



# ELIOS 2

## INTUITIVE INDOOR INSPECTION

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Elios 2 is the most intuitive, reliable, and precise indoor inspection drone. Keep your workforce out of harm's way while performing flawless inspections right from the first flight using cutting edge drone data capture capabilities.

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# FEATURES

## DESIGNED FOR INDOOR

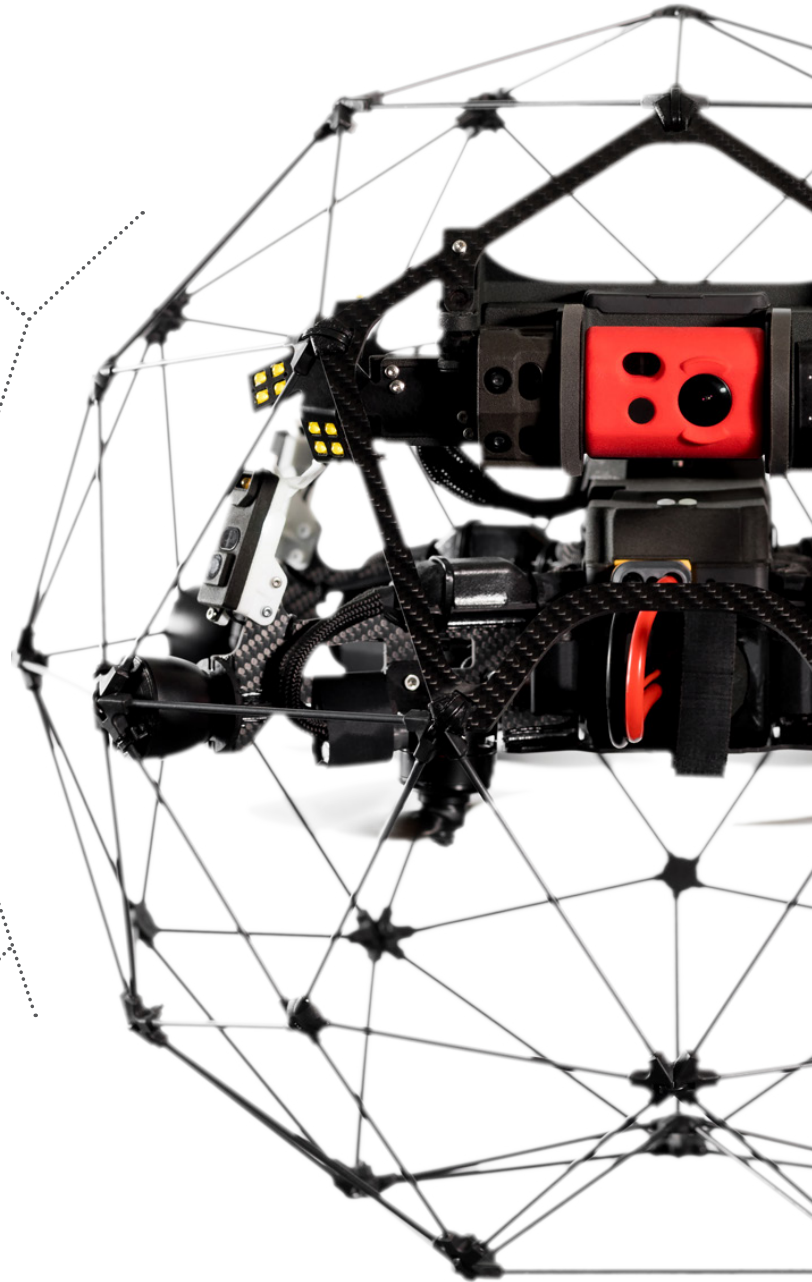
Collision-resilient  
Shockproof payload  
Confined space accessibility  
Robust wireless transmission

## INTUITIVE TO FLY

GPS-free stabilization  
Distance lock  
Full HD live streaming

## BUILT FOR YOUR SUCCESS

Easy maintenance  
Training included  
Dedicated support team





## DATA QUALITY

Close up inspection  
4k Camera  
Thermal camera  
180° tiltable camera pod  
10K lumen  
Adjustable lighting  
Dustproof lighting  
Oblique lighting  
Obstruction-free

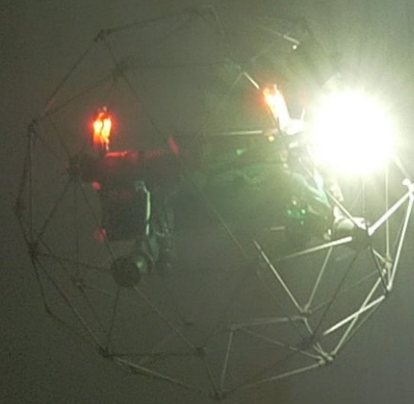
## DATA PROCESSING

Streamlined data management  
3D modeling  
2D measurement



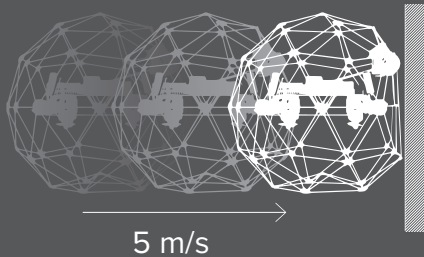
Patented  
Technology

# DESIGNED FOR CONFINED SPACES



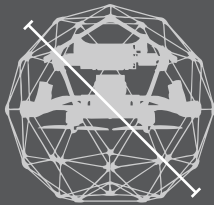
We believe that robots should be sent in hazardous places and dangerous situations instead of humans. Reinventing collision-resilience, Elios 2 allows you to capture every corner and inch of the most complex and confined assets, from a safe location.

# INDOOR CAPABILITIES



## COLLISION RESILIENCE

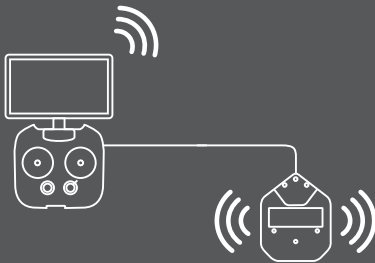
With a spherical cage protecting propellers from impacts, Elios 2 remains always stable through lightning-fast corrections on the propellers' speed and direction of rotation. The entire payload is mounted on a retractable structure that protects it from damages in case of frontal shocks.



< 40 cm  
< 15.7 in

## ACCESSIBILITY

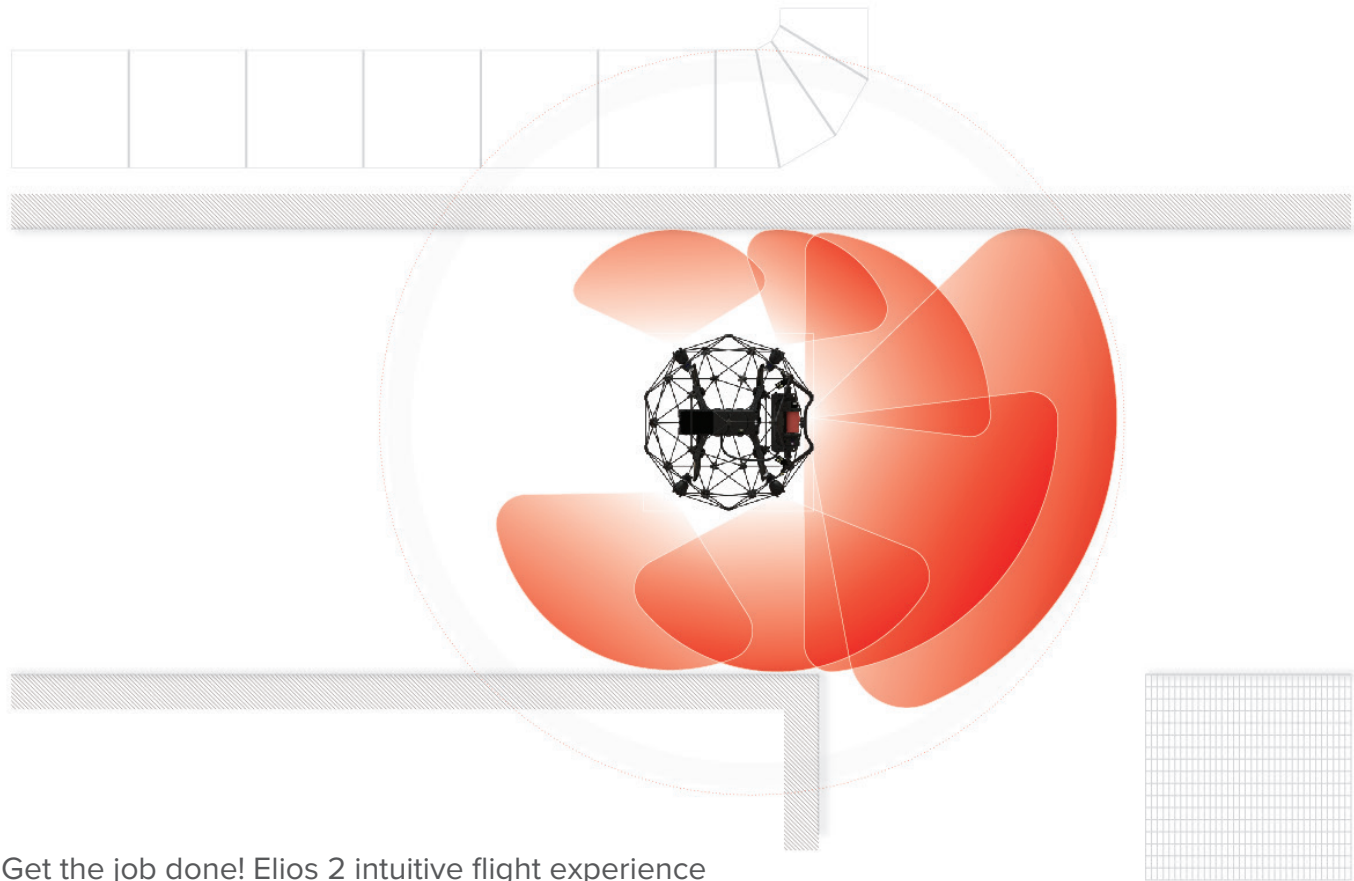
With an overall dimension just below 40 cm (15.7 in) Elios 2 fits into standard manholes and can enter any space where an inspection is needed. It can safely and easily be flown into assets without any human access needed; at no point do workers need to enter the space during the inspection.



## ROBUST TRANSMISSION

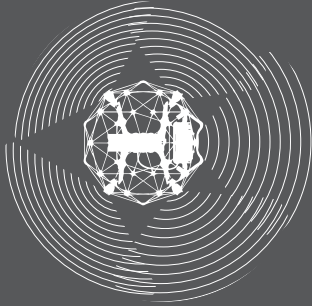
Perform remote inspections beyond line of sight, through walls and past obstacles with Elios 2. Its wireless transmission system overcomes the needs of indoor configurations and is compatible with the Range Extender for the most complex setups.

# INTUITIVE TO FLY



Get the job done! Elios 2 intuitive flight experience makes anyone feel like a seasoned pilot from the first flight. Perform flawless inspections with an effective and user-friendly tool, deployed within minutes.

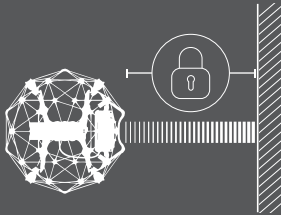
# FLIGHT EXPERIENCE



## GPS-FREE STABILIZATION

Take razor-sharp close-up images in GPS-denied environments, in dark and troubled air flows, beyond line of sight. Elios 2 features 7 stability sensors specifically designed for indoor allowing it to hover in place and easily navigate through unstructured spaces.

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## DISTANCE LOCK

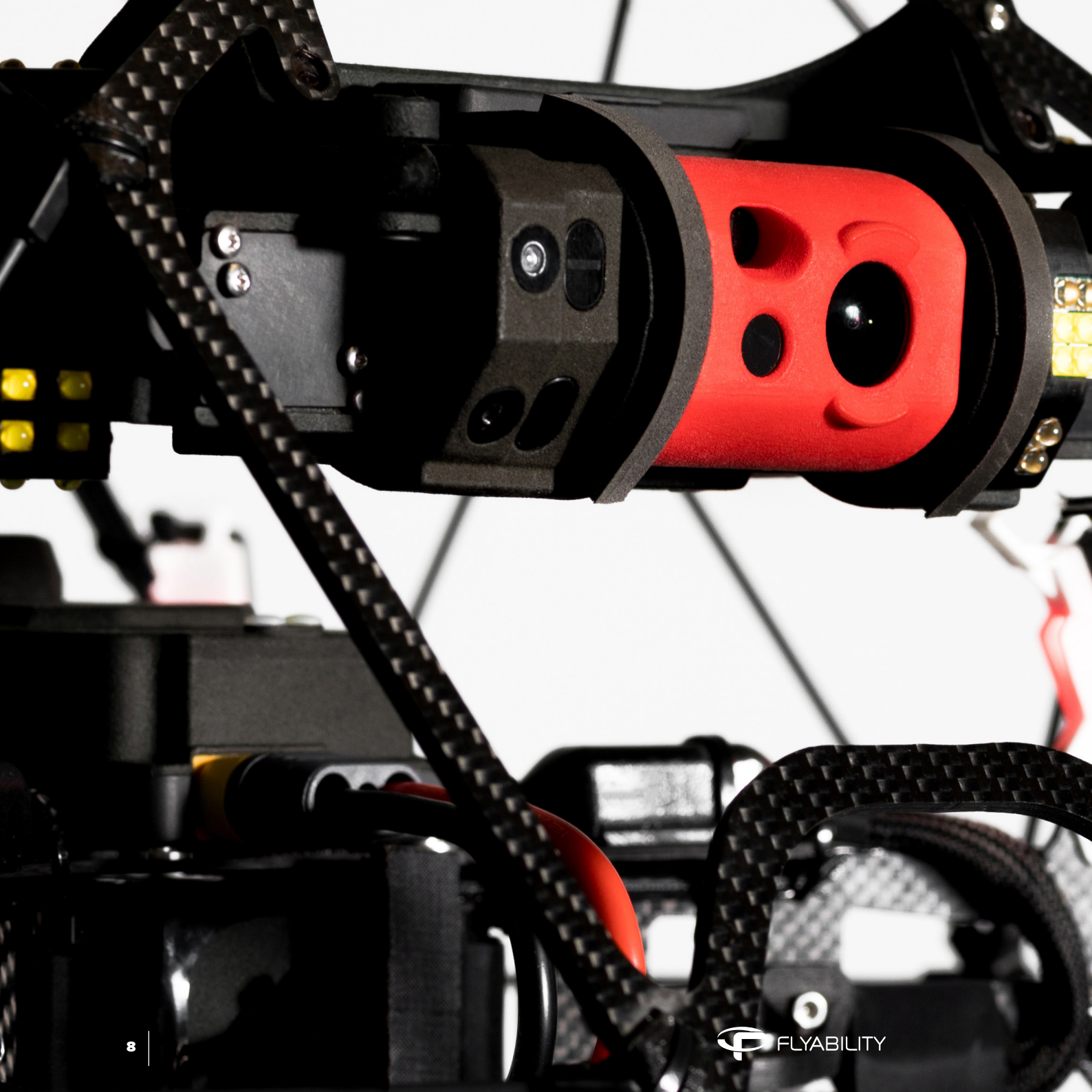
Perform smooth inspections of long and repetitive features like welding, or beams. With the distance lock, Elios 2 remains at a set distance, ranging from 30 cm to 200 cm (1 - 6 ft) autonomously.

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## FULL HD LIVE STREAMING

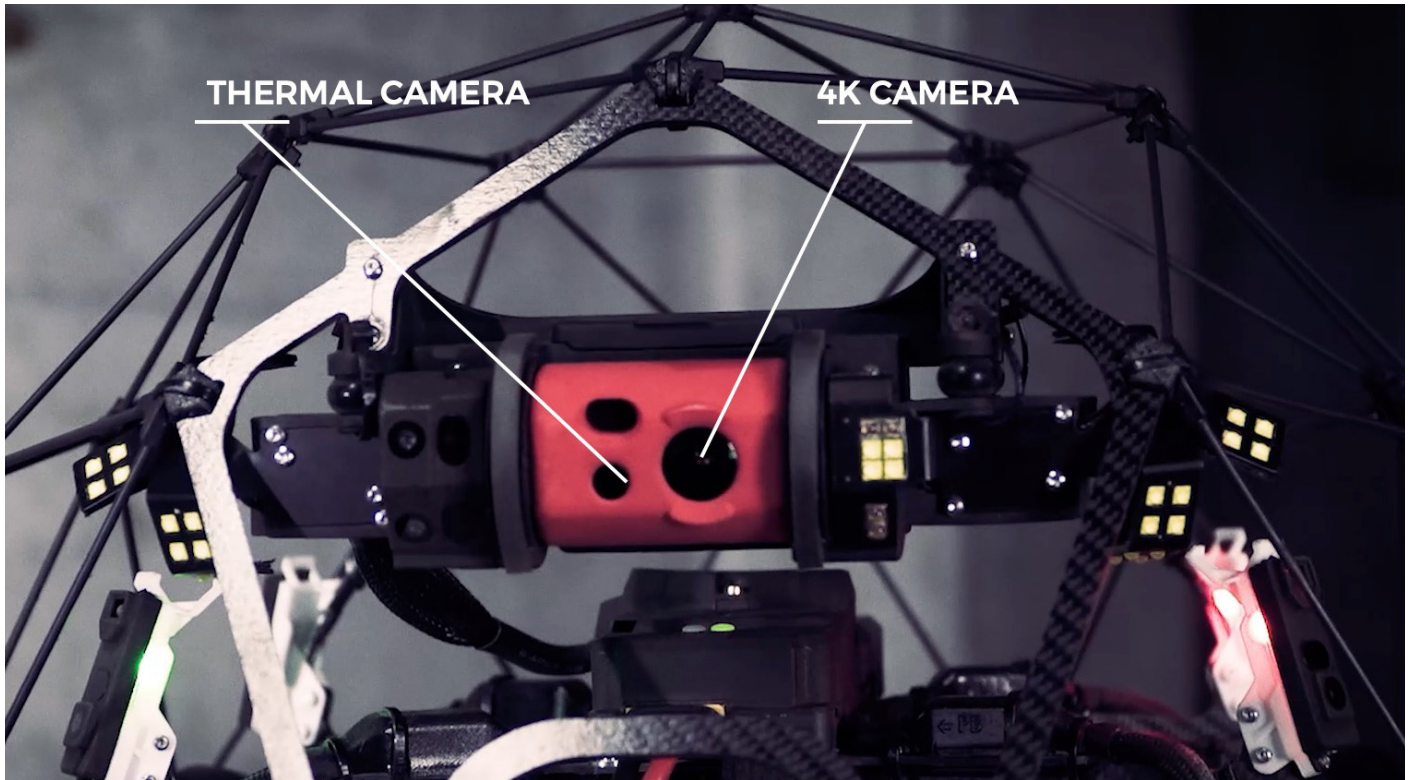
Experience a greater situational awareness and perform live inspections in First-Person View (FPV) thanks to the increased details of the Full HD live streaming built into Elios 2.







# ACCURATE DATA CAPTURE



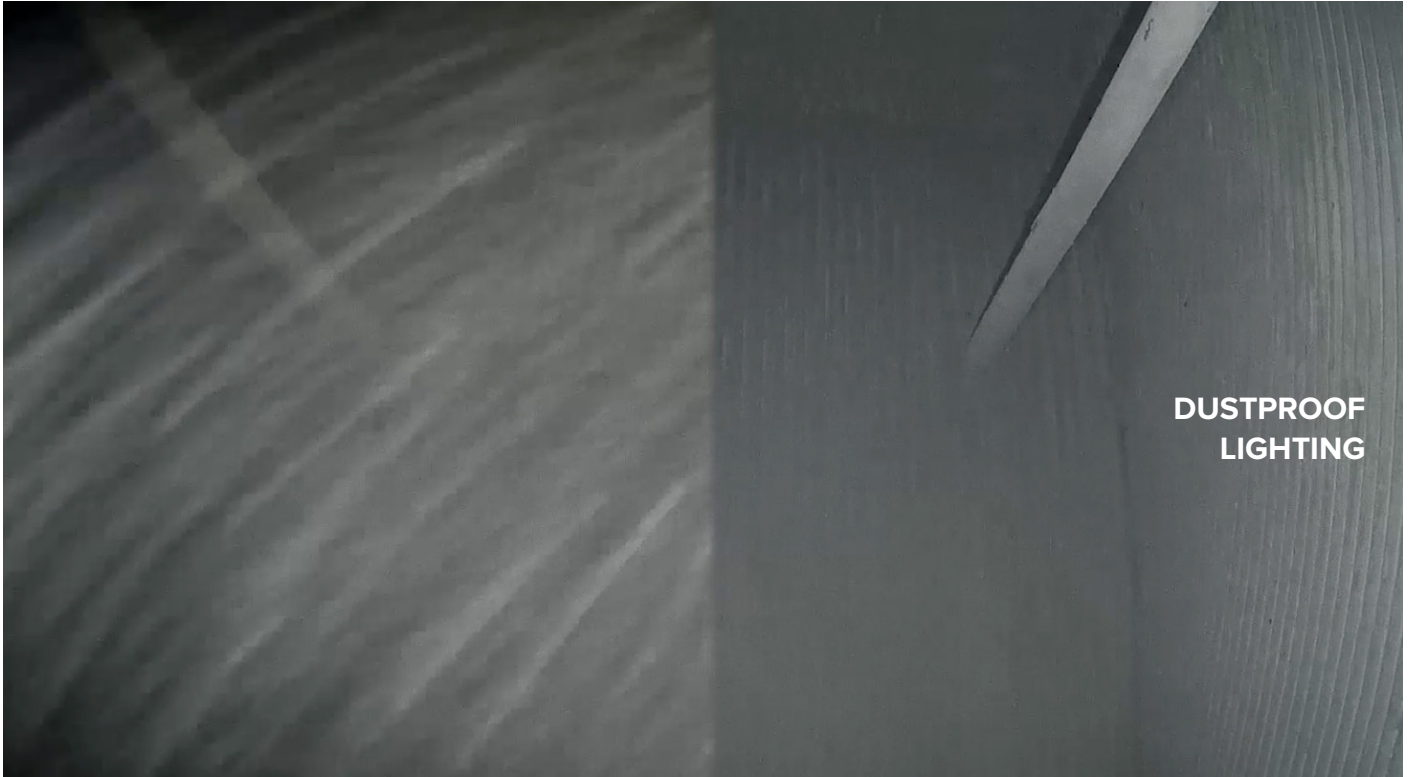
## THERMAL & 4K CLOSE-UP INSPECTION

When it comes to visual inspections, data is what matters. So, we've placed Elios 2 payload in the front cage-opening, fitted with a thermal and a 4K camera side by side. 12MP still and video recording gives you stunning detailed images with 0.18 mm/px resolution to spot the tiniest cracks from floor to ceiling.



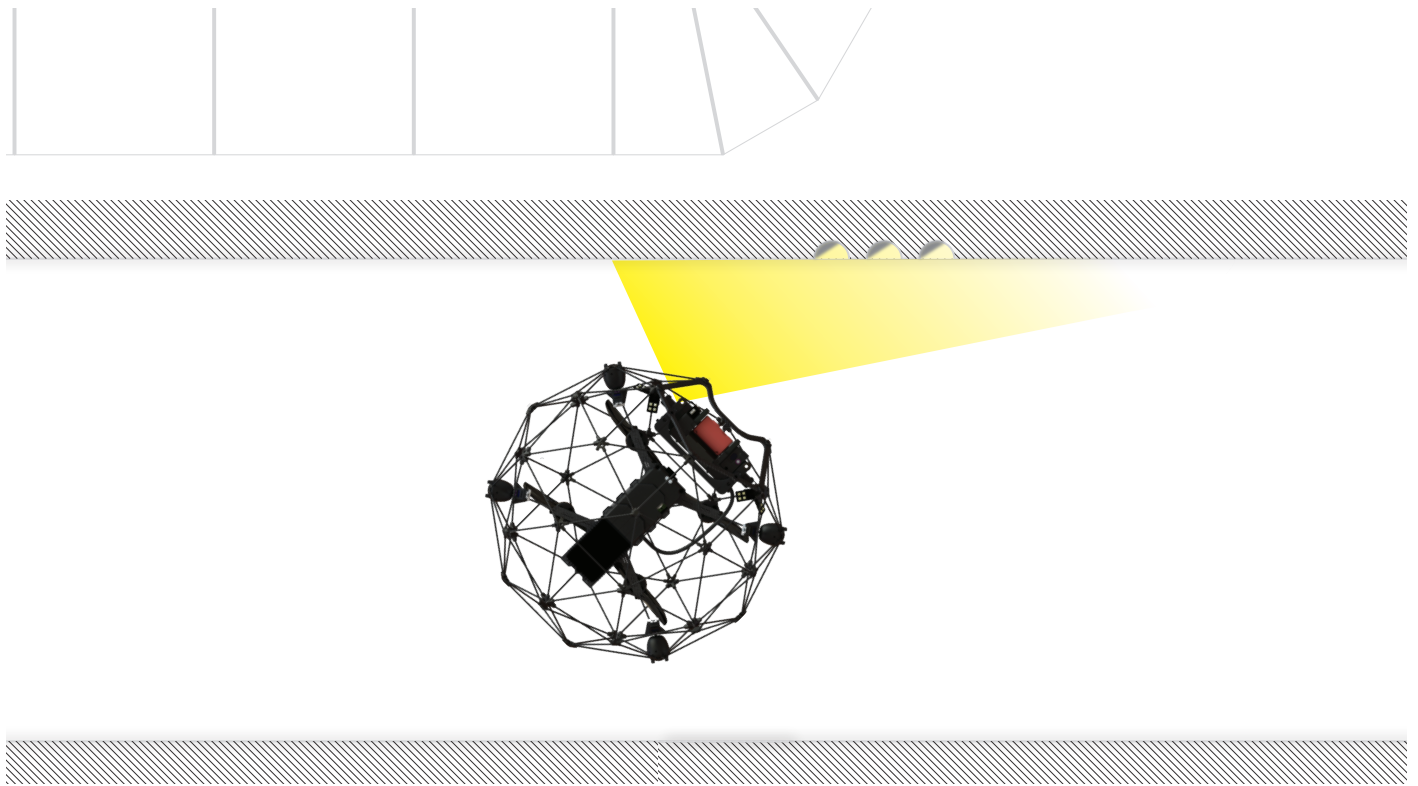
## 10K LUMENS

The Elios 2 features the most powerful and intelligent lighting system ever built on a commercial drone. Carrying 10'000 lumens of light, adjustable to your needs, Elios 2 provides the right amount of lighting whether you need to see the big picture or the tiniest crack.



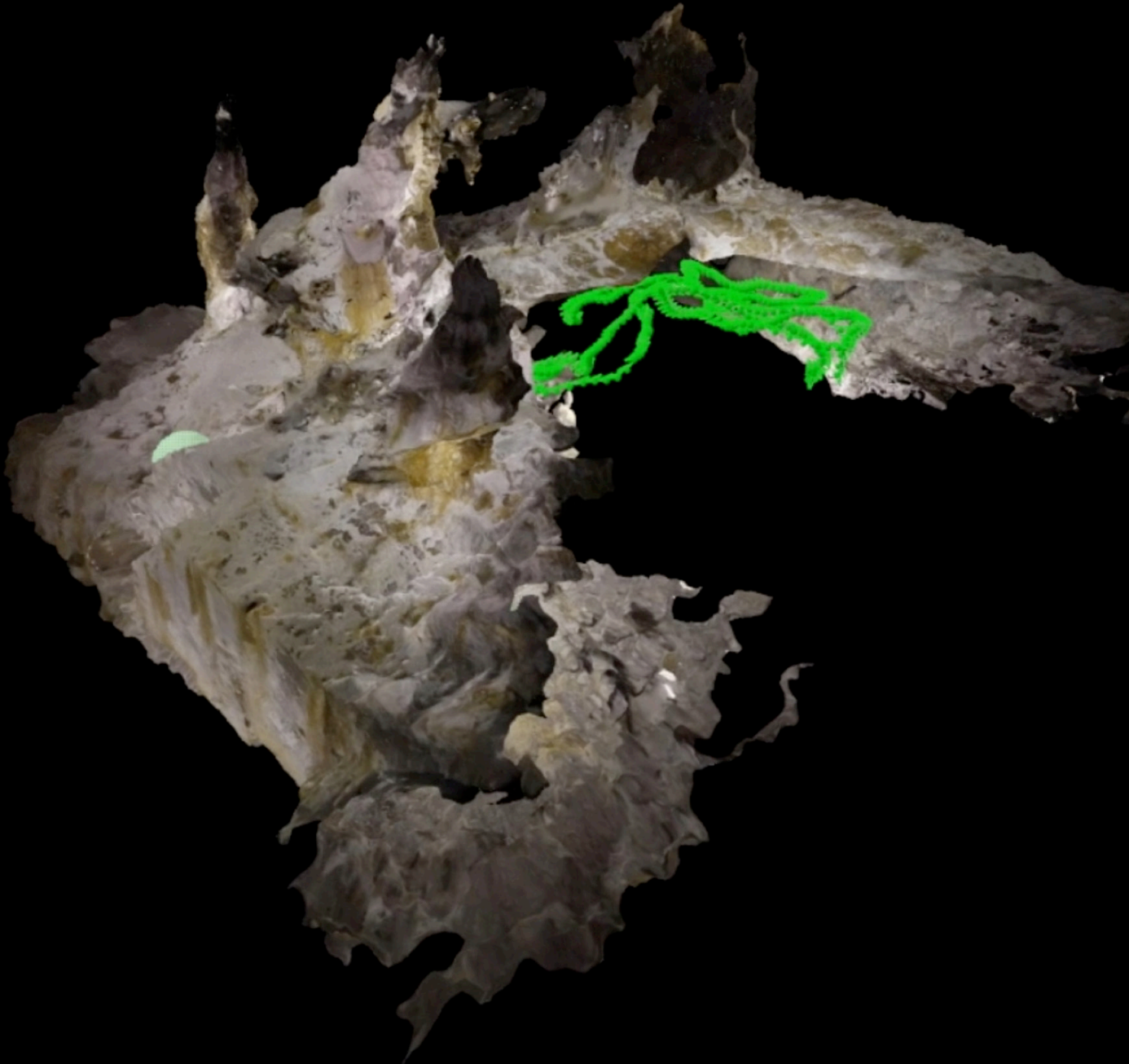
## **DUSTPROOF LIGHTING**

Industrial indoor spaces are often full of dust, which makes First-Person View aircraft navigation difficult. Dustproof lighting allows you to traverse dirty places without losing sight of your objective.



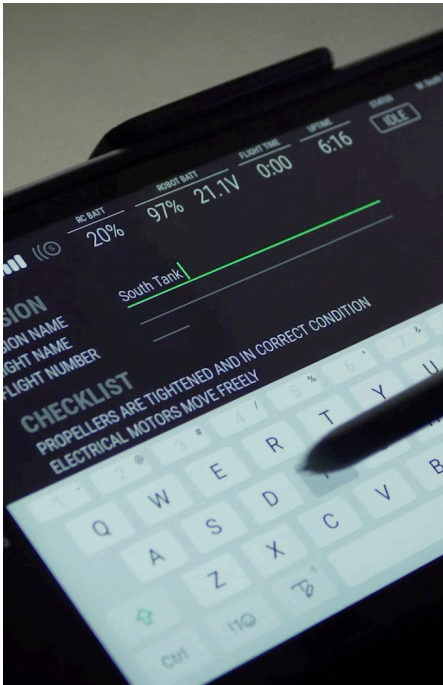
## OBLIQUE LIGHTING

To reveal textures and identify defects, inspectors use a lighting technique that creates shadows in asperities. Reproducing this technique with our new oblique lighting systems, looking for pitting, cracks, or build-ups becomes as natural as doing it with a flashlight.





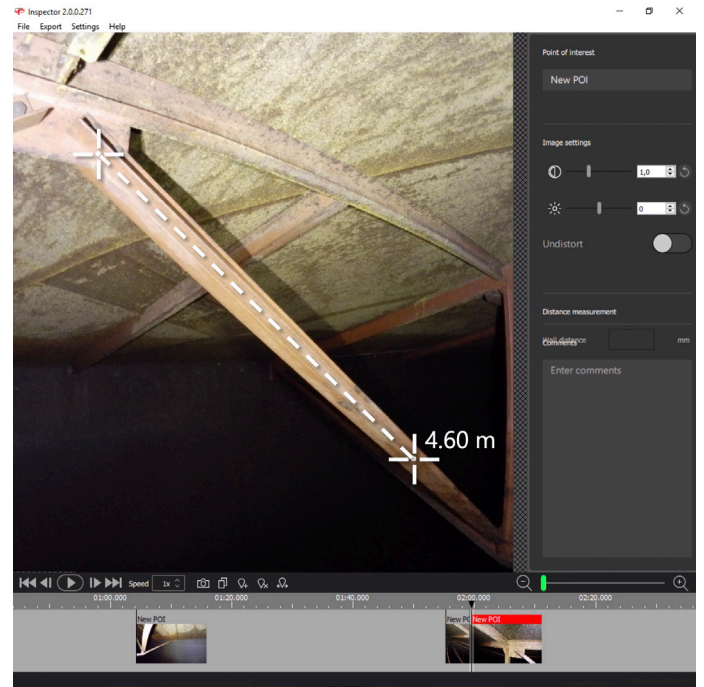
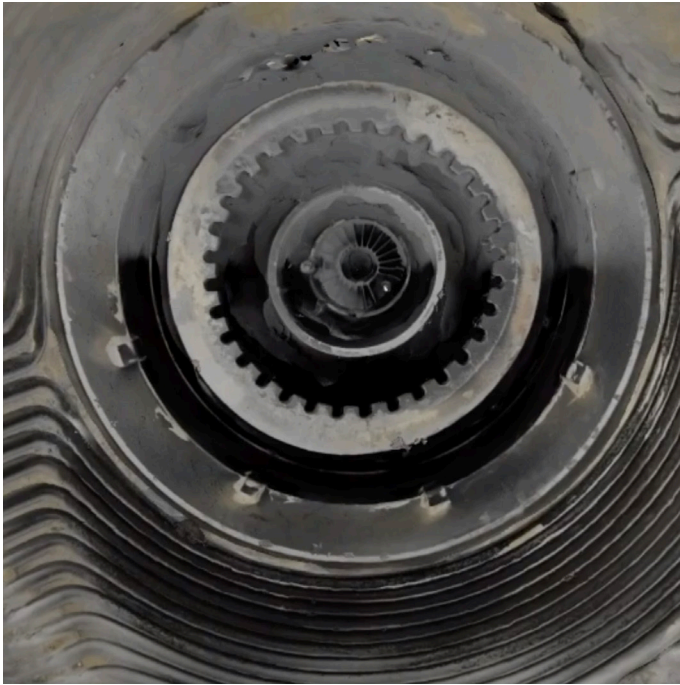
# **BUILD UPON ACTIONABLE DATA**



## FROM PLANNING TO REPORTING, WE'VE GOT YOU COVERED

Cockpit 2.0 has been designed to let you prepare your inspection reports on the fly. Once your mission is completed, simply connect Elios 2 to your computer using the USB port fitted on the drone to import all of your work into Inspector 2.0. From there, you will be able to further investigate captured data, document findings, and create reports.





## 3D MODELING

Change the way you deliver, visualize, and interpret data by building 3D models. Using third-party photogrammetry software such as Pix4D Mapper or Agisoft Photoscan, Elios 2 enables the creation of digital twins which reveals details of your assets.

## SIZABLE INSIGHTS

Turn visual information into insights by adding figures to features. During data processing in Inspector, simply draw a line on the image and you will get a 2D measurement.



# BUILT FOR YOUR SUCCESS

## TRAINING INCLUDED

Because we want you to make the most out of your drone, one full day of training is offered with each purchase of a unit

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## EASY MAINTENANCE

Elios 2 is engineered to be easily serviceable, minimizing the reasons to ever send your drone back to Flyability.

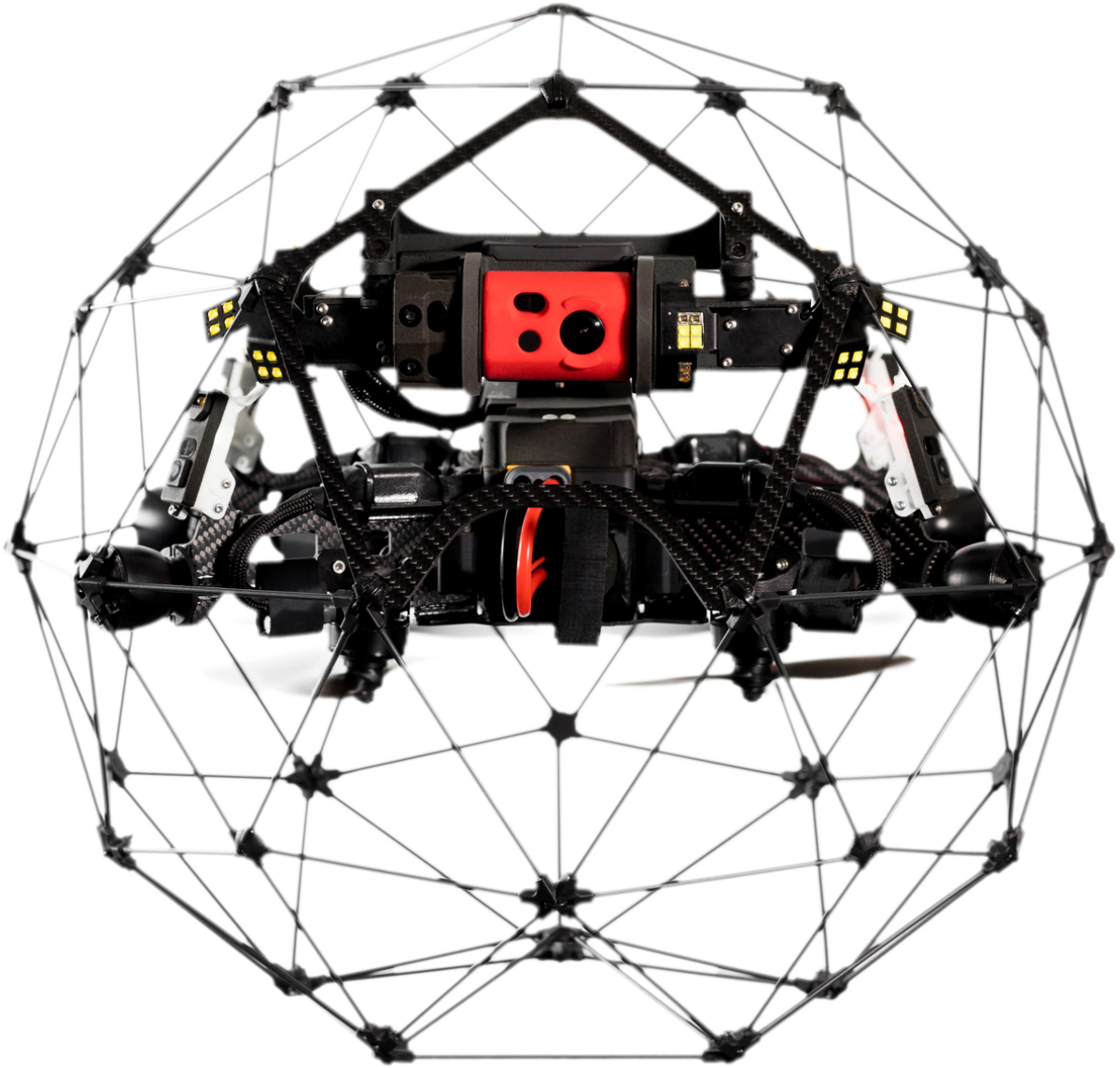
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## DEDICATED SUPPORT TEAM

For any assistance, in the field or at your office, our dedicated support team will travel the world for you.

# TECHNICAL SPECIFICATION

## AIRCRAFT



# AIRCRAFT

<b>CONFIGURATION</b>	Quadcopter	<b>FLIGHT CONTROL SENSORS</b>	IMU, magnetometer, barometer, 7 vision and distance sensors
<b>DIMENSIONS</b>	Fits in a < 400 mm sphere; 15.75 in	<b>MATERIALS</b>	Carbon fiber composites, magnesium alloy, aeronautical grade aluminum, high-quality thermoplastics
<b>MOTORS</b>	4 fast reversing electric brushless motors	<b>OPERATING TEMP.</b>	0 °C to 50 °C* ; 32 °F to 122 °F
<b>PROPELLERS</b>	4 propellers, 5 inches	<b>FLIGHT MODES</b>	OPTI - Optical mode ATTI - Attitude mode SPORT - Sport mode
<b>TAKE-OFF WEIGHT</b>	< 1450 g ; < 3,2 lbs Includes battery, payload & protection	<b>FAIL SAFE</b>	Auto-landing on signal lost
<b>MAX FLIGHT TIME</b>	Up to 10 min	<b>OPERATING FREQUENCY</b>	2404 – 2483 MHz (UAV to RC)
<b>MAX ASCENT SPEED</b>	1.5 m/s ; 5 ft/s	<b>EIRP</b>	2.4 GHz: ≤ 32 dBm (FCC); ≤20 dBm (CE); ≤10 dBm/MHz (MIC)
<b>MAX DESCENT SPEED</b>	1 m/s; 3,3 ft/s	<b>INGRESS PROTECTION</b>	Splash and dust resistant
<b>MAX SPEED</b>	1.3 m/s (Optical mode) ; 4,25 ft/s 4 m/s (Attitude mode) ; 13.12 ft/s 6.5 m/s (Sport mode) ; 19.69 ft/s	<b>NOISE LEVEL</b>	99 dB(A) hover 120 dB(A) max @ 1m
<b>MAX PITCH ANGLE</b>	0.15 rad (Attitude mode) 0.2 rad (Optical mode) 0.3 rad (Sport mode)		
<b>MAX WIND RESISTANCE</b>	3 m/s (Optical mode) ; 9,85 ft/s 5 m/s (Sport mode) ; 16,4 ft/s		

\*additional precaution have to be taken between 0-10°C and 40-50°C. Stability, flight performance and flight time might be reduced

## SMART BATTERY

<b>RATED CAPACITY</b>	5200 mAh
<b>NOMINAL VOLTAGE</b>	19 V
<b>BATTERY TYPE</b>	LiPo 5S HV Smart Battery: <ul style="list-style-type: none"><li>- Improved safety (protection for: overcharge, overcurrent, over/under-temperature)</li><li>- Plug-and-play charging</li><li>- Self-balancing</li><li>- Storage self-discharge</li><li>- State-of-Charge estimation</li><li>- Cycle counter</li><li>- Battery ID</li></ul>
<b>ENERGY</b>	98.8 Wh
<b>CHARGING TIME</b>	1.5 h
<b>BATTERY CHANGE TIME</b>	< 1 min
<b>COMPLIANCE</b>	Approved for carry-on luggage. Complies with IATA Dangerous Good Regulation.
<b>NET WEIGHT</b>	550 g ; 1,2 lbs
<b>OPERATING TEMPERATURE</b>	0-50°C *
<b>CHARGING TEMPERATURE</b>	10 - 45°C ; 50°F - 113°F
<b>MAX CHARGING POWER</b>	150 VA AC power
<b>CHARGER</b>	Elios 2's Smart Battery Charger

\*additional precaution have to be taken between 0-10°C and 40-50°C. Stability, flight performance and flight time might be reduced.

## PAYLOAD CHASSIS

<b>PAYLOAD HEAD</b>	Damped for vibrations
<b>CAMERA POD UPWARD TILT</b>	+90 degrees
<b>CAMERA POD DOWNWARD TILT</b>	-90 degrees
<b>PAYLOAD PROTECTION</b>	Load limiting mechanism to protect the payload in the case of a frontal shock.

## MAIN CAMERA

<b>SENSOR</b>	1/2.3" CMOS Effective Pixels: 12.3 M Sensitivity: Optimized for low light performance
<b>PHOTO FORMATS</b>	JPG
<b>VIDEO FORMATS</b>	MOV
<b>VIDEO RECORDING RESOLUTIONS</b>	4k Ultra HD: 3840 x 2160 at 30 fps FHD: 1920 x 1080 at 30 fps
<b>VIDEO STREAMING RESOLUTION</b>	FHD: 1920 x 1080 at 30 fps
<b>MOVIE FOV</b>	114° horizontal, 130.8° diagonal
<b>PHOTO FOV</b>	118.8° horizontal, 148.6° diagonal
<b>TOTAL VERTICAL FOV</b>	approximately 260° including camera tilt

<b>LENS</b>	2.71 mm focal length Fixed focal
<b>CONTROL MODES</b>	Auto mode with manual EV compensation
<b>FILE STORAGE</b>	MicroSD card (onboard the aircraft) Max capacity: 128 GB Recommended model: Sandisk Extreme micro SDXC UHS-I V30
<b>SUPPORTED FILE SYSTEM</b>	FAT32 for cards up to 32 GB, exFAT for cards bigger than 32 GB

## THERMAL CAMERA

<b>SENSOR</b>	Lepton 3.5 FLIR
<b>VIDEO RECORDING RESOLUTION</b>	160 x 120 at 9 fps
<b>LENS</b>	FOV 56° x 42°, Depth of field 15cm to infinity
<b>SENSITIVITY (NETD)</b>	<50 mK
<b>WAVELENGTH (LWIR)</b>	8-14 µm

## LIGHTING SYSTEM

<b>TYPE</b>	High-efficiency LEDs for even lighting in front, top and bottom, optimized for low impact of dust on picture quality. IR light used for stabilization system.
<b>CONTROL</b>	From remote controller, adaptive light beam controlled by camera pitch
<b>MODES</b>	Indirect/dustproof lighting Close up lighting Selective/oblique lighting
<b>LIGHT OUTPUT</b>	10k lumens

## OPERATIONAL SAFETY & CRASHWORTHINESS

<b>NAVIGATION LIGHTS</b>	Green (starboard) and red (port) lights.
<b>PROTECTION CAGE</b>	Carbon fiber cage with soft coating, modular subcomponents for maintenance ease, thermoplastic elastomer suspensions, front opening dimensioned for easy battery access.
<b>COLLISION TOLERANCE</b>	Uniform all around the drone, up to 3 m/s on flat objects, up to 1.5 m/s on sharp objects

# TECHNICAL SPECIFICATION

## GROUND CONTROL STATION





## REMOTE CONTROLLER

<b>OPERATING FREQUENCIES</b>	2404 - 2483 MHz (RC to UAV) 5738 - 5808 MHz (RC to RC) 920.6 - 928 MHz (RC to RC, Japan only)
<b>MAX TRANSMISSION DISTANCE</b>	Up to 500 m in direct line of sight
<b>EIRP</b>	2.4 Ghz $\leq$ 20 dBm, 5.8 GHz $\leq$ 13 dBm, 920 MHz $\leq$ 10 dBm
<b>WEIGHT</b>	810 g (924 g with tablet holder)
<b>OPERATING TEMP.</b>	0 °C to 40 °C
<b>OUTPUT PORT</b>	HDMI, SDI, USB
<b>BATTERY</b>	6000 mAh 2S
<b>CONTROLS</b>	Aircraft control and payload settings
<b>OPTIONS</b>	Optional remote controller (camera operator) with video stream reception on a secondary screen, and dual control of camera settings.
<b>BATTERY CHARGER</b>	17.4 V / 57 W

## TABLET

<b>MODEL</b>	Samsung Galaxy Tab Active 2
<b>BATTERY CHARGER</b>	USB Charger 5V
<b>OPERATING TEMP.</b>	-15 °C to 40 °C
<b>CHARGING TEMP.</b>	-15 °C to 40 °C
<b>CHARGING TIME</b>	5 hours
<b>WORKING TIME</b>	5 hours (when receiving video stream) to 76 hours (idle)
<b>WEIGHT</b>	415 g

# TECHNICAL SPECIFICATION ACCESSORIES & SOFTWARE



## TRANSPORT CASE

<b>DIMENSIONS</b>	61 x 44 x 53 cm
<b>WEIGHT</b>	11.5 kg
<b>COMPLIANCE</b>	IATA compliant for checked-in luggage.

## COCKPIT SOFTWARE

<b>FEATURES</b>	Real time video and UAV telemetry, status visualization (remaining battery, payload settings, warnings, etc. ), control payload settings and various configurations.
<b>OPERATING SYSTEM</b>	Android. Optimized for tablet provided with UAV system

## INSPECTOR SOFTWARE

<b>FEATURES</b>	Video and thermal video viewer (frame by frame), flight log analysis including point of interests recorded during flight, screenshots and flight data export.
<b>OPERATING SYSTEM</b>	Windows 7, 8 and 10 (32 and 64 bits)



Flyability is a Swiss company building solutions for the inspection and exploration of indoor, inaccessible, and confined spaces. By allowing drones to be used safely inside buildings, it enables industrial companies and inspection professionals to reduce downtime, inspection costs, and risks to workers. With hundreds of customers in over 50 countries in Power Generation, Oil & Gas, Chemicals, Maritime, Infrastructures & Utilities, and Public Safety, Flyability has pioneered and continues to lead the innovation in the commercial indoor drone space.

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