

SWISSDRONES 

SDO 50

Product presentation



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.



Applications



Aerial Surveillance

Aerial surveillance will give you unparalleled flexibility compared to traditional intelligence methods. Most of current operations are limited by the stationary nature of the observer or camera. Earlier aerial surveillance methods using helicopters deemed expensive. The SDO 50 with its class-leading payload capability allows the user to choose the best camera system for the mission. Higher payload capacity means you will be able to carry multiple sensors and/or offer a much longer endurance.

A key advantage of the SDO 50 is its ability to collect imagery, ideally suited for reconnaissance or rapid situation awareness, for decision-makers to detect, monitor and act upon potential threats from a safe distance.



Search and Rescue

Search & Rescue refers to using UAVs equipped with specific equipment to locate and help missing people, animals or objects in inaccessible or hazardous areas (land or water), including in difficult weather conditions. Once target persons/animals 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.

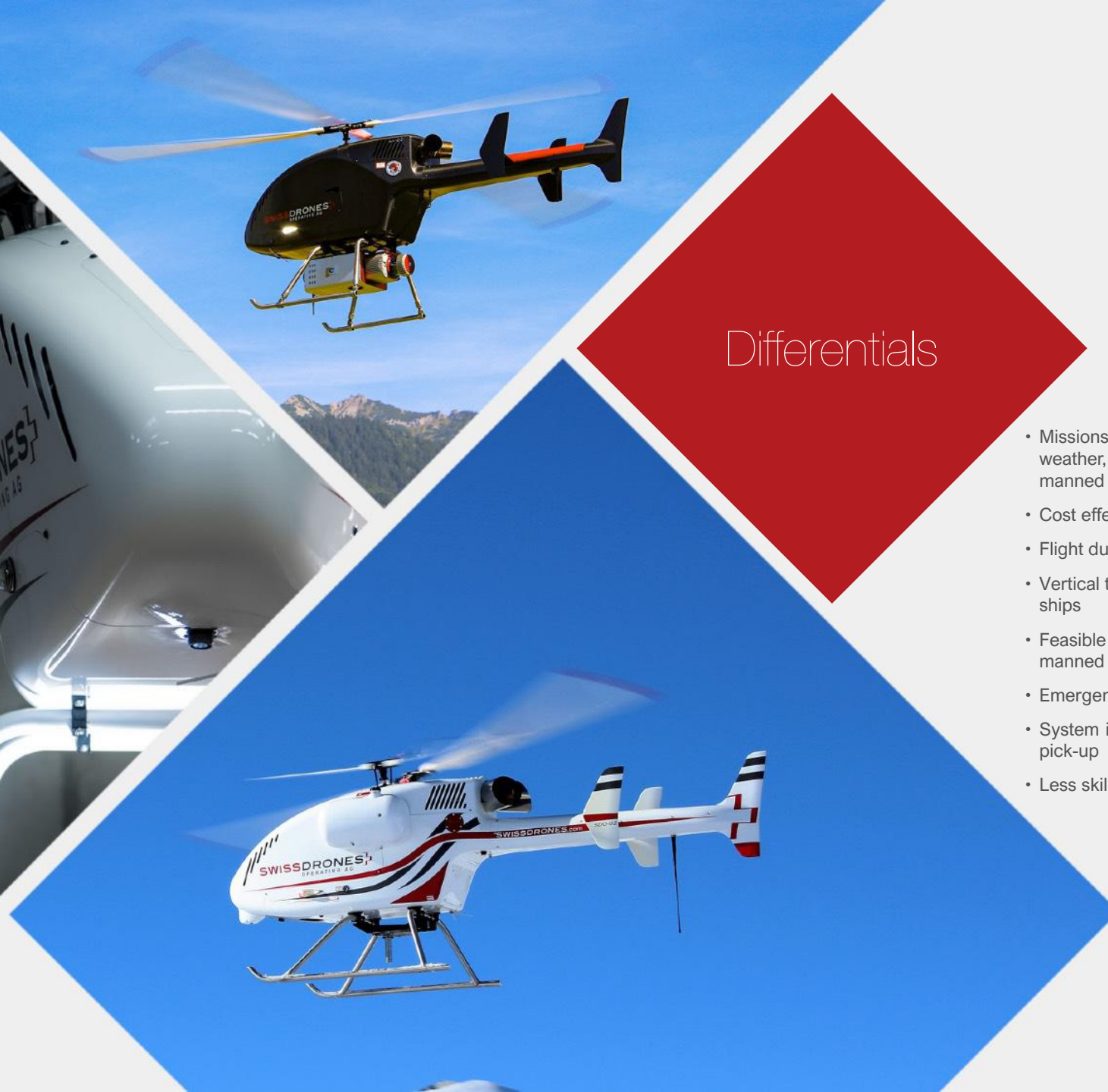
The SDO 50 is also capable of providing real-time visual information and data for better situational awareness in the aftermath of an earthquake, hurricane or other natural disasters.

Inspections

Regular inspections of critical infrastructure, such as high-voltage power lines, gas and oil pipelines and power plants are imperative for their uninterrupted operation and security. Downtime of infrastructure is costly and inspection/maintenance operations can often be dangerous to personnel. In the recent years UAVs have proven to be invaluable in these operations.

The SDO 50 can also conduct topographic surveys to assess site feasibility and offer in-depth information of environmental risks while being equipped with top of the range LiDAR, hyperspectral, multispectral or high definition camera modules.





Differentials

- Missions are possible under difficult or dangerous circumstances (e.g. bad weather, darkness, flying over hostile or otherwise unsafe areas) when manned operations are not feasible
- Cost effective compared to a manned IFR/night VFR airborne solution
- Flight duration up to 3.1 hours and range up to 40 km (extendable)
- Vertical takeoff and landing (VTOL) capability of drone incl. operation from ships
- Feasible for covered operations due to low noise emission compared to manned systems
- Emergency gear can be airlifted to inaccessible/hazardous places
- System is ground transportable to venue of mission by means of a van or pick-up
- Less skilled operating force required compared to manned systems

Intermeshing rotor system with proprietary SwissDrones design;
High-performing payload ratio; only UAV in the market carrying
more than its own weight.

Fully integrated avionics: Output power 28 V 200 W;
12 V 200 W; 7.4 V 200 W



Battery box: Exchangeable.



Auxiliary fuel tanks:
Optional 2 x 4 liters or 2 x 8 liters.



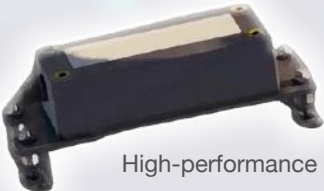
Main auxiliary fuel
tank with 13 liters.



High performance jet turbine:
Runs on Jet A1; 11 kW power.



High-precision GPS receiver.



High-performance magnetometer.

Product
details



The SDO 50 uses a proprietary design of the (Anton) Flettner principles of intermeshing double rotor systems (used in their axes in a low angle tilted against each other) allowing for significantly higher payloads and flight stability than conventional systems.



Flettner design



Rotary system: Flettner double rotor system

Rotor diameter: (4 blades) 2 x 2,82 m

Engine: High performance turbine

Fuel: JET A1

Fuel consumption: approx. 15 l/hour

Dimension l/w/h: 2,32 m x 0,7 m x 0,92 m

Max. payload: more than 40 kg

MTOW: approx. 87 kg

Max. fuel capacity: Main tank 13 l

Additional tanks available for
extended flying time (up to 2 x 17 l)

Max. flight time: up to 3.1 hours

Max. service ceiling: up to 3000 m AMSL

Max. indicative air speed: 20 m/s (72 km/h)

Technical
specification

- 01 - Bottom front panel (Base unit)
- 02 - Ventilation grid
- 03 - Cooling fan
- 04 - USB 3.0 connector (2x)
- 05 - Free socket
- 06 - Main power "on / off"
- 07 - System test power "on"
- 08 - System monitor (Touch screen)
- 09 - Payload key switch 1
- 10 - Payload key switch 2
- 11 - Payload key switch 3
- 12 - Payload push bottom



- 13 - Payload push bottom 2
- 14 - Payload analog 1
- 15 - Payload analog 2
- 16 - Monitor "on / off"
- 17 - Monitor "menu"
- 18 - Monitor "menu selection"
- 19 - Monitor "enter"
- 20 - 8.4" monitor
- 21 - Engine controle switch
- 22 - Flight control "auto take off"
- 23 - Flight control "auto landing"
- 24 - Flight control "manual mode"

SwissDrones provides a state-of-the art ground control station unit and a high-end autopilot, equipped with professional sensors and redundant systems (optional).

Ground control
station

- 25 - Flight control "start mission"
- 26 - Flight control "return to home"
- 27 - Flight control "position hold"
- 28 - 3-axis-stick (e.g. payload)
- 29 - 3-axis-stick (flight control)
- 30 - 1-axis control wheel (payload)

- 31 - 1-axis control wheel (flight)
- 32 - Keyboard illumination
- 33 - Mouse with left and right button
- 34 - 1-axis control wheel (payload)
- 35 - Lifting knobs for service
- 36 - Connecting tube to cover



Ground control
station

Mission and payload control

Data link / GPS
Terrestrial radio link

Control pilot interface

SWISSDRONES
OPERATING AG
FLIGHT CREW



• Primary link (S Band)

Sub carrier 1

Secondary link (UHF Band)

** optional satellite

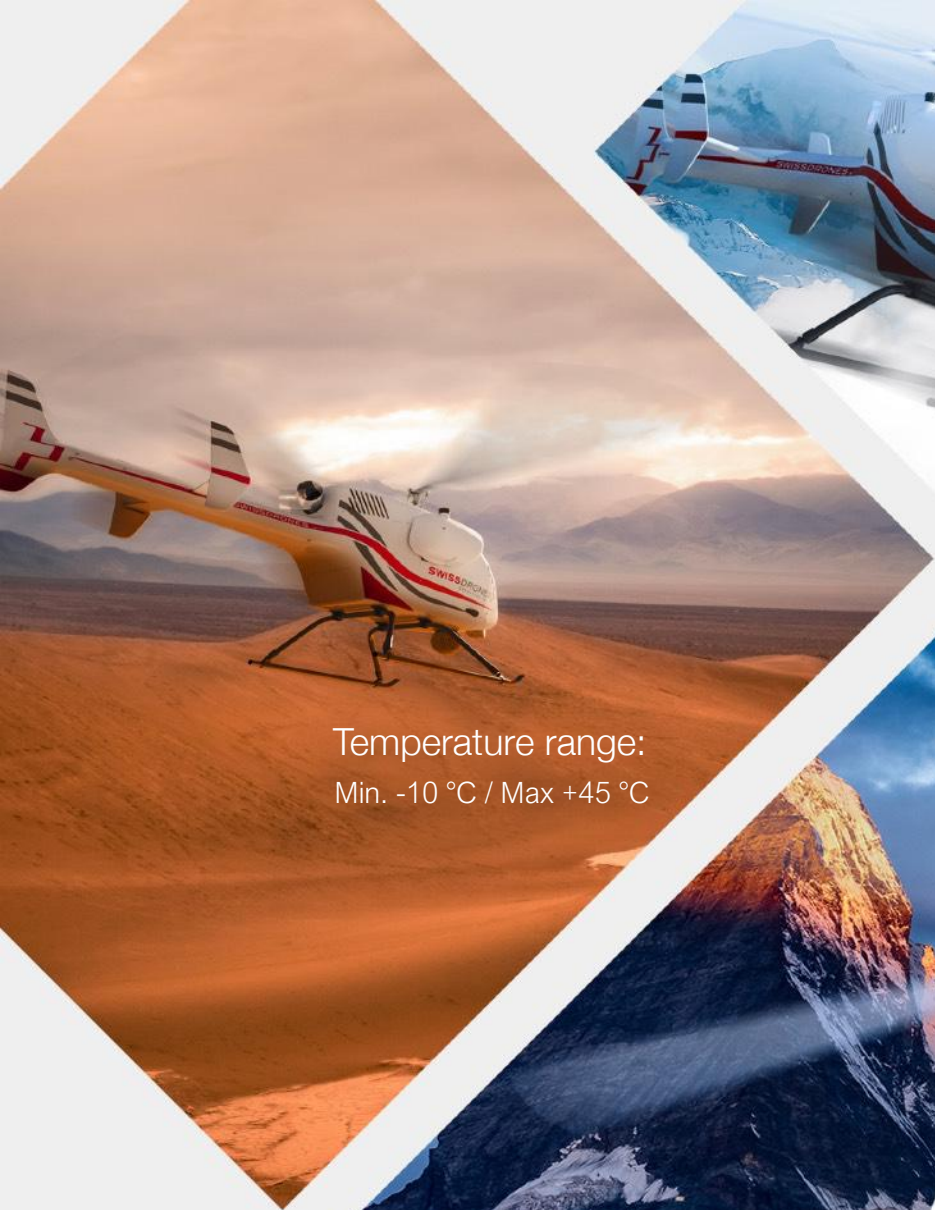
Data link
architecture

Weather conditions

The SDO 50 is made for missions in critical conditions, such as windy, rainy, snowy weather conditions, day and night, at high altitude and a large spectrum of temperatures.



Weather:
Light rain and snow



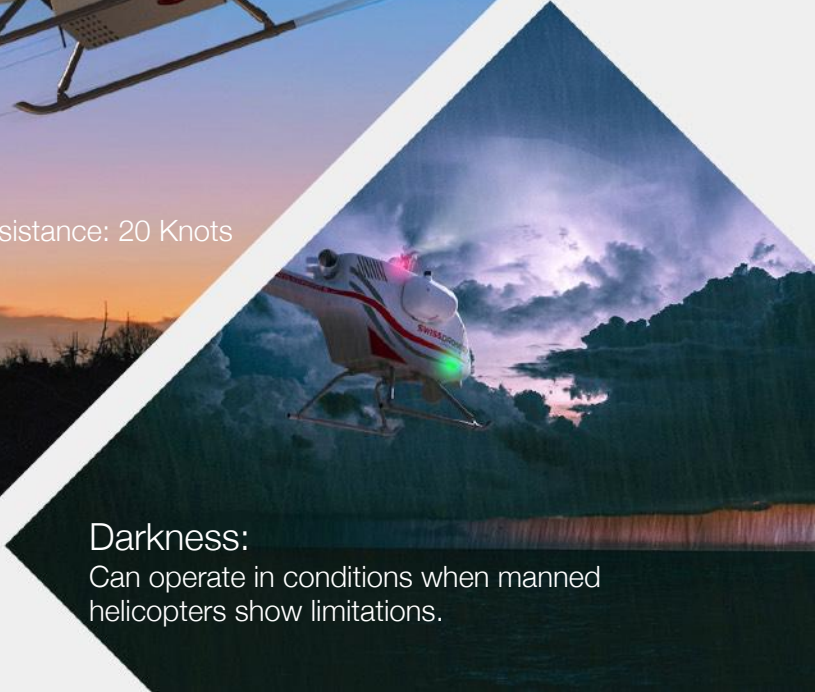
Temperature range:
Min. -10 °C / Max +45 °C



Altitude:
Max. up to 10'000 ft AMSL



Wind:
Max. resistance: 20 Knots



Darkness:
Can operate in conditions when manned helicopters show limitations.



Mobile:
15min set-up by 2 men crew,
transported by van or pick-up.



Stationary:
Fix installation at strategic
location.



Hybrid:
Combination of deployment
with other fast-response
mechanisms such as
helicopters.



Maritime:
Take-off and landing on a
moving ship.

Operations and mission deployment

The SDO 50 system can be operated as a fix installation, as part of a ship operation, be made ground transportable to the venue of mission by means of a van or pick-up or be deployed in combination with helicopters.

Payloads

Additional payloads can be integrated upon request.



Octopus ISR system
UAV Factory: Epsilon 175



LiDAR
RIEGL VUX



Hyper-spectral
Specim AisaKESTREL



Gas leaks
Pergam: Alma G4 mini



Radioactive particle detection



A grayscale photograph of a technician working on a drone engine. The technician is wearing a dark shirt and is focused on the engine components. The drone is white with black accents and has the text "SWISSDRONES.com" visible on its side. The background is slightly blurred, showing a workshop environment.

Maintenance cycle

Turbine check	Engine	Every 50 hrs
Gear wheel replacement	Mechanical	Every 100 hrs
Gear oil replacement	Mechanical	Every 100 hrs
Actuator replacement	Mechanical	Every 250 hrs
Generator and belt replacement	Mechanical	Every 250 hrs
Avionic box inspection	Electronics	Every 250 hrs
Avionic/ECU batteries	Electrical	Every 250 hrs
replacement Turbine pump	Engine	Every 500 hrs
SDO 50 overhaul	Mechanical	Every 500 hrs
Rotor blades	External	Every 500 hrs
Turbine replacement	Engine	Every 500 hrs

Maintenance
concept



SWISSDRONES 

Made for superior endurance in critical
unmanned aerial applications.