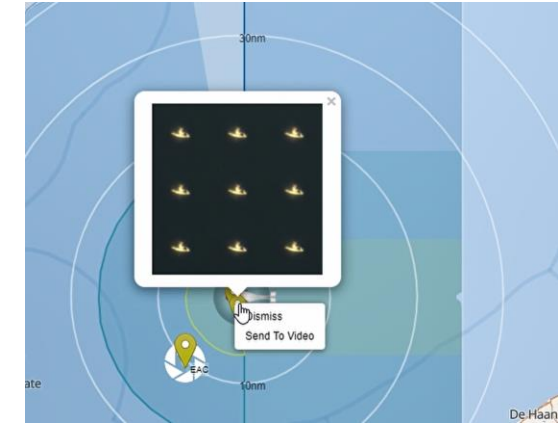


# Aerial surveillance - Maritime

## User interface



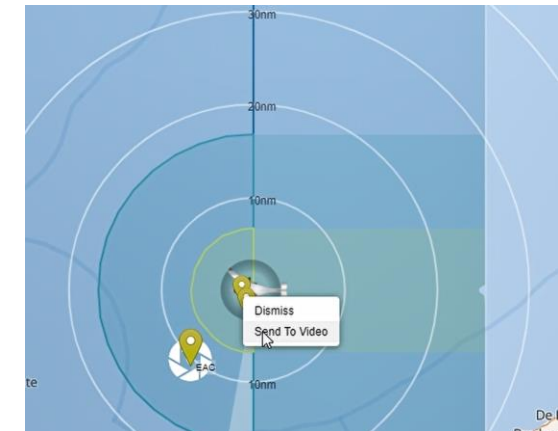
Continuous scanning 180°  
area in front of the aircraft



Target selection according to  
requirements (boat, vessel, person, etc.)



- Dismiss if not an interesting target
- Send to video → The gimbal will automatically zoom in on the target



Enabling unmanned aerial intelligence.



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