

**ZENITH AEROTECH**



**TETHERED  
DRONE  
SOLUTIONS**

**Zenith**   
AeroTech



## ZENITH AEROTECH

Zenith Aerotech is a leading, U.S.-based manufacturer of, heavy-lift Tethered Aerial Systems (TAS) for defense, federal agency, first responder, and commercial applications. What makes Zenith Aerotech so special is our highly customized approach to designing and delivering TAS solutions to operators in stark contrast to the mass-produced, one-size-fits-all systems available from other aerospace companies.

Our secure 84,000-square-foot facility is located on 10 rural acres just east of the Blue Ridge Mountains, where we design, fabricate, assemble, and test each of our units.

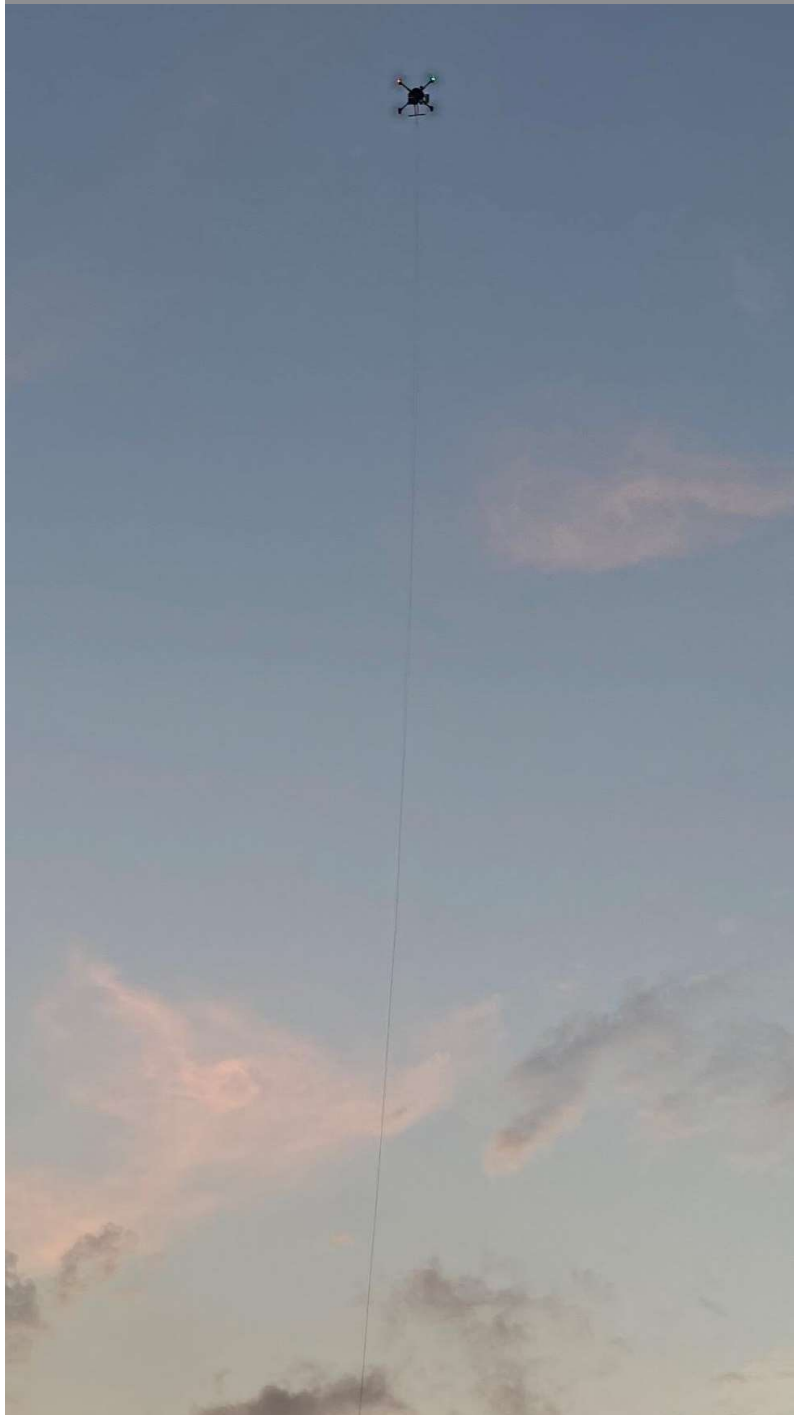
Zenith Aerotech is an Afton, Virginia-based company that designs and builds Tethered Aerial Vehicles (TAVs) for use in public safety, defense, industrial, and media applications



## MADE IN USA

All Zenith Aerotech tethered drone solutions are designed, assembled and tested in the US and all components such as flight controllers, data transmission devices, etc. are compliant for NDAA section 848.

Our team of experienced engineers and managers boasts a deep understanding of tethered flight vehicles, power electronics, embedded systems design, and various sensors. Zenith Aerotech also provides customized user interface design and integration of specialized payloads.



Zenith Aerotech tethered drone solutions offers a range of benefits and key features:

**Unlimited flight time:** Zenith Aerotech has a proven continuous flight of 108 hours with Quad-8 tethered drone platform.

**Ease of Operation:** Zenith QGC (which is a dedicated tethered drone software), simplifies tethered drone operation to one button take off and one button landing.

**No RF Emission:** All telemetry, sensor and control data is transmitted over F/O line in the tether, resulting in no RF interference

**Reliable and Safe Operation:** Zenith tethered drone system has a back-up battery both in drone and ground station, provides safe landing on power cuts.

**High Payload and Altitude:** Zenith tethered drone systems can carry up to pounds at 400 feet altitude.

Zenith tethered drones equipped with with radar and EO/IR gimbal payload can be used as counter-drone solution, offering a unique and effective approach to detecting and identifying, rogue or unwanted drones.

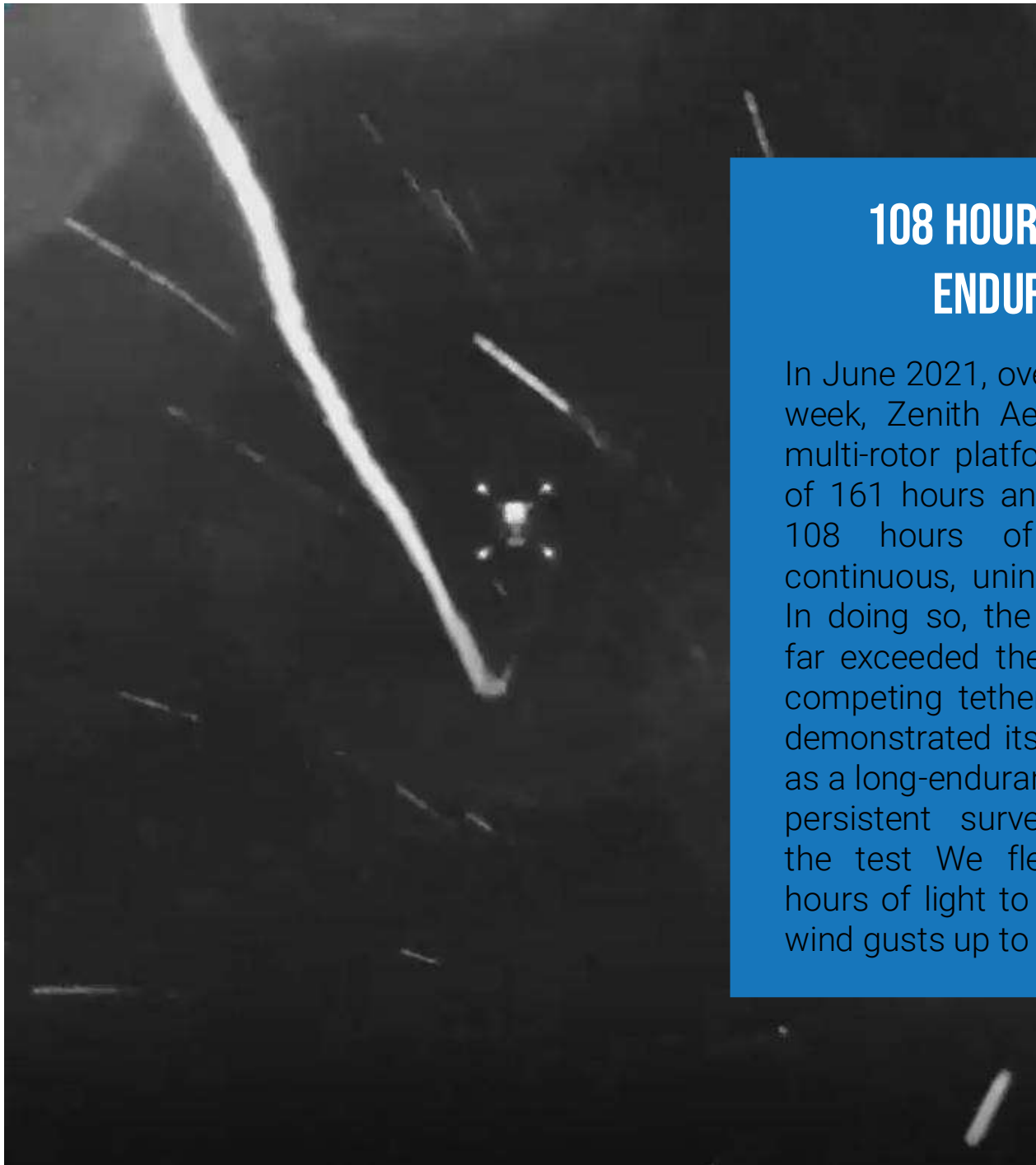


## INTELLIGENT GROUND POWER STATION

Zenith Our Tethered Aerial Vehicles (TAVs) utilize the Zenith Aerotech-designed Ground Power Unit to convert 120- or 240-volt AC power into high-voltage DC power. Power is then transmitted to the TAV through a high-strength, abrasion-resistant power supply cable. Intelligent ground control station provides cable with tension control to the tethered drone unit with power and data transmission.

- Tether Voltage Drop Compensation
- Fiber Optics Data Transmission
- Intelligent Tension Controlled Spool
- Interchangeable Spool Mechanism
- Back-up Battery System

All Zenith tethered drone systems are made in U.S.A. and they are NDAA compliant. Our products are widely used by government customers.



## 108 HOURS PROVEN ENDURANCE

In June 2021, over the span of a week, Zenith Aerotech Quad 8 multi-rotor platform flew a total of 161 hours and 49 minutes—108 hours of which were continuous, uninterrupted flight. In doing so, the tethered drone far exceeded the capabilities of competing tethered drones and demonstrated its ability to serve as a long-endurance platform for persistent surveillance. During the test we flew through 18 hours of light to heavy rain with wind gusts up to 40 mph.

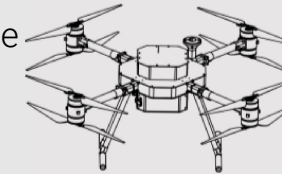
To reach out 720x accelerated video of the 108 hours continuous endurance test please use the QR code given on the page or visit [www.zenithaerotech.com](http://www.zenithaerotech.com)



## ZENITH AEROTECH PRODUCT LINE

### Tethered Drone Systems

- 100+ hour of proven endurance
- Heavy payload capacity
- Enhanced multilevel failsafe
- Simplified Operation



Quad-8 Heavy Lift Tethered Drone

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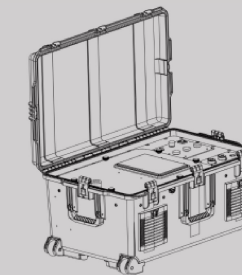


Quad-L Low Power Tethered Drone

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### Ground Power Station

- 400 feet tether with F/O
- Secure comm link
- Voltage drop compensation
- Interchangeable spool system



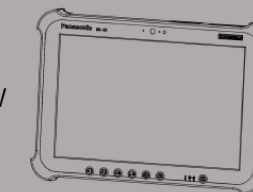
Zenith Aerotech Ground Power Station

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### Ground Control Software

- One button take-off and landing
- Click and go navigation and yaw
- System health monitoring
- Integrated payload control



Zenith QGC Software

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## TETHERED DRONE SYSTEM COMPONENTS

Zenith Aerotech tethered drone systems consist of tethered drone, ground power station and ground control software. As tethered drone system ZAT offers Quad-8 up to 20 pounds, Quad-L up to 8 pounds payload capacity.

Intelligent ground control station provides cable with tension control to the tethered drone unit with power and data transmission. Zenith QGC software is a ground control station software which is dedicated to tethered drone operations.



## QUAD-8 TETHERED DRONE SOLUTION

Zenith ZAT Quad 8 brings quadcopter reliability to another level. The redundant propulsion systems means that the unit can safely land even after the unlikely motor loss. The closed fuselage structure protects internal components from rain and dust. Due to its foldable arm design, the ZAT Quad-8 allows for easier transport.

Quad-8 supports tethered operation with various payloads such as communication devices, EO/IR cameras, cUAS radars, illumination panels or other custom devices up to 20 lbs.

Zenith Aerotech's (ZAT) Quad-8 sUAS provides advanced power, payload and endurance over other systems on the market today.

- Unlimited Time on Station
- Simplified Operation
- Heavy Payload Capacity with Options
- Hover Altitude up to 400 feet AGL
- Enhanced Fail-Safe Operation

ZAT Quad-8 is designed and built in the US and is NDAA compliant.

## TECHNICAL SPECIFICATIONS

Weight	
Maximum Gross Weight	20 kg / 44 lb
No Payload Weight	10.89 kg / 24 lb
Maximum Payload weight	9 kg / 20 lb
Dimensions	
Unfolded Diameter (excluding props)	740 x 740 mm
Unfolded Diameter (including Props)	1240 x 1240 mm
Folded Diameter	530 x 530 mm
Height	430 mm
Propellers	
Dimensions	22.2 x 7.2 in
Material	Carbon fiber and Epoxy
Propeller Orientation	(2) CW and (2) CCW (push) and (2) CW and (2) CCW (pull)
Propeller Options	Foldable, winglet tip - low vortex
Battery	
Nominal Battery Voltage and C	44.4V – 150C
Battery Capacity	6500 mAh
Backup Battery Flight Time	12-6 minutes (depends on payload)
Battery Connectors	XT-90
Charge Rate	5C Fast Charge Capable
Carry Case	
Case Exterior	26.50 x 26.50 x 25.25 in (67.3 x 67.3 x 64.1 cm)
Case Interior	24.00 x 24.00 x 24.00 in (61 x 61 x 61 cm)
Case Weight	31.97 lbs (14.5 kg)
Case Weight with drone	25.40 kg (56 lbs)
Flight Operations	
Hovering Accuracy	Vertical: ±0.5 m (GPS) Horizontal: ±1.5 m (GPS enabled)
Max Pitch Angle	25°
Ascend and Descend Speed	Ascend: 0.7 m/s Descend : 0.5 m/s Descend (last 10m) : 0.3 m/s
Moving Radius	20 meters (geofence)
Environment	Max Wind Resistance 30 mph (gust) Operating Temperature -20°C to 50°C (-4°F to 122° F) Can fly in rain up to 7.6 mm (0.30 in) per hour.
Supported GNSS	GPS/Glonass/Beidou/Galileo
Payload Interface	
Communication	<ul style="list-style-type: none"> <li>• RJ45</li> <li>• HDMI (Optional)</li> <li>• Serial (Optional)</li> </ul>
Power	<ul style="list-style-type: none"> <li>• 5V (45W)</li> <li>• 12V (72W)</li> <li>• 24V – 48V or high power optional</li> </ul>



## QUAD-L TETHERED DRONE SOLUTION

ZAT Quad-L is designed and built in the US and is NDAA compliant. The frame and support structures are fabricated from lightweight, high-strength carbon fiber. The design is durable, allows for flexible payloads, and offers an excellent strength-to-weight ratio.

The closed fuselage structure protects internal components from rain and dust. The motor arms and blades are field-replaceable, utilizing a quick release design. Due to its detachable arm design, the ZAT Quad-L allows for easier transport. Quad-L supports tethered operation and various payloads such as communication devices, EO/IR cameras or other custom devices up to 8 lbs. The ZAT Quad-L platform delivers performance and reliability for mission critical applications.

- Unlimited Time on Station
- Simplified Operation
- Heavy Payload Capacity with Options
- Hover Altitude up to 400 feet AGL
- Enhanced Fail-Safe Operation

Zenith Aerotech's (ZAT) Quad-L can fly in rain and snow (light and moderate up to 0.30 in per hour). Upper figure shows operation in snow.

## TECHNICAL SPECIFICATIONS

<b>Weight</b>	
Maximum Gross Weight	10.9 kg / 24 lb
No Payload Weight	7.3 kg / 16 lb
Maximum Payload weight	18.2 kg / 40 lb
<b>Dimensions</b>	
Unfolded Diameter (excluding props)	850 x 850 mm
Unfolded Diameter (including Props)	1400 x 1400 mm
Folded Diameter	500 x 500 mm
Height	450 mm
<b>Propellers</b>	
Dimensions	28.2 x 9.2 in
Material	Carbon fiber and Epoxy
Propeller Orientation	(2) CW and (2) CCW propellers
Propeller Options	Foldable, winglet tip - low vortex
<b>Battery</b>	
Nominal Battery Voltage and C	44.4V – 150C
Battery Capacity	3250 mAh
Backup Battery Flight Time	12-6 minutes (depends on payload)
Battery Connectors	XT-90
Charge Rate	5C Fast Charge Capable
<b>Carry Case</b>	
Case Exterior	26.50 x 26.50 x 25.25 in (67.3 x 67.3 x 64.1 cm)
Case Interior	24.00 x 24.00 x 24.00 in (61 x 61 x 61 cm)
Case Weight	32 lbs (14.5 kg)
Case Weight with drone	48 lbs (21.8 kg)
<b>Flight Operations</b>	
Hovering Accuracy	Vertical: ±0.5 m (GPS) Horizontal: ±1.5 m (GPS enabled)
Max Pitch Angle	25°
Ascend and Descend Speed	Ascend: 0.7 m/s Descend : 0.5 m/s Descend (last 10m) : 0.3 m/s
Moving Radius	20 meters (geofence)
Environment	Max Wind Resistance 30 mph (gust) Operating Temperature -20°C to 50°C (-4°F to 122° F) Can fly in rain up to 7.6 mm (0.30 in) per hour.
Supported GNSS	GPS/Glonass/Beidou/Galileo
<b>Payload Interface</b>	
Communication	<ul style="list-style-type: none"> <li>• RJ45</li> <li>• HDMI (Optional)</li> <li>• Serial (Optional)</li> </ul>
Power	<ul style="list-style-type: none"> <li>• 5V (45W)</li> <li>• 12V (72W)</li> <li>• 24V – 48V or high power optional</li> </ul>



## INTELLIGENT GROUND POWER STATION

Zenith Aerotech Intelligent Ground Power Station has several unique functions such as:

**Power Compensation:** Zenith ground station compensates the voltage drop occurs through the cable to carry high payloads in higher altitudes.

**Interchangeable Spool:** Zenith ground power unit has an interchangeable spool which operator can easily change the spools even on the field.

**F/O Data Transmission:** Zenith ground power unit provides data transmission through fiber optics which eliminates RF signature.

**Back-up Battery:** Both Zenith ground power unit and tethered drones have back-up batteries, on a power loss, drone lands itself and GPU reels the cable in.

**Tension Controlled Spool:** Tension controlled spool lets the cable out when drone is ascending, reels the cable in when drone is descending autonomously.



## TECHNICAL SPECIFICATIONS

Dimensions and Weight	
Box Dimensions	31.3 x 20.4 x 15.5" / 79.5 x 51.8 x 39.4 cm
Weight	70 lbs (31.7 kg)
Power	
Input Voltage	180-264 VAC (with Quad8) 85-264 VAC (with QuadL)
Input Frequency	47-63 Hz
Built in Power Options	6kW, 4.8kW, 3kW
AC Power Need for Drones	3500W Quad 8 1800W Quad L Heavy 1500W Quad L Lite
Cable	
Cable Length	Up to 400 feet
Conductor Cables	2 x 22 AWG Mil-Spec M22759/19
Fiber Optic	1 x Singlemode
Voltage Rating	600V
Voltage	
Tether Voltage (ground side)	400-500V (Compansated)
Tether Voltage (drone side input)	400V (Regulated from ground)
Drone Voltage	50V
Operation	
Setup Time	Less than 5 minutes
Portability	Telescopic handle and wheels
Back Up Battery	12V 5Ah Back Up Battery
Reel	Auto tension reel mechanism
Interface	
Connectors	1x Rj45 for communication 1x USB for charging 1x USB for debug

All Zenith tethered drone systems are made in U.S.A. and they are NDAA compliant. Our products are widely used by government customers.

**100+ hrs Proven Endurance**  
Zenith tethered drone solutions can provide persistent surveillance with unlimited flight time



## ZENITH QGC SOFTWARE

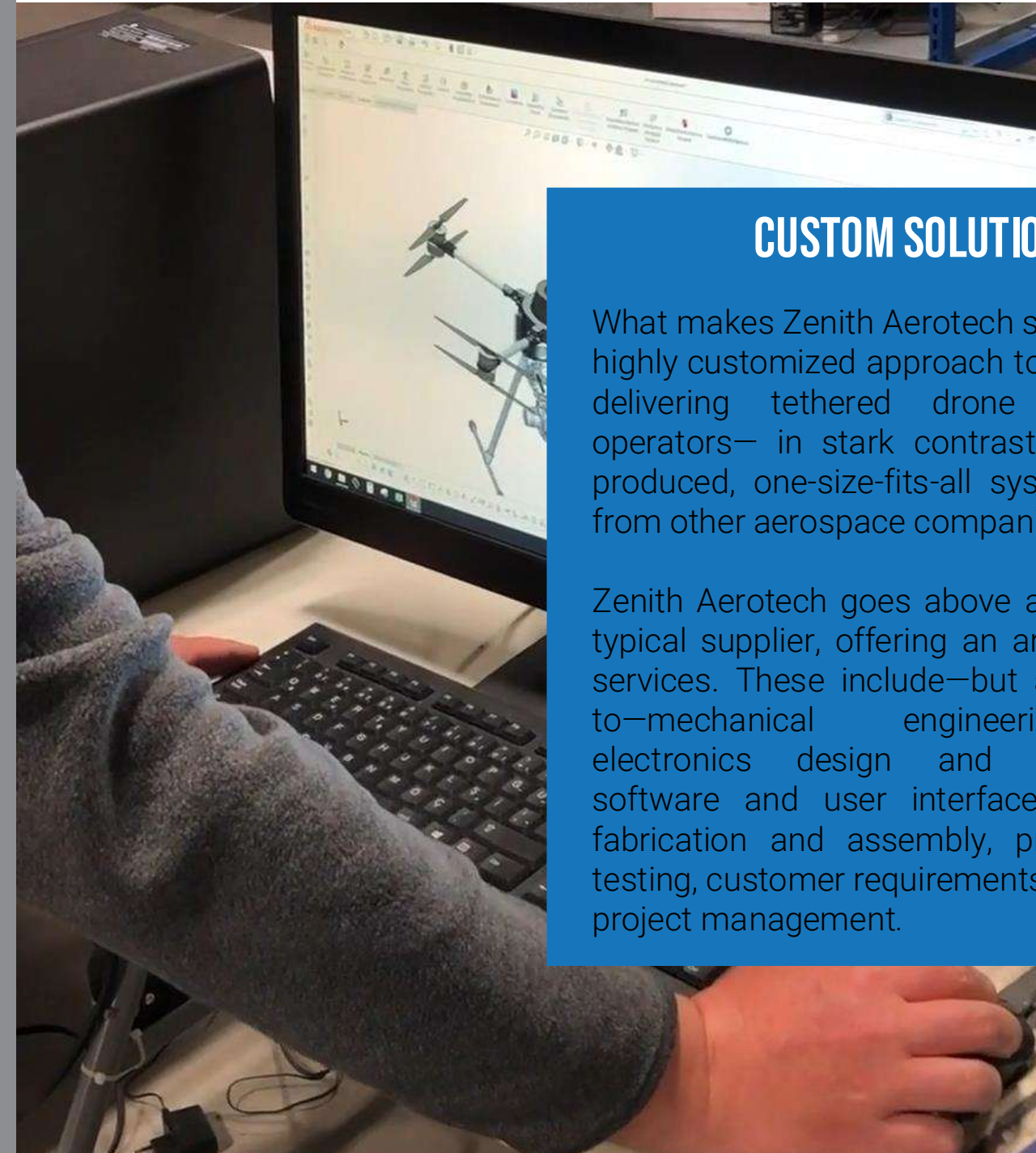
Zenith QGC software is a ground control station software which is dedicated to tethered drone operations, designed for the operators to proceed successful missions.

In a basic operation, operator presses take-off button, enters flight altitude to the slider and confirms the take-off. Tethered drone system will automatically take off and hover in the altitude.

Operator can navigate with clicking on the map and use go to function, operator can also yaw to the position, all the payload data and controls are implemented on the software.

For ending the mission operator clicks to the land button and confirms the action. All the safety procedures and fail-safe options are automated, operator does not need to take action for these actions.

Zenith QGC Software is based on open-source QGround Control project. Software can be used on Windows, Linux and Android devices.



## CUSTOM SOLUTIONS

What makes Zenith Aerotech so special is our highly customized approach to designing and delivering tethered drone solutions to operators— in stark contrast to the mass-produced, one-size-fits-all systems available from other aerospace companies.

Zenith Aerotech goes above and beyond the typical supplier, offering an array of inhouse services. These include—but are not limited to—mechanical engineering, power electronics design and manufacturing, software and user interface development, fabrication and assembly, prototyping and testing, customer requirements definition, and project management.

Zenith Aerotech has technical capability to offer new options like higher payload capacity, higher altitude, etc. whatever the application needs.



# ZENITH AEROTECH

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