

Global monthly E-magazine for Drones



DRONES

WORLD

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PARALLEL FLIGHT
TECHNOLOGIES PARTNER
TO BRING AUTONOMOUS
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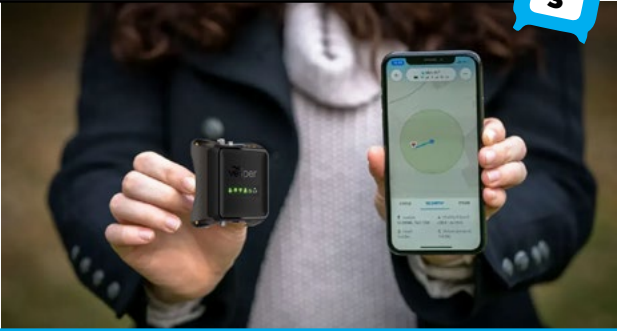


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DRONES WORLD

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DRONES WORLD is published by - B. Kartikeya



B. KARTIKEYA

Drones, previously only used by the military, have soared into our hearts, first as hobbies and interests and now as commercial enterprises. Although it is unclear how far the technology will permeate the security industry, it may make sense for dealers and integrators to swiftly begin looking for partnerships in this developing field to capitalise on the anticipated sharp rise in demand.

You will be able to learn about the most recent developments in the drone sector in this month's magazine. Update your knowledge about the latest technology by visiting our Product section. You may learn about the outstanding characteristics of the RDSX Pelican Hybrid VTOL Commercial delivery drone that A2Z Drone Delivery has launched in the Drone Delivery section. Also, look at the setup and price.

Pay close attention to the interview with Mr Neel Mehta, Co-Founder & Director of Asteria Aerospace Limited to learn more about the development of the drone sector. Additionally, look at EVE Air Mobility finishes EVTOL Wind Tunnel testing under the UAM heading. In the section on defence, learn more about the \$100 million contract IAI was given to supply airborne SIGINT solutions to a global client.

Finally, in part titled EVOLT, discover how DJI's brand-new Matrice 350 RTK redefines the ideal tool for the commercial drone business. Drones World Magazine helps link manufacturers, suppliers, component makers, technology providers, installers, purchasers, and consumers by reaching thousands of industry professionals across the commercial drone business.

For now, please sit back, relax, and glimpse the growth and evolution of the drone sector as we transport you over the world's sky.

A2Z Drone Delivery Launches RDSX Pelican Hybrid VTOL Commercial Delivery Drone



A2Z Drone Delivery, Inc, developer of commercial drone delivery solutions, has released its new flagship delivery drone, the RDSX Pelican. The new Pelican leverages a hybrid VTOL airframe with no control surfaces to combine the reliability and flight stability of a multirotor platform, with the extended range of a fixed wing craft. With no ailerons, elevator or rudder, the Pelican's durable-yet-simple design eliminates common points of failure and exponentially extends operational time between maintenance overhauls. Designed to meet the 55-pound takeoff weight limitation for FAA Part 107 compliance, the Pelican can carry payloads of 5 kilos on missions up to 40 kilometers roundtrip. Available in multiple model variations, the Pelican can be optimized for extended range operations or to deliver payloads from altitude with the company's RDS2 drone delivery winch.

Available in multiple configurations, the RDSX Pelican can be customized for an array of missions. Configured with the A2Z Drone Delivery drone winch, the Pelican enables deliveries from altitude where spinning propellers are kept far

New RDSX Pelican Features

- Optimized with the A2Z Drone Delivery RDS2 drone winch, the Pelican features:
 - Cruise Speed – 45 knot cruising speed to traverse routes quickly
 - Max Payload Capacity – Configurable up to 7-8 kg payload capacity
 - Max Range – 50 km max range with no payload/40 km max range with 5 kg payload
 - Max Takeoff Weight – 55lb. max takeoff weight
 - Operational Costs – 13 cents per kilogram per kilometer
 - No Specialty Delivery Boxes – Requiring no specialty delivery boxes, the Pelican can accept any shape payload with dimensions up to 400 x 300 x 300mm
 - A2Z 4G Link – The automatic network selector seamlessly transitions between multiple 4G networks and a mesh radio link to optimize connectivity
- Payload Auto-Release – Patent-pending auto-release mechanism can deposit any box without the need for a human receiver
- Parcel Pickup – Retrieve payloads up to 5 kg while maintaining hover at a safe altitude
- General-Purpose Payload Hook – Optional manual-release hook capable of delivering or picking up just about any payload with a handlebar
- Passive Payload Lock – Secures cargo during flight
- Tether Abandonment – Release the winch tether and payload should they become entangled
- A2Z Ground Control Station – Portable ground control station enabled with A2Z QGroundControl
- Intuitive Flight Controller – Ready to connect with any MAVLink-enabled device



from people and property, mitigating consumer privacy concerns of low-flying drones while abating intrusive rotor noise. Alternatively, for missions in which the drone is able to safely land at its destination, a simple servo-release mechanism can release payloads and expand the Pelican's payload capacity. Beyond logistics use cases like residential deliveries, the Pelican can be fully customized to suit unique mission criteria such as aerial mapping, drone inspection, forestry services, search and rescue operations, water sample collection, offshore deliveries, mining, etc.

The Pelican's hybrid fixed-wing/multirotor airframe eliminates the traditional control surfaces seen on most winged aircraft. With no servos to replace and minimal moving parts, the Pelican's simple-yet-robust design extends the time between recommended maintenance overhauls to reduce downtime and cost. To maximize scalability of those drone delivery ecosystems, the RDSX Pelican was also designed to minimize operational costs for commercial drone delivery fleets. Boasting an attractive 13 cents/kg/km operating cost, the RDSX Pelican delivers the efficiency, payload capacity and reach needed to scale a commercial drone delivery operation.

"Here at A2Z Drone Delivery, our development is not just about maximizing performance, it's about creating usable tools designed to get work done," said Aaron Zhang, Founder and CEO of A2Z Drone Delivery, Inc. "A full-service drone delivery ecosystem will need a fleet of short, medium and long-range UAV platforms capable of depositing

designed to minimize potential points

Pricing & Configurations

- Starting at \$29,000, the all-new A2Z Drone Delivery RDSX Pelican is offered in multiple model variations to meet the needs of any enterprise delivery fleet or drone service provider. A2Z Drone Delivery can also fully customize the Pelican for missions outside last-mile drone delivery or other logistics operations. The RDSX Pelican is offered as:

- RDSX Pelican with Winch – Optimized with the A2Z Drone Delivery RDS2 drone delivery winch system, this Pelican model accurately deposits payloads from altitude via tethered release. Keeping propellers far from ground obstructions such as trees, buildings or powerlines, this is the best option for delivery missions into unknown

topography.

- RDSX Pelican Payloads – For delivery missions in which the Pelican is able to safely land to deposit its payload, this model swaps the RDS2 drone winch for a simplified servo-release allowing the Pelican to carry even heavier payloads.

- Custom RDSX Pelican – Leverage the extended range and payload lift capabilities of the Pelican's hybrid VTOL airframe to meet any unique mission criteria. Customers can work directly with A2Z Drone Delivery's engineering team to create a one-of-a-kind, mission-specific UAV platform for drone inspection deployments, search and rescue missions, or any other unique demands.

Availability

The company is now accepting pre-orders for the RDSX Pelican which will be fulfilled on a first-come-first-served basis with initial deliveries expected for June 2023. Operators looking to place a pre-order for the new Pelican in any of its available configurations, or customized for a unique mission, can contact A2Z Drone Delivery at <https://www.a2zdronedelivery.com/>

payloads in an array of settings. The new RDSX Pelican is the highly efficient, long range delivery platform in that last-mile fleet. It is thoughtfully

of failure, reducing the overall cost-per-kilometer of logistics operations, all while providing maximum payload flexibility."

Dronedek Rebrands to Arrive, the World's First Smart Mailbox-as-a-Service Infrastructure & Platform for Autonomous Delivery Networks



Dronedek, the pioneer of smart Mailbox-as-a-Service (MaaS) solutions for autonomous delivery networks (ADNs), has rebranded to Arrive and will reveal its new look, along with a second-generation smart mailbox and new service models at XPONENTIAL 2023 in Denver May 8-11.

“Arrive is the only smart, secure and agnostic ADN mailbox infrastructure and platform that supports frictionless deliveries and pickups between people, robots and drones,” said Arrive CEO Dan O’Toole. “It enables businesses to provide continuous, asynchronous, multi-modal deliveries and pickups across their networks while securing their position at the forefront of autonomous and artificial intelligence (AI) powered logistics.”

Arrive COO Mark Hamm said the rebranding dovetails perfectly with the company’s latest advances and its support for robotic and drone ADNs.

“The market is moving beyond deliveries and thinking about autonomous pickup and multi-modal networks,” Hamm said. “Arrive is the world’s first MaaS infrastructure and platform for ADNs. It’s the final piece of the autonomous logistics puzzle.”

Hamm said customers will be able to seamlessly scale their ADNs with Arrive, thereby maximizing returns and enabling smarter business decisions.

Aerodyne unveils solutions for advanced air mobility and UAS ISTAR



Aerodyne Group, a drone services provider, unveiled its two flagship solutions, ARGENTAVIS and FULCRUM, at the Langkawi International Maritime and Aerospace Exhibition 2023 (LIMA 2023). These drones are powered by Aerodyne’s proprietary intelligence platform, DRONOS (Drone Operating System).

Kamarul A Muhamed, founder and Group CEO of Aerodyne said, “We are thrilled to embark on various projects, including an island to island delivery, implementation of a nested drone system to monitor assets spanning over thousands of kilometres, enabling efficient delivery of food and medicines to remote areas, providing long-range surveillance capabilities, and supporting maritime and land border management. These opportunities showcase the versatility and game-changing potential of our advanced drone technologies.”

ARGENTAVIS, an air mobility solution, can lift up to 225kg and travel for up to 725km. It is designed to cater to various industries including oil and gas shore-to-platform deliveries, medical supplies transportation to rural areas, and smart city logistics.

FULCRUM is designed for intelligence, surveillance, target acquisition and reconnaissance (“ISTAR”) when combined with AI-driven geospatial intelligence and a nested swarm system. It could be used for oil and gas pipeline monitoring, search and rescue missions, and border security.

ARGENTAVIS and FULCRUM integrate with DRONOS, which serves as the intelligence hub for all things drone.

EIB provides €40 million for Wingcopter to scale up electric delivery drones and logistics services

The European Investment Bank (EIB) will provide a €40 million quasi-equity investment into Wingcopter GmbH, a European leader and pioneer in unmanned delivery drone technology and related services. Founded in 2017 in the German state of Hesse, Wingcopter's electrically powered unmanned aircraft are already delivering goods as part of several small-scale commercial and humanitarian projects. For example, in Malawi, a joint project with UNICEF and Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) has seen Wingcopter's drones deliver life-saving medicines and medical supplies to rural communities in hard-to-reach areas.

The EIB investment is backed by the European Commission's InvestEU programme under its sustainable infrastructure window. Using electric cargo drones to deliver urgently needed goods can replace carbon-intensive modes of transport such as motorcycles, vans and helicopters, thereby contributing to the transition towards a green and sustainable economy.

The Wingcopter 198 is expected to be operated for the first time in Germany this summer when Wingcopter launches a pilot project in southern Hesse to test the potential of on-demand transport of groceries and other consumer goods. The project's goal is to improve local supply in rural German communities through a sustainable delivery service and will be conducted together with the Frankfurt University of Applied Sciences. It is funded by the German Federal Ministry for Digital and Transport.

What makes Wingcopter's cargo drones truly unique is their ability to take off and land vertically while flying quickly and efficiently over long distances like an airplane without the need for expensive infrastructure. They can carry up to 5 kg and cover distances of up to 100 km. The core hardware and software is patented worldwide. Already running on pure battery power, the Wingcopter team,



together with Hamburg-based ZAL Center of Applied Aeronautical Research GmbH, is currently developing a green hydrogen energy system to power Wingcopter's drones for even longer flight times.

The EIB's investment comes alongside existing funding from a strong international group of investors, including leading European retailer REWE Group, Japanese Fortune 100 conglomerate ITOCHU, Silicon Valley-based Xplorer Capital and Uber co-founder Garrett Camp's investment arm Expa. Together, the investor commitments will enable Wingcopter to extend the capabilities of its flagship drone, obtain regulatory approval in key markets and deploy its drones at scale in sustainable last-mile delivery networks to become a global logistics services provider across multiple sectors.

EIB Vice-President Ambroise Fayolle, who is responsible for activities in Germany, said: "Europe is currently the global leader in cleantech, and we must work hard to maintain this lead. Backing European cleantech pioneers with global reach like Wingcopter is central to our mission. Electric cargo drones are an important vertical segment for a future of sustainable transport and logistics. This investment underlines our commitment to supporting entrepreneurs growing and building advanced green

technology businesses in the European Union, strengthening our technological competitiveness, creating highly skilled jobs and opening up new markets, while preserving nature. We are proud to be supporting this European success story."

European Commissioner for Economy Paolo Gentiloni said: "This agreement is an excellent example of how InvestEU is helping businesses access the finance they need to innovate and expand. InvestEU will continue to support investment that will allow Europe to maintain its position as a world leader in the development and production of innovative products with positive real-world applications."

Wingcopter co-founder and CEO Tom Plümmer said: "We would like to thank the European Investment Bank for their trust in us and their support as we strive to become a global leader in the drone-based delivery of urgently needed goods, from medical supplies to groceries. Our goal is also to improve lives by creating many jobs — in R&D and manufacturing at our headquarters in Europe, as well as in the countries where we provide services, where we train and qualify local young people to operate our drone delivery networks. It requires strong partners like the EIB to build reliable, efficient and safe delivery drone technology and logistics services."

ParaZero and Parallel Flight Technologies Partner to Bring Autonomous Parachute Systems to Heavy-Lift UAV Aircraft

ParaZero, a world-leading provider of autonomous safety systems for commercial drones and urban air mobility aircraft, has partnered with U.S.-based heavy-lift drone and hybrid propulsion technology provider, Parallel Flight Technologies, to integrate customized SafeAir parachute safety systems with Parallel Flight Technologies' flagship heavy-lift, long endurance UAV, Firefly.

Parallel Flight Technologies' 122 kg MTOW (maximum takeoff weight) Firefly has been described as a 'heavy-lift workhorse' for various industrial applications, including wildfire support, medical and disaster logistics, search and rescue, precision agriculture, and renewable use cases. Parallel Flight Technologies' proprietary Parallel Hybrid Electric Multirotor (PHEM) drone technology gives Firefly the ability to carry an impressive 45 kg payload (not including fuel) for up to 100 minutes. The proprietary IP built into the Firefly allows 10x longer endurance and range over electric drones. The Parallel Flight Technologies and ParaZero combination will bring one of the safest industrial heavy-lift drones to the market.

Firefly's long flight endurance and payload capabilities make the platform an ideal candidate for flight beyond visual line of sight (BVLOS) and remote operations. Platforms designed for advanced applications and autonomous missions offer new levels of ROI for customers.



payloads for are the preferred complement to Firefly's built-in redundancies and safety features to mitigate ground risk and enable the regulatory permissions we need to operate. This integration highlights Parallel Flight's company-wide commitment to stringent safety and quality measures. Furthermore, this allows Firefly to stand ready in saving lives, property, and the environment, additionally creating value for industrial customers across the globe," says Parallel Flight CEO, Joshua Resnick.

ParaZero's SafeAir is a UAV parachute recovery system that mitigates flight risks autonomously. The SafeAir system is equipped with integrated sensors that continuously monitor and analyze the drone's flight patterns to identify any indications of a critical failure. When triggered, the SmartAir Pro™, ParaZero's onboard computer, responds with an instantaneous activation of the SafeAir system. The system cuts power to the drone, alerts people on the ground with an audible alarm, and deploys a lightweight parachute, bringing the drone to the ground in a safe, controlled descent.

Equipped with ParaZero's patented parachute technology, organizations and operators around the world have received regulatory approvals for advanced operations, including autonomous flight beyond visual line of sight (BVLOS), operations over people (OOP), operations in densely populated areas, and drone delivery, by providing a robust safety solution to mitigate ground risk in the event of an emergency.

"The Firefly represents a true innovation in the UAS industry, and we have appreciated working with the very talented team at Parallel Flight Technologies," said ParaZero Director of Business Development & Regulation, Aaron Gliner. "We are committed to helping UAS manufacturers meet performance-based safety and regulatory requirements, enabling a broader array of advanced use cases and applications."

The custom Firefly safety system protects people, property, and valuable various use cases. "ParaZero's safety systems

protects people, property, and valuable various use cases. "ParaZero's safety systems

Reliable Robotics Conducts Autonomous Flight Demonstration at Travis Air Force Base



Reliable Robotics, a leader in safety-enhancing aircraft automation systems, provided a demonstration during the recent Golden Phoenix readiness exercise at Travis Air Force Base (AFB). This exercise demonstrated capabilities that will help the United States Air Force (USAF) modernize and project safe, rapid, global mobility. During the flight, Reliable's remotely operated aircraft system was engaged for an end-to-end automated mission including auto-taxi, auto-takeoff, climbout and auto-landing with an onboard test pilot.

"This signifies a historic milestone as an aircraft, under the guidance of Air Mobility Command airmen, autonomously taxied, took off, and landed at an AMC base for the first time," said Maj. Wesley Williams, Travis AFB Phoenix Spark Innovation Lab. "Today marked a truly historic day for the Air Force. This is how we win."

Reliable's remotely operated aircraft system includes high precision navigation, sophisticated flight planning capabilities and robust flight controls. The system Reliable is developing and certifying will enable continuous autopilot engagement through all phases of flight and support remote piloting across multiple types of aircraft. Last year, the certification basis for Reliable's advanced navigation and autoflight system was accepted by the Federal Aviation Administration.

"Commercial innovation can increase the Air Force's ability to generate air power, more frequently and over longer distances, providing our Airmen greater options in leading critical missions around the world," said Col. Derek Salmi, 60th Air Mobility Wing commander. "It was inspiring to watch the autonomous flight demonstration... partnerships between industry and Airmen offer endless possibilities."

Reliable's solution allows the Air Force to benefit from state of the art, commercial technology at fractional costs. This technology will provide increased aircraft availability, more options in deploying aircraft in crewed, uncrewed or "pilot +1" configurations while requiring fewer deployed Air Force personnel in high-risk regions. Remote piloting enables safe and efficient aircraft operation in all flying environments, strengthening the Air Force's mission to supply forward operations around the clock, and around the globe.

Nokia's turnkey 5G-connected drone platform selected by Belgium's Citymesh for world's first nationwide drone network

NOKIA

Nokia selected by Citymesh to deploy 5G Drone-in-a-Box solution for emergency response across Belgium



Nokia announced a first-of-its-kind contract with Belgian telecom operator Citymesh to supply its Nokia Drone Networks platform with 70 Drone-in-a-Box (DiaB) units. This is enough to blanket Belgium with a 5G automated drone grid that informs and speeds resource mobilization in emergency events.

Branded SENSE by Citymesh, the 70 drones are deployed in 35 emergency zones across the country and will gather information in the critical 15-minute period immediately following a call. This ensures that first responder teams are fully apprised of and equipped to respond to each unique situation.

Belgium's emergency services can receive more than two million calls a year, and typically police and fire brigades are dispatched with incomplete data that can stymie the efficiency of their response. With Nokia Drone Networks, pilots will be able to operate 24/7 and dispatch drones from docking stations strategically located across the country.

Equipped with high definition and AI-

enhanced thermal imaging, drones capture real-time aerial footage – such as smoke plumes, fire parameters, and number/location of people – and transfer it to control centers even before emergency teams have had time to leave. These aerial images are essential to identifying a plan of action that can save lives and limit damage to affected assets and natural resources.

Hans Similon, General Manager, Citymesh Safety Drone, said: "SENSE is a great example of how technology can save lives. We've been impressed with Nokia as our partner for reliable wireless connectivity and an outstanding turnkey Drone-in-a-Box solution that we can customize to our specific needs. Together, we're making Belgium safer and proving just how innovative we are as a nation." Thomas Eder, Head of Embedded Wireless Solutions, Nokia, said: "We are proud to be selected by Citymesh as the turnkey 5G Drone-in-a-Box platform provider for SENSE. Our 5G-connected drone platform is a logical extension of our leadership in building nationwide wireless networks.

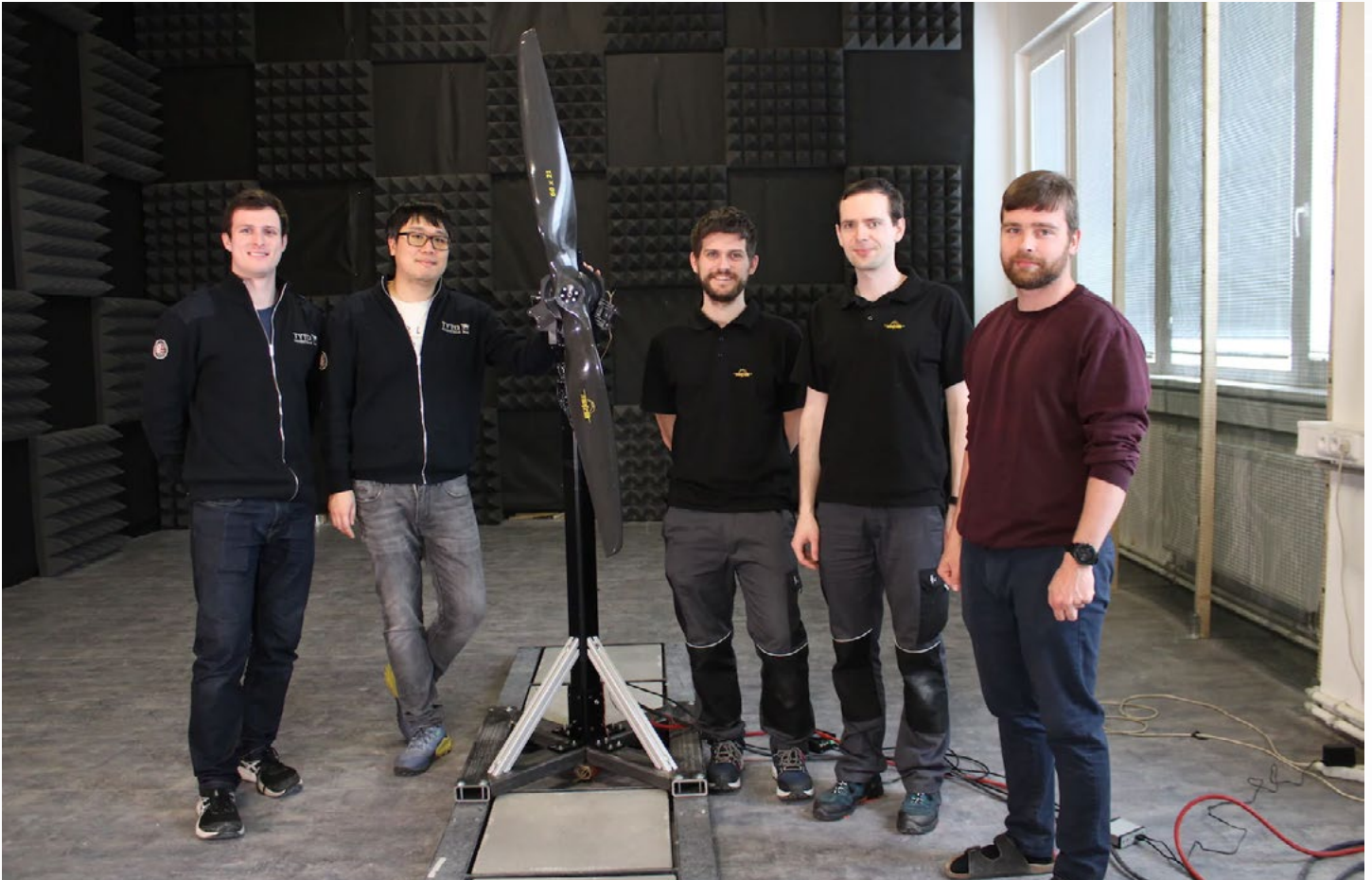
Nokia Drone Networks is a game-changer for operational efficiency of first responders and data security. Enabled by Nokia MX Industrial Edge (MXIE), it ensures that collected data is stored locally and stays under the full control of authorities."

Nationwide availability of SENSE follows pilot projects in the Fluvia fire brigade in Kortrijk, Brussels Airport Company, Port of Antwerp-Bruges, and the city of Genk, with the support of the Federal Public Service Economy.

The Nokia Drone Networks solution connects to public and private 4G and 5G networks to enhance situational awareness for first responders and other professionals. It can be operated remotely and complies with aviation regulatory bodies such as EASA in Europe and FAA in the United States.

The platform is equipped with a dual gimbal camera, docking station, and edge data processing, and it is supported by an open API framework that allows integration of third-party applications to expand its capabilities for a wider range of use cases.

Tyto Robotics Gets \$400,000 Grant to Develop eVTOL Thrust Stand



Montreal-based Tyto Robotics received a significant contribution from the Consortium for Research and Innovation in Aerospace in Quebec (CRIAQ) in order to develop test equipment for large propulsion systems. The \$400,000 grant will fund the R&D portion of the project, which they are completing in collaboration with Mejzlik Propellers of Czechia and l'Université de Sherbrooke of Quebec.

The full title of the project, “Research and development of an electrical propulsion system, including a reliable propeller, a thrust stand, and an AI model to analyze performance data, for heavy-duty cargo UAVs or eVTOL”, outlines the scope of the work to be done. Tyto Robotics will design

a thrust stand capable of testing motors for large cargo drones and electric vertical takeoff and landing (eVTOL) vehicles, up to 500 kgf of thrust and 320 kW of power.

Together, Tyto Robotics and Mejzlik Propellers will perform tests on powertrain components used on eVTOL to study how factors like motor Kv, voltage, and propeller finish affect overall performance and reliability.

Concurrently, the team at l'Université de Sherbrooke will design an AI model capable of predicting a propulsion system's performance based on machine learning from data generated by the physical tests.

The goal of the project is to develop test equipment that can be used by manufacturers in the heavy-lift cargo drone and eVTOL

industries. One of the major barriers to the widespread adoption of eVTOL as a mode of transportation is the low flight time of aircraft, caused in part by limited battery capacity and unoptimized propulsion systems.

Another barrier is the uncertainty surrounding reliability, as one of the key factors required to make eVTOL commercially viable is to have reliable powertrain components that prevent mid-air failure.

The test equipment developed during this project will allow eVTOL manufacturers to test their propulsion systems and find the most efficient combination of motors, propellers and electronics. This will get them one step closer to having a commercially available solution in the air.

UNIQUE GROUP ACQUIRES NEW USV FROM SEAFLOOR SYSTEMS

Unique Group announced it has entered a partnership with Seafloor Systems to acquire EchoBoat-160 unmanned surface vessel (USV), with fully integrated multibeam echosounder (SeaRAY) and sound velocity profiler, which will be available for hire from the group's Houston facility from May 2023.

Unique Group offers a range of USVs, including its own 'Uni-Range' of USV systems, on a sale and rental basis with a wide range of available sensor packages.

The EchoBoat-160 USV is a purpose-built remote survey platform for hydrographic data collection. With true one-button startup, the nimble vessel integrates professional-grade sensor suites in a compact package to navigate challenging bodies of water by remote control or autonomous wayfinding.

Chris Blake, Vice President - Survey at Unique Group, said, "We're extremely delighted to add the EchoBoat-160 USV to our ever-expanding inventory of USVs. This fifth generation fully integrated system is an excellent portable USV that can be used by our clients to undertake hydrographic surveys remotely and safely. It is readily available in our U.S. facility and can be quickly deployed across North and Latin America from our facilities. We look forward to the prospect of further developing our partnership with Seafloor in the future."

Unique Group said it aims to support Seafloor with its technical capabilities and worldwide presence, to facilitate support for customers, a team of Unique Group's technical personnel will be attending a week-long in-depth operational and maintenance course at Seafloor Systems, Shingle Springs, Calif. fabrication facility.

Once the system is delivered to Houston, Unique Group will receive Seafloor's support to set up the complete system and make it operationally ready for rental opportunities.



“

“It is great to partner with Unique Group and expand our reach by taking advantage of Unique Group's global presence. EchoBoat-160 USV is a purpose-built system that is well suited for hydrographic surveys and accomplishes the same results demanded of large, crewed boats more efficiently and at a fraction of the cost. We're confident that through our partnership we will be able to cater to client requirements easily and effectively.”

John Tamplin, CEO at Seafloor

”

Dedrone technology to be installed at second airport in ongoing support of FAA



Dedrone, the market leader in smart airspace security announced an expanded partnership with the Federal Aviation Administration (FAA) under Section 383 of the FAA Reauthorization Act of 2018, which provides for testing of counterdrone detection, tracking, identification and mitigation technologies to develop clearer regulations around the use of these technologies at airports. Dedrone was part of the first round of technologies selected for testing at Atlantic City International Airport and has now been invited to expand to a second airport (to be named at a later date) as part of the ongoing research being conducted by the FAA to make airports safer from disruptions caused by drones. “The threat of drone disruptions to airports and other critical infrastructure is persistent and escalating. We are honored to continue our work with the FAA to make airports safer for passengers, crew and airport staff by incorporating counterdrone technology into existing airport security apparatuses,” said Aaditya Devarakonda, CEO of Dedrone. “We look forward to further supporting the FAA at this additional airport after successful implementation at Atlantic City International Airport.”

DedroneTracker, a sensor-fusion

platform providing drone detection, tracking, identification (DTI) and mitigation via the most sophisticated AI capabilities on the market, is currently being used at both airports. By taking inputs from multiple sensors including radio frequency (RF), radar, camera and acoustics, DedroneTracker confirms drone presence and determines the precise location of drone. Based on real-time drone behavior, imagery, known flight modeling and other inputs, the AI engine offers the operator a prioritized queue of targets through autonomous background interrogation while simultaneously tracking multiple friendly drones.

Dedrone has also been selected to work with the FAA on bringing safe mitigation technologies to airports, including the recently released DedroneDefender precision jammer. DedroneDefender comes equipped with narrow-band jamming to minimize disruption to other devices and meets military standard MIL-STD-810H. This use of narrow-band or “comb” jamming reduces the risk of interference with other systems in the area like Wi-Fi or radar.

The FAA testing is by invitation only and began in February 2022. It will continue through September 30, 2023 at a total of

five airports around the country including Rickenbacker International Airport, Columbus, Ohio; Huntsville International Airport, Huntsville, Alabama; Syracuse Hancock International Airport, Syracuse, New York; and Seattle-Tacoma International Airport, Seattle, Washington, in addition to Atlantic City. The FAA will use the results of the testing in its development of a plan for the certification and authorization of counterdrone detection and mitigation systems in the National Airspace System (NAS) including at airports around the country.

This work with the FAA constitutes a further expansion of Dedrone’s service to the 30 US federal entities that Dedrone already counts as customers. In fact, Dedrone’s technology is implemented across 40 countries, and used by four of the G-7 nation governments; more than 100 critical infrastructure sites; 30+ airports; 50+ stadiums and 20+ non-US governments. Most recently, Dedrone acquired Aerial Armor to further cement its leadership in the counterdrone industry. The combined company actively provides counterdrone solutions for some of the most high-profile events around the world and works closely with over 70 public safety agencies.



Trimble Introduces RTX Positioning Solution for Commercial Package Delivery Applications via Drones

Trimble announced the Trimble PX-1 RTX™ solution for accurate and robust positioning and heading for commercial drone delivery applications. The Trimble PX-1 RTX allows drone integration companies to add precise positioning capabilities so operators can more efficiently plan and execute takeoff, navigation and landing tasks as drone delivery advances to take on more challenging operations.

The Trimble PX-1 RTX leverages Trimble's CenterPoint® RTX corrections and small, high-performance GNSS-inertial hardware to provide real-time, centimeter-level positioning and highly accurate inertial derived true heading measurements. This solution allows operators precise control of the drones during takeoff and landing in order to tackle more demanding operations in tight or partially obstructed spaces. It also minimizes operational risks from poor sensor performance or magnetic interference by ensuring greater positioning redundancy, especially important as commercial drone delivery operations venture into increasingly difficult urban and suburban environments.

Trimble PX-1 RTX offers:

1. Precise single antenna IMU heading allows for accurate guidance and control in magnetically challenged environments
2. Centimeter-level positioning accuracy without base stations via Trimble CenterPoint RTX corrections over satellite L-Band or NTRIP removes additional infrastructure requirements
3. Applanix IN-Fusion+™ multi-sensor aided inertial technology ensures consistent solution performance in all environments
4. Hardware and Software-as-a-Service with flexible subscription pricing reduces upfront cost and eliminates separate hardware maintenance costs
5. End-to-end integration support provides faster go-to-market by reducing integration effort

"Drones are quickly revolutionizing package delivery by reducing cost, minimizing environmental impact, creating additional operational efficiencies and enhancing application safety," said Joe Hutton, director of Airborne Products, Trimble. "The PX-1 RTX is a highly accurate and robust solution designed to help integrators achieve these goals."

The Trimble PX-1 RTX solution is available through Trimble Applanix sales channels. For more information visit: <http://advancedairmobility.trimble.com/>.

RIEGL expands Test Aircraft Fleet with a new DA62 SurveyStar



RIEGL Laser Measurement Systems GmbH, a global leader in development and production of laser scanners and systems for applications in surveying, and in cooperation with Diamond Aircraft Austria since day one of their Special Mission Aircraft business, acquires a new test and calibration aircraft, a DA62 SurveyStar.

After successfully operating one of the very first DA42 GeoStar aircraft for nearly 15 years, RIEGL is becoming the first Austrian operator of its groundbreaking successor, the DA62 SurveyStar. Due to the close cooperation between RIEGL and Diamond Aircraft, the complete line of RIEGL's high-end airborne laser scanners and systems can already be fitted on the new test aircraft for trials.

Markus Fischer, Director Diamond Aircraft Special Mission Aircraft, said: "Beside so many already sold and delivered DA62 SurveyStar's, this one is my absolute top favorite as I have been knowing Dr. Riegl since I joined Diamond Aircraft in 2006. It has always been an absolute honor and pleasure to work with everyone at RIEGL Laser Measurement Systems over the last 15 years. To have the world's most modern and state-of-art airborne scanner manufacturer as a partner and customer is an outstanding privilege. Looking forward to deliver this unit personally to Dr. Riegl and his team."

Dr. Johannes Riegl, CEO and enthusiastic pilot himself, commented: "After many years of successfully using our Diamond DA42 MPP for test flights, the increased development and production expansion of our range of high-end airborne laser scanners means that it is now also appropriate to expand and modernize our aircraft fleet. The DA62 SurveyStar is exactly the right device to continue to be at the cutting edge of technology also in the field of aviation for many years to come. Not to mention, that I also personally look forward with enthusiasm to pilot this beautiful bird myself in the future."



Phase One Announces iXM-SP150 at GEOINT - An Advanced 150 Megapixels Snapshot Matrix Camera for Earth Observation and Space Domain Awareness Applications

Phase One, a leading developer of digital imaging technologies, has announced the introduction of its iXM-SP150 space camera, which boasts high-quality components that make it ideal for both Earth Observation and Space Domain Awareness applications. Phase One will officially unveil the iXM-SP150 at GEOINT 2023 in St. Louis.

“Phase One is pleased to announce the commercial release of a space-hardened camera designed specifically for satellite hardware,” said Dov Kalinski, Phase One Vice President of Security & Space. “The new camera is available to order now.”

The Phase One iXM-SP150 is a 150 megapixels snapshot matrix camera for high-demand Earth Observation and Space Domain Awareness applications. Its snapshot matrix imaging technology provides high photogrammetric precision, eliminating errors associated with line Time Delay Integration scanning cameras. It is specifically engineered to endure the harsh conditions of Low Earth Orbit, providing high resolution, high sensitivity, and low noise for both color and multispectral imaging applications. Furthermore, the iXM-SP150 is designed to be lightweight, weighting less than 1 kg, and has a compact enclosure size of 100 mm x 100 mm x 70 mm (excluding the telescope lens). Its maximum power consumption is 20 W RMS. The compact and efficient design ensures that it can be easily integrated into small satellite platforms without compromising performance.

A Phase One customer’s need was the beginning of this latest innovation. Matthew Mangione ARKA Danbury’s Remote Sensing Business Lead commends: “We value the imaging sensor expertise Phase One has provided to our space solutions. We see their newest product, the high resolution large format iXM-SP150 camera, having a major impact on LEO earth observation missions and other spaceflight applications.” In October last year, Phase One announced the successful launch and orbital deployment of an imaging sensor based on the Phase One iXM Series 150 MP frame camera.

The Phase One iXM-SP150 is currently available. Thanks to its exceptional image quality, ability to unlock new functionalities, and significantly reduce integration times, the iXM-SP150 truly is a game changer.

Leica Geosystems introduces the next evolution in smart, autonomous mobile mapping



Leica Geosystems, part of Hexagon announced the latest addition to its Leica Pegasus TRK portfolio of mobile mapping solutions, the Leica Pegasus TRK100. Specifically designed for GIS professionals, the new mobile mapping system is a powerful, easy-to-use geospatial solution built for large-scale infrastructure measurement and digital twin creation.

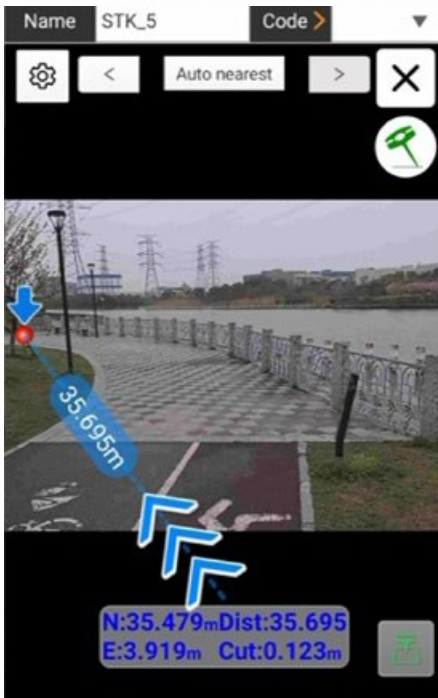
Leica Geosystems’ Pegasus TRK portfolio is renowned for its simplicity and ease of use, lightweight robust design, and integration with intelligent, autonomous systems. The Pegasus TRK100 is even lighter and smaller weighing just 14 kilogrammes, making it easy for one person to mount on any vehicle. The new mobile mapping system features the same modular hardware approach allowing users to add more cameras to expand the range of use cases.

The Pegasus TRK100 is designed to excel in GIS mapping and asset management applications, providing essential location intelligence for georeferenced visual data. Tailored for GIS professionals, it empowers them to transform their business operations. The system puts control into their hands for quick and autonomous data collection, and asset information capture.

With its advanced mapping capabilities, the Pegasus TRK100 enables GIS professionals to visualise and understand the location of assets, to help make the right decisions, improve asset management, and support infrastructure building and maintenance. The capabilities include MatchPoint for delivering next generation point cloud refinement. This new technology combines artificial intelligence and a unique learning algorithm to enhance and optimise the clarity of points in post-processing for improved accuracy. The versatility of the Pegasus TRK100 suits a variety of applications in diverse industries, including telecommunications, utilities and road maintenance.

“The Leica Pegasus TRK100 advances autonomy and artificial intelligence in mobile mapping, removing manual process steps and providing actionable insights for informed decision,” said Christian Schäfer, Business Director Mobile Mapping at Leica Geosystems. “It empowers GIS professionals to create the maps they need, collect the information they require and visualise the data in a way that immediately aids understanding.”

CHCNAV Introduces the i93 IMU-RTK GNSS receiver enhanced with the vision-based positioning



CHC Navigation (CHCNAV) announced the availability of the i93 Visual IMU-RTK GNSS smart antenna. The i93 is a versatile, high-end GNSS, IMU, and dual-camera receiver that pushes the boundaries of centimeter accuracy surveying. Its 3D visual staking feature offers unmatched ease of use and convenience, increasing operators' efficiency on any job site, regardless of their experience level.

"The innovative visual positioning simplifies point measurement and facilitates surveying in hard-to-reach or hazardous areas," said Rachel Wang, Product Manager of CHCNAV's Surveying and Engineering Division. "In addition, the i93 can be used to augment aerial surveys generated from oblique imagery with ground-based images, as its data is fully compatible with the most popular 3D modeling software. The i93 takes GNSS

surveying to the next level by merging the best of GNSS, IMU, and 3D imaging into a single antenna."

The i93 GNSS receiver combines CHCNAV's proprietary iStar technology with an integrated 1408-channel RF-SoC processor for optimized use of all GNSS constellations and frequencies. These new technologies improve GNSS data quality and tracking capabilities by more than 20 percent, enhancing GNSS RTK performance in challenging environments. As a result, reliable and accurate positioning data is guaranteed for all applications.

Real-time 3D visualization changes the face of surveying

The integrated Starlight cameras provide immersive 3D visual navigation. Based on powerful image processing technology, the cameras paired with the controller offer a unique way for surveyors to capture precise coordinates in real-

time. Field operators simply follow the 3D directional arrow and distance on the controller in real-time to stake out points. The 3D visual guidance is also available for line and CAD map staking in LandStar™ software, making surveying easy, intuitive, and efficient.

Auto-IMU for a seamless experience for all users

The Auto IMU feature eliminates the need for manual initialization and complex procedures. The CHCNAV's Auto-IMU 200 Hz pole-tilt compensation automatically maintains maximum accuracy, allowing the pole to be carried over the shoulder, held in hand, or placed horizontally, as you move from point to point on the job site. As a result, productivity is enhanced, and projects are completed in less time.

The i93 GNSS receiver is available worldwide through the CHCNAV Authorized Dealer network.

AFRL conducts swarm technology demonstration



The Air Force Research Laboratory, or AFRL, conducted a demonstration of its high-power microwave counter drone weapon, the Tactical High-power Operational Responder, or THOR, as it engaged a swarm of multiple targets at the Chestnut Test Site, Kirtland Air Force Base.

“The THOR team flew numerous drones at the THOR system to simulate a real-world swarm attack,” said Adrian Lucero, THOR program manager at AFRL’s Directed Energy Directorate. “THOR has never been tested against these types of drones before, but this did not stop the system from dropping the targets out of the sky with its non-kinetic, speed-of-light High-Power Microwave, or HPM pulses,” he said.

Capt. Eric Plummer, a test engineer

with AFRL’s Directed Energy Directorate, operated the THOR system and has been with the THOR program for nearly two years. He was responsible for aiming the THOR system at the swarm.

“THOR was exceptionally effective at disabling the swarm with its wide beam, high peak powers and fast-moving gimbal to track and disable the targets,” said Lucero.

As the dangers from drone swarms evolve, leaders from across the Department of Defense are working closely to ensure we are exploring different technologies like directed energy to support the needs of the warfighter in the future against such threats.

“THOR was extremely efficient with a near continuous firing of the system during the swarm engagement,” said Capt. Tylar Hanson, THOR deputy

program manager. “It is an early demonstrator, and we are confident we can take this same technology and make it more effective to protect our personnel around the world.”

While AFRL celebrates the success of the demonstration, leaders at Kirtland are recognizing the hard work of their team who have decades of research in high-power electromagnetic technologies.

“We couldn’t have come this far without the perseverance and professionalism of the entire THOR team,” said Ken Miller, AFRL’s high power electromagnetics division chief. “Our scientists, Airmen and contractors worked early mornings and late nights to make this swarm demo...a great success. AFRL is committed to developing such advanced technologies to defend our service members on the front lines.”

DJI's New Matrice 350 RTK Redefines the Ultimate Tool for the Commercial Drone Industry

DJI has launched the DJI Matrice 350 RTK (M350 RTK), an upgraded flagship drone platform that is believed to be more adaptable, safer and efficient for any aerial operation in public safety, energy, mapping, infrastructure or forestry.

“It’s great to see how commercial drone pilots around the world use DJI platforms to carry out their operations with increased safety and more effectively than using traditional technology,” said Christina Zhang, Senior Director of Corporate Strategy at DJI. “The new capabilities offered by the advanced technology of the M350 RTK enables operators to push these boundaries even further.”

More power for more scenarios : With its 55-minute max flight time (flying at approximately 8 m/s without payloads), the M350 RTK’s has a payload capacity of 2.7kg allowing operators a choice of payloads for their task. The new DJI O3 Enterprise Transmission gives users peace of mind with triple-channel 1080p HD live feeds and a max transmission distance of 20 km at a flight altitude of approximately 120 m. This is achieved with a four-antenna transceiver system, which can intelligently select the two optimal antennas to transmit signals, while the four antennas receive signals simultaneously. Anti-interference capabilities are significantly improved and transmission stability is optimized.

Enhanced flight safety : For use in both commercial and rescue missions, the M350 RTK’s IP rating has been improved from IP45 to IP55 and the FPV camera has been enhanced to provide better navigation for safer night flights. The M350 RTK also adds a new arm lock detection function to avoid the risk of unlocked arm sleeves, alleviating pilot concerns during flight.

Concerns are also lessened with the drones six-directional binocular vision system and an infrared sensing system for six-directional awareness, positioning, and obstacle-sensing capabilities, providing comprehensive protection during flight.

Improved efficiency : The M350 RTK comes with the DJI RC Plus as standard



giving the operator a 7-inch high-bright screen, the option of Dual Operator Mode and an operating time of up to six hours with a standard WB37 external battery. Dustproof and waterproof to IP54 and with an operating temperature of -20° to 50° C (-4° to 122° F), the RC Plus is ready to support operation even in severely hot or cold environments.

Intelligent functions can greatly increase the efficiency and safety of any drone deployment. AI Spot Check can be used to automate routine inspections and capture consistent results every time; or PinPoint can be used to mark an object with a quick tap and have its coordinates calculated and projected to all camera views as an AR icon which is particularly useful in search and rescue operations.

Flight cost reduction : The M350 RTK’s new TB65 battery has a 100% increased battery cycle count and can be charged up to 400 cycles, reducing the cost of a single flight. Its dual-battery system supports battery hot swapping and allows for multiple flights without powering off.

The new BS65 Intelligent Battery Station provides a one-stop solution for battery charging, storage, and transport. Multiple charging modes enable the operator to select the best option for them such as charging the battery up to 50% in Storage Mode, if the battery isn’t going to be used again for a prolonged period of time, or Ready-to-Fly Mode, which quickly charges multiple battery sets to 90% to start operation at any time and extend the battery life.

When the battery station is connected to DJI RC Plus, the DJI Pilot 2 app will display the battery status and health information. In addition, the user can set the number of

self-discharge days, update the firmware, export logs, and access other quick operations with one tap. The battery station is designed with 360°-movement wheels for convenient transportation.

Powerful payloads : The M350 RTK supports a single downward gimbal, dual downward gimbals, and single upward gimbal, and has an E-Port open interface. With a max payload capacity of 2.7 kg, the aircraft can carry up to three separately purchased payloads simultaneously, meeting the needs of different operation scenarios such as public safety, inspection, and mapping.

Intelligent operation : A number of intelligent features can be used to get the very best from the aerial platform.

High-Precision Mapping: The M350 RTK supports Waypoint, Mapping, Oblique, and Linear Flight missions. Terrain Follow or Smart Oblique can be used for efficient data collection and, when combined with DJI Terra, HD 2D and 3D digital results can be quickly achieved for high-precision and high-efficiency mapping operations.

Air-to-Ground Coordination: With functions like the high-precision PinPoint and cloud-based real-time mapping, the M350 RTK can link the air, ground, and cloud together. After the aircraft completes image collection, DJI FlightHub 2 can quickly model the operation site and transmit command information to the aircraft and ground operators. Both the remote controller and FlightHub 2 support point, line, surface drawing, and real-time uploading, and can cooperate with the aircraft to livestream the real-time operation view, breaking through communication barriers for air-to-ground collaborative operation.

Automated Precision Inspection: Through Live Mission Recording, the M350 RTK can generate and store flight route files that can be used at any time to create automated operations and reduce the time and effort needed for make repetitive inspections. When using AI Spot-Check, the M350 RTK supports automatic framing and manual adjustment of subjects to improve the accuracy of repeated shooting and the quality of inspection operation.

The World's First Quadcopter Drone Announces the New Standard for Drone LiDAR

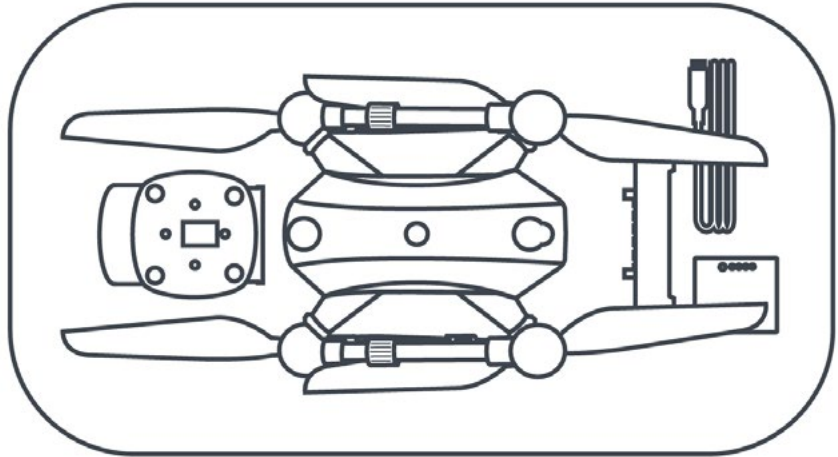
From the floor of Xponential, drone surveying pioneer Microdrones announced an entirely new drone platform built around the demands of geospatial professionals. Vivien Heriard-Dubreuil, CEO of Microdrones explains “We’re excited to announce this new drone platform that prioritizes three key areas: transportability, a simple control interface and ease of use.”

Xponential participants crowded the Microdrones booth for a closer look. “This is EasyOne,” said Frank Darmayan, company CTO, as he pointed to the display. “It fits in a case that’s about two and a half feet long and a foot and a half wide and deep. The mdCockpit mission planning screen is fully integrated into the RC. All sensitive onboard electronics are designed, manufactured and assembled in Germany. It’s just as powerful and capable as our legacy systems but it’s even easier to use.”

EasyOne is an optimized and fully integrated drone system that will provide the lifting power to carry Microdrones LiDAR and photogrammetry surveying equipment. It improves upon the company’s legacy drones in three key areas:

EasyOne is Easier to Transport. EasyOne features a significantly smaller operational form factor with the same payload capacity of the md4-1000 platform. In addition to a smaller operational form factor, the EasyOne packs down even smaller, fitting the drone, remote, charger, two batteries and the payload into a protective storage case that’s small and light enough to bring anywhere.

EasyOne has an Improved RC Controller and mdCockpit Interface. EasyOne will feature an entirely new



controller design that provides an enhanced user interface and safety features.

- Combined device and integrated remote control- the RC and tablet are one integrated control unit.
- FPV available directly on the remote

EasyOne is easy to use.

Heriard-Dubreuil explains, “We want to make it even easier for geospatial professionals to adopt this technology and make it a part of their daily work. We offer complete systems to plan flights, fly data collection in the field, process data and then visualize it for better decision making. You are getting a fully integrated package from one company; it includes the drone, RC, mdCockpit flight planning software, survey LiDAR+ imagery payload, LP360 data processing software, workflow, training, and support. EasyOne is the complete package.”

Designed and assembled in the USA and Germany, Microdrones technology, firmware, software and workflow developed and refined since 2006 is used

with the new airframe to provide:

- New autopilot integrated into a single board- this means less cabling, less weight, more compactness and less risk of connection-related failures and better electromagnetic compatibility.
- Additional sensors to improve safety and awareness
- mdCockpit software ecosystem for mission planning and control directly integrated into the RC
- EasyOne is certified as a “Remote Identification Unmanned Aircraft” following FAA 14 CFR Part 89.
- payload connection/communication quick-connect
- real time terrain follow

According to Legrand, “Responsible sourcing is becoming increasingly important for many of our government customers. For these institutions, we will soon offer NDAA-compliant EasyOne systems that take our responsible sourcing to an even higher level, with RC and sensor sourcing options that are exclusively NDAA compliant. We are in process for Green UAS Certification.”

The new “basic solution” device for aeromodellers launches with a starting price of \$49.



Dronetag, a leader in drone Remote ID technology, announces the launch of its groundbreaking drone device for Remote Identification. It is the most affordable device for all aeromodellers, FPV pilots and hobbyists to comply with new FAA standards. It comes with a poetic name, “Dronetag BS,” which stands for Basic Solution, but it also refers to what hobby pilots most often call the new Remote ID policy.

Dronetag BS offers cutting-edge technology accompanied by a full-scale mobile app for an introductory price of \$49 that applies only on May 22, 2023. The device can be preordered online during the limited 24-hour window at shop.dronetag.cz. We also enable e-mail registration for our watchdog to notify customers when the special price is on.

The number of hobby and FPV pilots

in the US is steadily growing, attacking the 300,000 mark according to AMA; however, only very few of them own aircraft that comply with the FAA’s Remote ID policy coming into effect on September 16, 2023.

As these pilots most often call Remote ID policy “bul**it,” Dronetag, which specializes in devices for professional pilots, unmanned air traffic integrators and drone manufacturers, now launches the most affordable solution, or Basic Solution, to help amateur pilots easily upgrade their drones to fly in compliance with new FAA rules. Dronetag BS is a compact, user-friendly device that anyone can easily install in any drone to eliminate the stress of changing regulatory environment.

The device weighing only 0.105 oz with antennas, is designed to meet the basic Remote ID requirements following the latest aviation regulations by FAA. Dronetag BS provides real-time tracking

and identification, ensuring drone enthusiasts can enjoy their hobby safely and responsibly without fearing breaking any rules. Plus, they get subscription-free access to a Dronetag multi-platform mobile app that allows them to check the airspace zones, plan flights, browse real-time flight data, inspect other airborne drones and stay notified about any hazards around them.

“Dronetag’s mission is to make drone flying accessible, safe, and enjoyable for everyone, and our device Dronetag BS is a major leap forward in that direction,” said Lukas Brchl, CEO of Dronetag. “We are confident that this product will prove to be a game-changer in the industry, making it easier than ever for aeromodellers and FPV pilots to comply with regulations while enjoying their favorite hobby. Maybe the honest name of this device will even make their day; who knows.”

Doodle Labs, ModalAI renew partnership to promote integration of Mesh Rider Radios and VOXL 2 autopilots

Doodle Labs, producer of long-range, industrial-grade wireless networking solutions, and ModalAI, Inc., a manufacturer of autonomous drone and robot technology, announced a renewed partnership to continue to develop and promote the direct integration between Doodle Labs' nano-OEM and mini-OEM Mesh Rider Radios and ModalAI's VOXL® 2 and new VOXL 2 Mini autopilots.

The two companies will showcase their newest products at each other's exhibition hall booths at AUUVSI Xponential in Denver, May 9-11. (Doodle Labs: Booth 4416; ModalAI: Booth 4534) They'll also share a stage at the conference, one of the world's largest events dedicated to uncrewed and robotic technology, for "How Collaboration Sparks Innovation in DIU's Blue UAS Program," a panel discussion featuring Defense Innovation Unit and other Blue UAS ecosystem leaders. The session is Wednesday, May 19 at 3 p.m. MST.

The integration between Doodle Labs' and ModalAI's key drone components empowers drone OEMs to seamlessly build highly intelligent drone systems with a powerful and reliable datalink. Doodle Labs' Helix version of its Mesh Rider Radios and ModalAI's VOXL 2 are both part of the Blue UAS Framework, fully cleared for use by the US government. ModalAI will showcase its new VOXL 2 Mini, an 11g single-board AI autopilot, at both its' and Doodle Labs' booths in Xponential's exhibition hall.

"This integration has been a game-changer for many drone OEMs and has empowered customers to go to market faster with arguably their best drones ever," said Ashish Parikh, VP Business Development for Doodle Labs.

"ModalAI is committed to developing autopilots for smaller, smarter and safer drones. Our radios work in service of the autopilot and other high-end components



with high throughput and a reliable datalink," said Parikh. "We're happy to continue to grow the partnership at Xponential and beyond."

"As a Blue UAS Framework manufacturer, our mission is to advance the U.S. drone industry with advanced, interoperable technology that accelerates the path to autonomy," said Chad Sweet, CEO and Co-Founder of ModalAI. "We are pleased to collaborate with Doodle Labs to make their Mesh Rider Radios available on VOXL 2. Developers who use VOXL 2 and Doodle Labs' Mesh Rider Radios can achieve a quicker time to market and FY20 NDAA Section 848 Compliance."

Doodle Labs Helix Mesh Rider Radio

The development of Doodle Labs' Helix Mesh Rider Radio was sponsored by the Department of Defense's Defense Innovation Unit specifically for the Blue UAS program. It's the only radio to meet all Blue UAS Framework requirements in one radio.

The Helix Mesh Rider Radio provides the tactical capability of up to six frequency bands in one radio, an industry first. The radio is available in several multi-band configurations in federal frequencies, including M1-M6, and L + S. With Helix, end-users can switch frequency bands based on interference, country of operation or any other reason without having to swap out hardware. Helix Smart Radios are fully

NDAA compliant.

Helix Mesh Rider Radios are available in two form-factors for drones; mini-OEM and the even smaller nano-OEM, both low-SWaP designs that enable long range and high throughput. In addition to Blue UAS-compliant Helix versions, both Smart Radios are also available in unlicensed multiband 900MHz + 2.4 GHz versions for commercial drone use.

ModalAI VOXL 2 : VOXL 2 is ModalAI's flagship autopilot, powered by the Qualcomm® Flight RB5 5G platform. At only 16 grams, VOXL 2 boasts more AI computing than any other autopilot. VOXL 2 integrates a PX4 real-time flight controller with an 8-core CPU up to 15 TOPs, seven image sensors, TDK® IMUs and barometer, 5G connectivity and is assembled in the USA. ModalAI's VOXL 2 and new VOXL 2 Mini accelerate the development of commercial drone and robot solutions to realize the benefits of autonomous AI and 5G.

VOXL 2 enables autonomy and communications for indoor and outdoor drones and robots with vision-based SLAM and AI for movement, designed specifically for GPS-denied, autonomous UAVs with obstacle avoidance. With a Doodle Labs Helix Mesh Rider Radio add-on, VOXL 2 enhances mission critical navigation, including beyond visual line-of-sight (BVLOS) to support safer, more reliable flight.

New SOSA-Aligned High-Performance 3U VPX SBC Released

EIZO Rugged Solutions, a provider of ruggedized graphics, displays, and video electronics hardware, has released a new High-Performance Embedded Computing (HPEC) module.

The Condor AGX-IOX, a 3U VPX Single Board Computer (SBC), is designed with the NVIDIA Jetson AGX Orin 64GB System-on-Module (SoM) including an NVIDIA Ampere GPU and an Arm Cortex-A78AE CPU. The module's 64GB LPDDR5 system memory allows up to 205 GB/s memory bandwidth shared between the Arm Cortex CPU, NVIDIA Ampere GPU, and Accelerator Engines.

The Condor AGX-IOX is a powerful CPU + GPU, a single-slot solution designed for I/O-intensive C5ISR applications requiring at-the-edge computing. According to EIZO, the solution provides customers with lower Size, Weight, and Power (SWaP) and increased performance per watt with the Arm-based CPU and the NVIDIA GPU configured on a single module.

For a maximum 60-watt single-slot solution, the Condor AGX-IOX 3U VPX card significantly increases the speed and

efficiency of data processing in multi-sensor systems, allowing for real-time detection and analysis of incoming signals and data.

The Condor AGX-IOX 3U VPX card supports advanced storage and networking capabilities, including 64GB eMMC internal storage and 10GbE (Gigabit Ethernet), and high-speed I/O such as USB 3.2, DisplayPort, and RS-232 Serial. The card also includes dedicated HEVC (H.265)/AVC (H.264) NVENC and NVDEC engines with support for up to 4K-UHD encode resolution. The Condor AGX-IOX features a modular design to support both VITA 46/65 and the Sensor Open System Architecture

(SOSA) technical standards slot profile 14.2.16.

With the release of the new product, EIZO Rugged Solutions is now a member of the NVIDIA Jetson ecosystem, enabling the company to develop even more advanced 3U VPX solutions for embedded edge computing applications.

John Payne, Senior Product Manager at EIZO Rugged Solutions, said: "The Condor AGX-IOX is an exciting new addition to our HPEC product portfolio with the introduction of the NVIDIA Jetson AGX Orin 64GB SoM. The unified memory architecture between the Arm-based CPU cores and the NVIDIA Ampere architecture-based CUDA cores significantly minimizes latency, compared to the traditional CPU interface to GPU resources via a PCIe interface."



LILIUM AND FLIGHTSAFETY INTERNATIONAL SIGN FLIGHT SIMULATOR AND TRAINING AGREEMENT

Lilium N.V. developer of the first all-electric vertical take-off and landing (eVTOL) jet, has agreed to partner with premier professional aviation training company, FlightSafety International (FSI).

The agreement establishes FlightSafety as the exclusive developer and provider for flight training devices for the Lilium Jet. This will include industry-leading, immersive, and mixed-reality simulators for training, as well as an early flight simulator representative of the Lilium Jet cockpit, to be used by Lilium engineers. The simulator, known as the e-Sim (“e” for engineering), will be integrated into Lilium’s ground-based aircraft systems integration laboratory (SiLab), and used by Lilium teams as part of the testing and certification of the revolutionary Lilium Jet. The e-Sim will be an important asset in the Lilium Jet development program, enabling pilot familiarization before the start of flight testing and an appropriate environment for the verification of aircraft requirements. The e-Sim will also support type-certification of the Lilium Jet by providing means of compliance for demonstrating that the aircraft conforms to certification requirements.

Additionally, FSI will develop and deliver training programs, including online training program modules, for the qualification of future Lilium pilots and mechanics worldwide. FSI continues to support the emerging Advance Air Mobility (AAM) market with the latest innovative and cutting-edge technology to support distance learning training curriculums and the latest advances in training device manufacturing.

FSI operates the world’s largest fleet of advanced full-flight simulators at Learning Centers and training locations in the United States, Canada, France,



and the United Kingdom. FSI has manufactured simulators for Airbus, Boeing, Bombardier, Embraer, and many other commercial aircraft manufacturers. FSI’s training devices are approved by the FAA, EASA, and other aviation regulatory authorities worldwide.

Qualification of the first training devices and development of training programs will be supported by the expertise of Lufthansa Aviation Training (LAT).

Sebastien Borel, Chief Commercial Officer, Lilium said: “This partnership represents another critical milestone that will support the Lilium Jet’s progress through certification and commercial

launch. Thanks to FSI’s vast experience and expertise in the field of aircraft simulators, we look forward to enabling all Lilium pilots to get familiar with our aircraft before commercial launch.”

Nate Speiser, EVP Sales and Marketing, FlightSafety International said: “It is our mission to deliver best-in-class pilot training, globally, while working with new partners to bring new, sustainable modes of transport with cost-effective training capabilities. We are excited to be working with leading eVTOL manufacturer Lilium, to advance and deliver training that empowers and prepares pilots for the world of eVTOL flight.”



Drones World Editor Bethireddy Kartikeya in conversation with **Mr. Neel Mehta**, Co-Founder & Director, Asteria Aerospace Limited



Q What was your key objective behind starting Asteria Aerospace?

A When we started Asteria over a decade ago, our main objective was to use our experience and knowledge in the aerospace sector, apply it towards developing a nascent drone industry, and in the process reduce India's foreign dependence in a core engineering field. The defence market was the largest market for drones at that time and hence we set our sights to design, develop, and manufacture high-performance, rugged, and reliable drones for military and paramilitary end users.

Over the years, we have transitioned from being just a drone hardware manufacturing company to a complete drone solutions provider with expertise in drone hardware, software, and analytics. Today, we service multiple government and



Drones are also being used to digitize and inspect critical infrastructure spread across the country, such as telecom towers, oil & gas pipelines, and heavy industry facilities for preventive maintenance, audit, and optimization purposes.



enterprise customers across sectors – defence & homeland security, oil & gas, GIS, critical infrastructure, agriculture - with drone solutions that transform aerial data into actionable insights.

Q Please brief us about the products/services/solutions you provide to your customers and how do they get value out of it?

A Asteria Aerospace is a full-stack drone technology company developing and deploying drone solutions for enterprises from different sectors as well as for government agencies. We design and manufacture multiple drone platforms ranging from 2 kg to 25 kg all-up weight that are easy-to-use, rugged, and performance driven. These drones can be used in several applications, such as security & surveillance, land surveys, agricultural surveys as well as



inspection of critical assets like pipelines, powerlines, and telecom towers. Our drones improve operational efficiency, ensure worker safety, and significantly cut the time between data gathering and decision-making.

Asteria also provides end-to-end Drone-as-a-Service solutions supported by our in-house drone operations cloud platform, SkyDeck. SkyDeck helps in seamlessly managing the planning & execution of drone flights, data processing, visualization, and analytics to provide business insights from drone data. Our solutions provide near real-time AI-based analysis of drone data which can be used to make better and faster decisions and optimize operations.

Q What is your biggest USP that differentiates the company from competitors?

A Asteria is vertically integrated in hardware design & manufacturing, software platform development, and providing drone services at scale. This integration allows us to develop and deploy deeply customized solutions for our customers and provides them with a one-stop partner for all their aerial data needs.

Asteria is also first drone manufacturer in India with 3 DGCA type certified drones – 2 under the small category and 1 under micro category. We have a growing team of more than 300 people and are one of the few companies in India that can manufacture and deliver hundreds of drones per year.

Our focus on customer needs, long term solutions, and our scale differentiates us from competitors.

Q Mention some of the awards, achievements, recognitions, and client's feedback that you feel are notable and valuable for the company?

A Over the years, we have received several awards for our contribution to the drone industry. Recently, we received FICCI's award for Geospatial Excellence in Business Application. This award is testimony to our commitment to solve business problems using our drone expertise. We are also one of the only companies to have multiple drones with DGCA type certification. Type certification makes our drones fully compliant with the safety and quality standards laid down in the Drone Rules, 2021 for operations in the Indian airspace. It demonstrates that our drones have passed the strict quality assurance requirements laid down by the DGCA for designing and manufacturing drones.

Q How have you seen the evolution of the industry? As you said that you have been here from the beginning, how has the growth been?

A The drone industry has seen explosive growth in the last couple of years. However, things were a lot different ten years ago. The use of drones in the civil airspace was banned from 2014 - 2018. Only defence and government users were operating drones at that time and the market was limited. In 2018, DGCA introduced the first regulations for the use of drones

in civil airspace. This opened up opportunities for the use of drones for a variety of applications. However, the industry was heavily overregulated and didn't really take off until 2021 when the liberalized Drone Rules were introduced. This kicked off a period of high growth for the Indian drone industry. Due to attractive government policies, some of the biggest venture capitalists and corporates have shown interest in investing in the drone industry. As per a research report released by Tracxn, the Indian drone industry raised \$39.1 million of equity funding last year, which is more than double the funding compared to 2021. We are hopeful that the government will continue to support the drone industry and come up with progressive additions in the rules to achieve our combined vision of making India a global drone hub by 2030.

Q What are the biggest challenges for drone manufacturing companies in India and what Asteria is doing to overcome these challenges?

A In India, we have many companies manufacturing drones for a variety of applications, but we still have a dearth of component manufacturing companies. Electronic chips, batteries, motors, and other such components used in manufacturing drones are still being imported from outside of India. This is one of the biggest challenges for drone manufacturing companies. Considering the global supply chain constraints and geopolitical climate, we need to ensure that we have a robust

component manufacturing ecosystem in India, which can make components not only for the Indian drone manufacturers but for global manufacturers as well. This can be solved over time by incentivizing local component manufacturers to scale their production, leveraging capabilities in allied industries like EV, and creating drone manufacturing and testing clusters which can encourage entrepreneurship and close partnerships in this space.

The PLI scheme and other such initiatives launched by the government in the last couple of years have had a huge impact on the component manufacturing industry. There has been a significant increase in the number of component manufacturers in India, and it is expected that this number will continue to grow in the future. At our end, we ensure that we support and promote such companies by collaborating with them for component development, testing, and sourcing.

Q What are some of the new and emerging areas of potential growth in the drone industry?

A While drone technology evolved to primarily serve

military forces, today it finds uses in sectors as diverse as agriculture, oil & gas, mining, telecom, and healthcare – to improve operational efficiency, safety, and cost. For example, Kisan drones are being used for effective spraying of pesticides and nutrients over farms, thereby reducing time, improving efficiency, and enhancing safety. Drones with advanced sensors are also being used in digitizing farms for crop health analysis, land usage planning, transparent & quick settlement of insurance claims, and other areas.

Drones are also being used to digitize and inspect critical infrastructure spread across the country, such as telecom towers, oil & gas pipelines, and heavy industry facilities for preventive maintenance, audit, and optimization purposes. One of the innovative use of drones is for the faster transport of critical items such as medicines, vaccines, blood samples, and other healthcare items. In hilly and mountainous areas, drones can cut the transport time of these items by as much as 5-6 times compared to road transport, with the potential to save human lives. Over time, logistics drones carrying cargo and people can be an area of high potential growth.



ARCHER ROLLS OUT 1ST MIDNIGHT AIRCRAFT; PREPARES FOR FLIGHT TEST

Archer Aviation Inc., a leader in electric vertical takeoff and landing (eVTOL) aircraft announced it has now completed the final assembly of its first Midnight aircraft. With final assembly and initial testing complete, last week the aircraft was shipped from Archer's Palo Alto facility to its flight test facility in Salinas, California and reassembled. Archer will now take this aircraft through a series of ground tests leading up to its planned first flight this summer. The Midnight aircraft has recently garnered significant attention from the U.S. Department of Defense given its payload capabilities.

This Midnight aircraft will enable Archer to perform critical "company testing" to accelerate and reduce risk on its certification program with the Federal Aviation Administration ("FAA") in advance of "for credit" certification testing that the company plans to begin early next year with piloted Midnight aircraft. Our strategy with this aircraft is to allow Archer to fly many of the same test points that will be needed during piloted "for credit" flight testing in order to further validate the aircraft before the FAA witnesses and participates in the testing - a customary practice in many aircraft certification programs.

Component manufacturing is already underway for Archer's conforming Midnight aircraft. Archer is targeting the completion of final assembly of its initial conforming Midnight aircraft in Q4 2023 and to begin piloted flight test operations in early 2024.

"Today we announced our exciting progress that the final assembly of our first Midnight aircraft is now complete and it is preparing for its flight test program," said Adam Goldstein, Archer's Founder and CEO. "This aircraft will accelerate and reduce risk on our certification program paving the way for our team to focus on building and



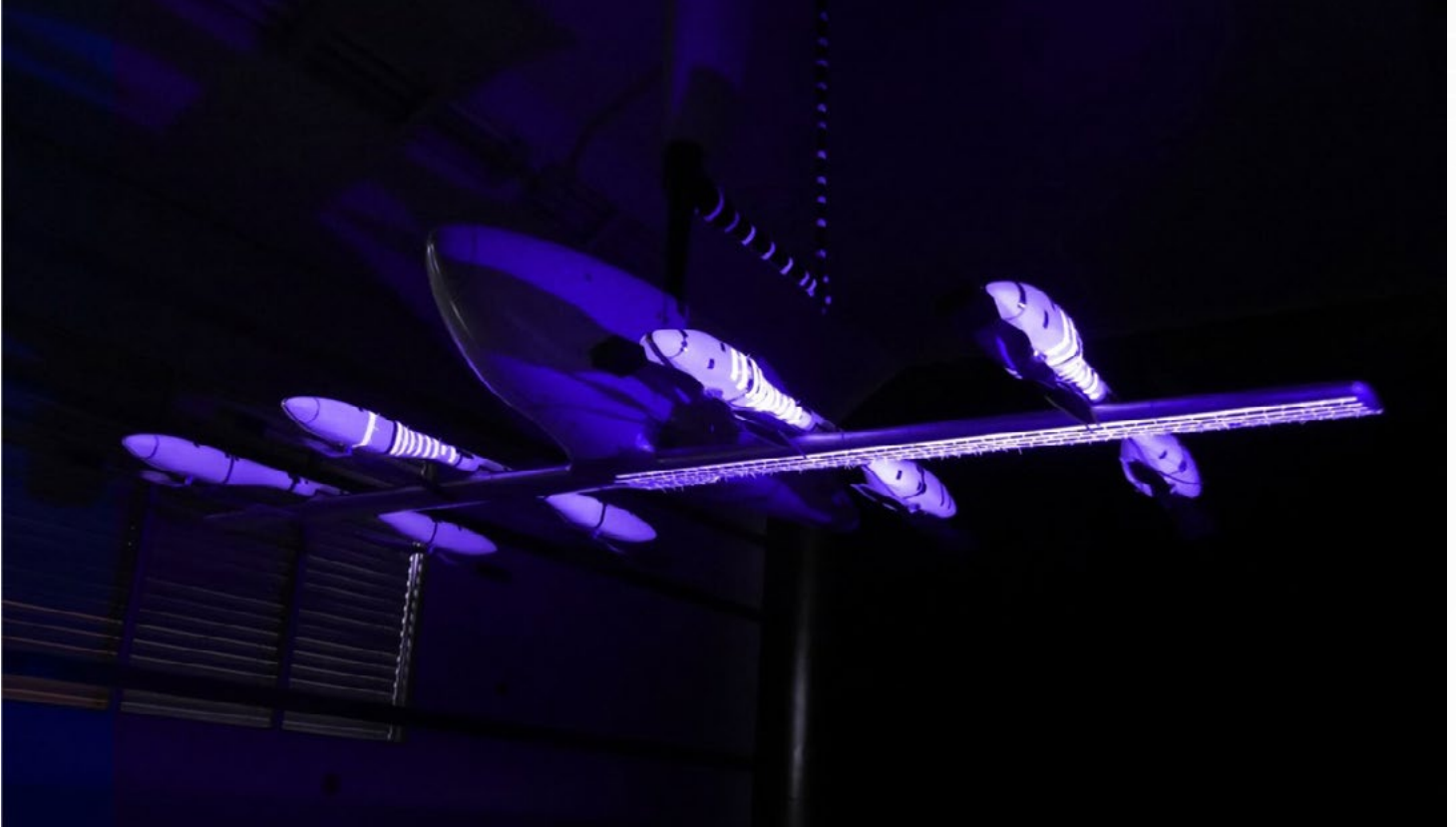
conducting piloted operations with conforming aircraft to support the goal of entering into service in 2025."

Archer's industry-leading team, alongside its key strategic partners, Stellantis and United Airlines, continues to advance its aircraft development and commercial operations with impressive speed and efficiency. The company has also established a significant lead over industry peers on the manufacturing and commercial operations fronts with the build out of its high-volume manufacturing facility in Covington,

Georgia underway and announced key strategic electric air taxi routes in New York and Chicago.

With a range of up to 100 miles, Archer's Midnight aircraft is designed to perform rapid back-to-back flights with minimal charge time in between. Archer's goal is to transform inter-city travel, replacing 60-90 minute commutes by car that can take over an hour in traffic with ~10-20 minute electric air taxi flights that are safe, sustainable, low noise and cost competitive with ground transportation.

EVE AIR MOBILITY COMPLETES EVTOL WIND TUNNEL TESTING



Eve Air Mobility recently completed wind tunnel testing of its electric vertical takeoff and landing (eVTOL) vehicle. The testing, which was conducted at a wind tunnel near Lucerne, Switzerland, utilized a scale model of Eve's eVTOL which is projected to enter service in 2026.

Wind tunnel testing is an important engineering tool used in the development of an aircraft. The testing allows engineers to monitor the flow of air over and around the vehicle and each of its individual parts. It is also used to measure the aerodynamic forces and moments acting on the vehicle, allowing the team to evaluate the vehicle's lift, efficiency, flying qualities and performance.

The main objective of the test was to investigate and validate how components including fuselage, rotors, wing, tail and other surfaces would perform in flight.

Wind tunnel testing provides a unique view of aerodynamic behavior of complex geometry and provides a higher level of validation of design characteristics. The tests are part of an effort to acquire experimental data to validate production solutions, development tools and models which also includes other test articles such as fixed and moving rigs, flying vehicles and other wind tunnel tests.

"The completion of wind tunnel testing is an important engineering milestone as we continue the development of our eVTOL," said Luiz Valentini, chief technology officer at Eve Air Mobility. "The information we obtained during this phase of development has helped us further refine the technical solutions of our eVTOL before committing to production tooling and conforming prototypes. Our goal is to design, produce and certify an aerodynamic and

efficient eVTOL that will be used for a variety of urban air mobility missions."

Eve's engineering team will use the data gathered through wind tunnel testing to continue to develop the eVTOL's control laws leading to optimal performance and passenger comfort.

Eve's eVTOL is 100% electric and has a range of 60 miles (100 kilometers) allowing it to complete a variety of urban air mobility missions. Its human-centered design ensures the safety, accessibility and comfort of passengers, the pilot and the community by minimizing noise. The aircraft features a lift + cruise configuration with dedicated rotors for vertical flight and fixed wings to fly on cruise, with no components required to change position during flight. It will be piloted at launch, but ready for autonomous operations in the future.

VoltAero Signs MoU with the Swiss-based SKY2SHARE Business Mobility Provider



VoltAero's customer base for its Cassio aircraft family has further expanded with a pre-order for 15 of its electric-hybrid airplanes from SKY2SHARE, a Swiss-based aviation company that offers fractional ownership and is focused on radically decreasing the CO2 footprint of its operations.

This commitment begins with the five-seat Cassio 330, while also incorporating the flexibility for SKY2SHARE to incorporate the six-seat Cassio 480 and 12-seat Cassio 600 versions. With this latest agreement, VoltAero has now lined up a total of 218 orders and commitments for its Cassio airplane product line.

"Cassio is perfectly tailored for SKY2SHARE's ambitious goal of providing productive and environmentally conscious mobility services that reduce business aviation's environmental footprint," said Jean Botti, VoltAero's CEO & Chief Technology Officer.

Selim Franko, SKY2SHARE Co-founder and the company's CEO, added: "We are impressed with VoltAero's progress in developing the Cassio aircraft family's "clean sheet" design, which offers the right solution for our economically-viable and socially-responsible services as a truly sustainable alternative to traditional business aviation. We are thrilled that the Cassio family will allow us to radically reduce the environmental impact of our operations."

VoltAero's airframe configuration for Cassio is based on a sleek, aerodynamically-optimized fuselage, a forward fixed canard, and an aft-set wing with twin booms that support a high-set horizontal tail. By integrating VoltAero's patented electric-hybrid propulsion system into the company's purpose-designed airframe, the Cassio aircraft family will deliver an order of magnitude higher performance as compared to the current competition, and provide significantly lower operational costs.

Production Cassio airplanes will be

built in three versions, each sharing a high degree of modularity and commonality. The family will provide a highly capable and reliable product line for charter companies, regional commercial operators and private owners, as well as in utility-category service for cargo, postal delivery, and medical evacuation (Medevac) applications.

First to enter service will be the Cassio 330, with five seats and powered by the 330-kilowatt electric-hybrid propulsion system. VoltAero's follow-on six-seat Cassio 480 will have an electric-hybrid propulsion power of 480 kilowatts, while the Cassio 600 is sized at a 12-seat capacity with electric-hybrid propulsion power of 600 kilowatts.

VoltAero is headquartered at the Aérodrôme de Royan-Médès in southwest France, and its Cassio aircraft are to undergo final assembly in a purpose-built facility at the Rochefort Charente-Maritime Airport in France's Nouvelle-Aquitaine region.

Vertical Expands Presence in Asia-Pacific with VX4 Aircraft Pre-order from Kakao Mobility



Vertical Aerospace a global aerospace and technology company that is pioneering zero-emissions aviation, today announces that South Korean mobility technology company, Kakao Mobility, has pre-ordered up to 50 of Vertical's VX4 aircraft, adding South Korea to Vertical's list of customer launch markets.

Kakao Mobility, the largest Mobility-as-a-Service (MaaS) platform in South Korea with more than 30 million registered users, is the mobility subsidiary of South Korean internet giant, Kakao Corporation. Kakao Mobility runs the country's most popular taxi-hailing app, Kakao T, providing taxi-hailing, designated driver booking, parking space search, and Kakao Navi app providing real-time traffic information services. Vertical and Kakao Mobility will establish a Joint Working Group (JWG) to drive the commercialisation of AAM services in South Korea, including the exploration of network and fleet planning, infrastructure requirements,

regulatory development, and consumer awareness of eVTOL mobility solutions.

South Korea is one of the largest economies in the world and is home to globally leading technology companies. Seoul, as well as other regions including Busan, is expected to have a significant Urban Air Mobility (UAM) market potential. This JWG builds on Vertical's existing consortium partnership with Kakao Mobility, LG Uplus, GS E&C, and the continued engagement with Korea's Ministry of Land, Infrastructure and Transport, for the K-UAM Grand Challenge (K-UAM GC). The agreement with Kakao Mobility marks Vertical's first partnership with a mobility technology company, enabling Vertical to leverage their existing customer base and vehicle network to create a seamless air-to-ground passenger journey and UAM ecosystem in the country.

Stephen Fitzpatrick, Vertical's Founder and CEO, said "We are delighted to be partnering with Kakao Mobility. With its over 30 million

registered users, Kakao Mobility is the go-to choice to 'hail a ride' and with our partnership, we look forward to people across South Korea being able to fly in a VX4 in the years to come. We are thrilled to be working together to make our joint vision a reality."

Alex Ryu, CEO of Kakao Mobility commented, "Kakao Mobility is the leading mobility platform and in an AI-enabled world with needs for faster, eco-friendly means of moving, we understand that UAM will be a game-changer in the near future. We are excited to take part in Vertical Aerospace's mission to launch its VX4 globally and to bring an UAM service to Korean market. We will be expanding our business not only on the ground but to the sky through this partnership. As a consolidated mobility platform, Kakao Mobility will develop the "De Facto Standard" for UAM services. We look forward to collaborating closely to complete the K-UAM Grand Challenge successfully and into commercialization shortly after K-UAM GC."



AeroVironment Introduces VTOL Kit for Puma AE UAS

AeroVironment, Inc. introduced the Puma™ VTOL (vertical take-off and landing) kit, designed for plug-and-play integration into Puma 2 AE and Puma 3 AE small unmanned aircraft systems (SUAS). The optional Puma VTOL kit expands the operational capabilities of the combat-proven Puma system in complex terrain, as neither runway nor large open space are required for launch and recovery of the VTOL-equipped Puma, allowing operators to launch anywhere, anytime.

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“The VTOL kit converts the Puma AE into a highly precise and agile ISR asset where a single operator can effortlessly launch the aircraft from a small space and attain mission-critical information of enemy forces in a timely manner and land on a desired rooftop or other small, targeted areas.”

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Leveraging AeroVironment’s Crystals™ ground control solution, the added VTOL capability now allows a single Puma operator to execute missions and streamline operations through features like one-button launch and recovery.

“The modern battlefield offers varying types of complex terrain features, both natural and manmade, that can pose challenges to small unit operations and their use of unmanned aircraft. Our new Puma VTOL kit provides the operator with a wider range of launch and land capabilities, enhancing the unit’s mission while further safeguarding its personnel during these periods of transitional flight,” said Shane Hastings, AeroVironment’s vice president and product line general manager for small UAS.

Integration of the Puma VTOL kit requires minimal one-time modifications to the aircraft’s airframe by qualified personnel. Once modified, the plug-and-play Puma VTOL kit can be easily added or removed in the field within a couple of minutes, allowing operators to quickly transition between a fixed-wing and VTOL platform to suit varying mission needs with a single aircraft.

Available as an add-on option for new Puma 3 AE system orders and as a retrofit kit for already fielded Puma 2 AE and Puma 3 AE aircraft, both

fielded and new aircraft can take advantage of this VTOL capability. To learn more about the new operational capabilities of Puma AE and Puma VTOL kit, visit www.avinc.com/uas/puma-ae.

Marines receive first MQ-9 Reaper under latest procurement contract



The Marine Corps recently received the first of eight MQ-9 Reapers, which was delivered under a joint contract with the U.S. Air Force. The Navy’s Multi-Mission Tactical Unmanned Air System program team (PMA-266) at Pax River leveraged the U.S. Air Force’s Agile Reaper Enterprise Solution (ARES), an Indefinite Delivery, Indefinite Quantity (IDIQ) type contract, to procure U.S. Air Force MQ-9 Reaper aircraft, associated spares, and support equipment for the Marine Corps.

The Air Force has enabled the Marine Corps to move fast standing up the Medium Altitude Long Endurance portion of the Marine Air Ground Task Force (MAGTF) Uncrewed Expeditionary (MUX) family of systems, a key component of Marine Corps Force Design 2030

“The U.S. Air Force has been a great partner and a major enabler in the Marine Corps’ pursuit to acquire group 5 UAS,” said Lt. Col Leigh Irwin, Marine Corps MQ-9 program director for PMA-266. “Group 5 UAS will give the Marines the ability to conduct ISR [intelligence, surveillance and reconnaissance] and network extensions in support of the MAGTF in support of stand-in forces and the Joint Force.”

Marine Unmanned Aerial Vehicle Squadron (VMU)-1 in Yuma will utilize this aircraft for operational missions overseas, she said.

The MQ-9 Reaper is filling an immediate need for a long-range, long-endurance, land-based Group 5 UAS to conduct ISR and data relay in the Indo-Pacific Command area of responsibility. Currently, the Marine Corps has two operational MQ-9A aircraft to support a wide range of operations such as coastal and border surveillance, weapons tracking, embargo enforcement, humanitarian assistance /disaster relief, peacekeeping and counter-narcotic operations.



VSR700 tested at sea in full operational configuration

Airbus Helicopters and the French Armament General Directorate (DGA) tested the unmanned aerial system (UAS) VSR700 for the first time in an operational configuration from a ship at sea. At the beginning of May, the VSR700 performed 80 fully autonomous take-offs and landings from a civil vessel equipped with a helicopter deck, cruising off the coast of Brittany in the west of France.

“This flight test campaign was an important step for the VSR700 programme as it allowed us to validate the excellent performance of the drone in operational conditions, which were representative of its future missions,” said Nicolas Delmas, Head of VSR700 programme at Airbus Helicopters. “The VSR700 prototype opened its flight envelope in winds above 40 knots, accumulated eight hours of testing in 14 flights, and made successful landings in several different sea states,” he added.

In 2022, the autonomous take-off and landing capabilities of the VSR700 were tested from the same vessel using an optionally piloted vehicle (OPV) based on a modified Guimbal Cabri G2 equipped with the autonomous take-off and landing (ATOL) system developed for the VSR700. This time the test campaign took place with the SDAM demonstrator and fully validated the capabilities of the system as part of the SDAM (Système de Drone Aérien pour la Marine) study that was awarded to Airbus Helicopters and Naval Group in 2017.

Autonomous take-off and landing capabilities are a key asset of the VSR700 and are made possible with the use of the Airbus DeckFinder system. This enables autonomous launch and recovery of unmanned air vehicles (UAVs) with an accuracy of 10-20cm during challenging operations in harsh environmental conditions, independently of GNSS/GPS and regardless of degraded visual conditions.

This new test campaign follows two series of trials that were conducted with the DGA in late 2022 and early 2023 from the Levant Island test center located in the south of France. During these trials, the SDAM prototype demonstrated its ability to operate in a maritime environment. The handling qualities of the aircraft were tested as well as the capabilities of the sensors (a maritime surveillance radar, an electro optical sensor, and an AIS receiver) alongside the mission system developed by Naval Group.

The next development steps will see the second VSR700 prototype perform its maiden flight ahead of flight testing onboard a French Navy FREMM during the second semester of this year.

Kraken Receives \$1.1M of Synthetic Aperture Sonar Orders



Kraken Robotics Inc announces \$1.1 million of purchase orders for our AquaPix® synthetic aperture sonar (SAS). These systems will be integrated to Autonomous Underwater Vehicles (AUVs) for use in mine hunting and security applications. Customer names cannot be disclosed. Delivery is expected in 2023.

Kraken's AquaPix is an off the shelf, configurable SAS that replaces high end sidescan systems at an affordable price, while delivering higher resolution, range, and area coverage rates (ACR). The increased range, resolution, and therefore higher useable ACR of SAS over traditional Side Scan Sonar systems significantly expand the capabilities of naval, scientific, and commercial applications. Kraken's AquaPix is capable of 2 cm x 2 cm Ultra High-Definition SAS imaging at long ranges. AquaPix is uniquely positioned within the industry to bring this capability to the increasingly popular small, man-portable vehicle class. AquaPix is modular and has been integrated and deployed on over 20 different underwater vehicle platforms from shallow water to full ocean depth. Kraken's SAS is modular and versatile, demonstrated by being one of only two companies in the world that has sold and integrated SAS into small, man portable vehicles, towed systems, and deep-water vehicles. This ability to cross several platforms enables military customers to streamline their Post Mission Analysis by having the same sonar resolution and ATR performance across their entire fleet of vehicles and mission requirements.

Navantia, SAES, Perseo to Develop a Line of UUVs

Navantia, SAES, and Perseo have announced during the FEINDEF (defence and security exhibition) their intention to develop a line of unmanned underwater vehicles equipped with state-of-the-art sensors to deploy exploration and surveillance capabilities in increasingly demanding operational theatres. Navantia has launched a roadmap to incorporate a range of solutions based on unmanned vehicles (UXV) into its product catalogue, aiming to cover the full spectrum of missions to be executed in different domains: naval, aerial, and land, where these platforms provide tactical superiority. This roadmap is part of the company's Horizon 5.0, a long-term plan through which Navantia aims to strengthen its systems business as a core activity alongside shipbuilding, intelligent services, and green energies.

In the submarine domain, SAES, a leading company in underwater acoustics and electronics with nearly 35 years of experience in developing technologies in this field, positions itself as one of the main national players to provide tactical and mission capabilities to unmanned vehicles (UXVs) based on its expertise in sonar technology, underwater communications, and operational concepts for various missions. SAES, whose essence and strategy are summarised in its new brand "innovate, develop, and protect", approaches this field from two perspectives: collaborating in their development to make them truly autonomous and using them in conjunction with other proprietary systems to provide submarine defence solutions within the scope of its business lines.

Perseo Techworks, a Spanish company specialising in UXV, numerical simulation, onboard electronics, rapid prototyping, additive manufacturing, IoT, and artificial intelligence, has extensive knowledge and experience in the sector, participating in various European projects and R&D+i at the national level.

SAES and Perseo, together with Abance Ingeniería y Servicios, Arisnova, and Eolos



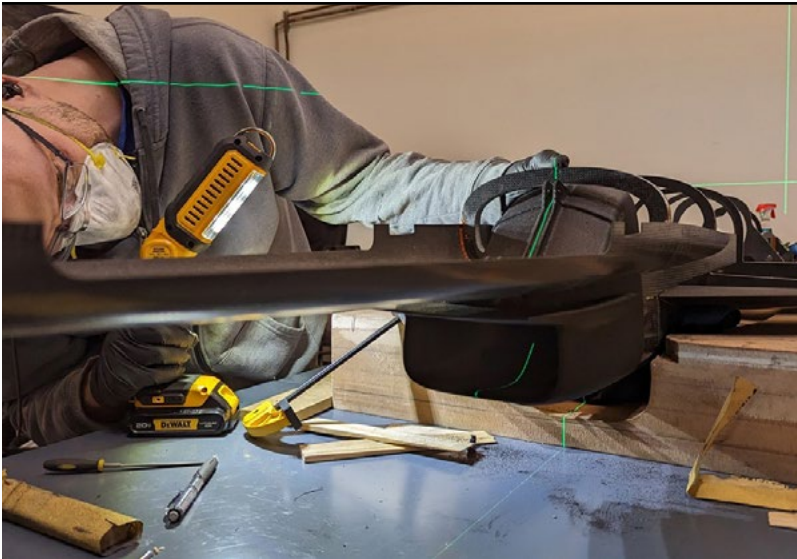
Floating Lidar Solutions, participate in the E-PARK+ project, led by Navantia, which seeks to develop solutions for digitising the operation and maintenance of offshore wind farms using unmanned vehicles alongside other industry companies.

At FEINDEF, a UUV prototype with distinctive features that would allow it to cover a multitude of missions has been exhibited. This first approach is focused on its use in mine countermeasure (MCM) missions, although its possible application as an advanced sensor or loitering munition is being studied based on the same development and with few modifications. Donato Martínez Pérez de Rojas, Technologies and Digital Transformation Director and Systems and Services Director at Navantia, Joaquín López Pagán, President and CEO of SAES, and Sergio Olmos Guío, CEO of Perseo Techworks, have expressed their commitment to collaborate in promoting innovation in the field of autonomous underwater vehicles. "Unmanned vehicles are an asset of growing importance for the armed forces and civilian applications. Navantia already has experience in the development of unmanned surface vessels (USV), and together with SAES and

Perseo, we want to expand our catalogue to those intended for the submarine domain," said Donato Martínez.

According to SAES President Joaquín López Pagán, "at SAES, we are committed to the development of sustainable technologies in the naval sector. Our experience in underwater acoustics and electronics positions us as one of the main players in providing autonomy to unmanned vehicles and collaborating in their development to make them truly autonomous. Moreover, as they do not require human crew members, these vehicles are a safer and more economical option for carrying out defence missions and civilian applications."

"The development of unmanned systems requires specific technologies and working methodologies for competitive developments. Perseo Techworks works on these enabling technologies within a work scheme that allows for rapid iterations, in which simulation, rapid prototyping, and testing and trial capabilities are intertwined to create products with very short development times and adaptable to a constantly changing market," says Sergio Olmos Guío.



Exosonic's EX-3M "Trident" UAS Enters Testing Program

Exosonic announced the successful beginning of a ground and flight test program to validate the capabilities of its EX-3M "Trident" autonomous, open architecture, high-speed, developmental unmanned aerial system (UAS) test aircraft.

Exosonic designed, manufactured, and brought the EX-3M to flight test in only nine months. The team accomplished this by rapidly iterating the aircraft design, diversifying the supply chain, and maintaining the assembly process within Exosonic.

The Trident will serve as a quarter scale testbed to validate the autonomy software that will ultimately be incorporated into Exosonic's full-scale supersonic UAV, the EX-3 "Revenant", the supersonic fifth-generation aerial target UAS that Exosonic is designing under a \$1.250 million Small Business Innovation Research (SBIR) contract with the USAF. In addition to the aerial target role, Exosonic will investigate a modified EX-3 version to serve in the adversary air role as well.

The EX-3M was inducted into a rigorous testing program by completing a series of ground taxi tests at the New Cuyama UAS test range in the California high desert near Santa Barbara. The ground testing is being performed to verify taxi and takeoff characteristics in advance of a series of planned summer 2023 flights which will validate vehicle performance and autonomous capabilities.

"I'm extremely proud of the team for getting the Trident vehicle designed, assembled, and into the test program in only nine months," said Norris Tie, Exosonic's CEO and co-founder. "They worked tirelessly over the past several weeks to reach this point."

Exosonic Chief Technology Officer and co-founder Timothy MacDonald, PhD described the testing as "An excellent beginning to a comprehensive testing program. We were able to put our aircraft through its paces out in the field and gather some great results. The data will now be analyzed, and we'll move to further ground testing and flight testing." As Exosonic completes the flight test program, the company will explore commercial opportunities to leverage the EX-3M as an autonomy testbed or as a research vehicle to demonstrate USAF critical capabilities. Exosonic is currently in discussions with several commercial entities to demonstrate crewed-uncrewed teaming.

MQ-25, H-1 Test Next-gen Satellite Communications



The Marine Corps' UH-1Y helicopter completed an initial flight to test the data transmission of the new Mobile User Objective System (MUOS) Satellite Communications (SATCOM) capability for MQ-25 Stingray April 26 at Pax River. The team at both the Dedicated Unmanned Carrier Aviation (UCA) Development Environment (DUDE) lab at Webster Outlying Field in St. Inigoes, Maryland, and the Communications Systems Integration Laboratory (CSIL) at Pax River transmitted data utilizing unique test equipment to the UH-1Y during flight, proving MUOS connectivity, resilience, and viability using a maneuvering aircraft.

"This type of testing is a way to show how two very different programs can team up and develop capabilities together," said Capt. Daniel Fucito, Unmanned Carrier Aviation (PMA-268) program manager.

MUOS is a communications satellite system that provides global connectivity to military networks. The next generation of this system works much faster and has additional payloads that support new waveform capabilities and compatibility with the legacy UHF satellite communications systems.

"Testing MUOS with H-1 will facilitate the MQ-25 test infrastructure development and ensure MUOS connectivity configuration," said Ray Belcher, MQ-25 Integrated Test Team communications lead. "It also provides an opportunity for the PMA-268 program team to observe MUOS flight characteristics."

The MQ-25 Stingray will be the world's first operational, carrier-based unmanned aircraft that will provide aerial refueling as well as intelligence, surveillance and reconnaissance (ISR) capabilities that will enhance the carrier air wing and carrier strike group.



IAI Awarded \$100M Contract to Provide Airborne SIGINT Solutions to an International Customer

IAI through its defense electronics subsidiary, ELTA Systems, announced that it has been awarded with a contract to provide airborne Signals Intelligence (SIGINT) solutions to an international customer. The contract size including systems delivery and maintenance will surpass \$100 million.

Under the contract, ELTA will provide SIGINT systems and airborne communications suites for installation both on manned and unmanned aircraft. The SIGINT capabilities are designed to cope with the challenges of modern, dense communications and electronic environments, to analyze complex signal formats, and to build a real-time Electronic Order of Battle (EOB) providing time-critical intelligence. These systems will provide the customer with continuous, detailed intelligence on communications and enemy activity over a wide geographic area.

The systems are developed for Intelligence, Communications, and Electronic Warfare (EW) and provides a full array of solutions. Supporting Electromagnetic Dominance – equipping forces with the means to sense, communicate, and navigate effectively using the electromagnetic spectrum, while detecting and denying the enemy’s attempts to operate in this domain. IAI provides systems in the fields of SIGINT – comprising Communications Intelligence (COMINT) and Electronic Intelligence (ELINT), EW systems for self-protection and electronic attack, communications systems including Line-Of-Sight, SATCOM, airborne networks, and tactical wideband communications, and multi-intelligence software for integration and exploitation of sensor data using advanced algorithms and artificial intelligence.

Adi Dulberg, VP and GM of ELTA’s Intelligence, Communications and Electronic Warfare (EW) Division, said, “In the modern battlefield, the goal of achieving Electromagnetic Spectrum Dominance is becoming more and more urgent, especially in light of lessons learned from recent conflicts. With systems installed in hundreds of manned and unmanned platforms around the world, ELTA has proven its depth of expertise and combat-tested experience in airborne SIGINT and EW. We are excited about the opportunity to provide our customer with cutting-edge technology that will allow them to achieve their operational intelligence goals over the coming decades.”

UAVOS and Bayanat Enter Partnership for the Supply of Autonomous Helicopters



UAVOS Inc. has been selected by Bayanat, a leading provider of AI-powered geospatial solutions, to deliver its Unmanned Aircraft System (UAS) for a wide variety of applications including aerial photography and perimeter control. The UAS consists of two UVH 25EL unmanned autonomous helicopters powered by electric motors, a ground control station and various sensor payloads including the multispectral camera, LiDAR, as well as digital and thermal cameras. UAVOS also provides full operational support, including training, and a fundamental review of what the UAS is to be used for.

The autonomous helicopter’s advanced capabilities of long endurance of up to 1.5 hours, along with its camera capabilities, enable the UVH 25EL to carry out accurate mapping within a radius of 67 km. The accurate mapping can successfully take place even in harsh environmental conditions, with winds of 14 m/s during take-off and landing, be it day or night. The UVH 25EL electric helicopter has a practical load weight of 5 kg. These capabilities ensure high performance as well as maximum operational flexibility for applications such as coastal security, search & rescue, and advanced aerial photography missions.

The electric propulsion helicopter is economical, simple to operate, easy to maintain, and needs no fuel storage, making it environmentally friendly and safe. In addition, like other UAVOS platforms, it is adapted to high-altitude flights. The UAS’ autorotation ability is an important safety feature of the UVH 25EL; it provides a type of flight that can be used to descend from heights after an engine failure, while the UAV remains controllable. The helicopter also features a parachute recovery system for maximum aviation safety.

“We are grateful to Bayanat for their confidence in proven systems developed by UAVOS,” said Co-Founder and CEO of UAVOS Aliaksei Stratsilatou. “We are confident that UVH 25EL UAS will meet their requirements offering easy and safe aerial access to challenging areas, a larger surface coverage in a single flight, higher resolution images, efficient, and cost-effective aerial data acquisition”.

Upgraded Gray Eagle Extended Range UAS Featured in Demo



General Atomics Aeronautical Systems, Inc. is supporting a demonstration that began in March and is featuring two U.S. Army-owned Gray Eagle Extended Range (GE-ER) Unmanned Aircraft Systems (UAS). GA-ASI – the developer of the GE-ER platform – was contracted by the Army to integrate and operate an array of new capabilities on the versatile UAS platform as part of an ongoing effort to modernize GE-ER for Multi-Domain Operations (MDO).

This demonstration employs improved capabilities, including long-range sensors – like those traditionally flown on manned platforms – and navigation capabilities, as well as rapid

integration of advanced sensors and payloads tailorable to specific missions. As part of this MDO configuration, the next-generation Synthetic Aperture Radar (SAR) used for the demonstration is the new Eagle-Eye Multi-Mode Radar (MMR) supplied by GA-ASI. The Eagle-Eye radar is an MMR that provides increased performance and couples well with other payloads.

“Eagle-Eye easily detects threats and provides precise location data, which eliminates unknowns for the ground tactical commander on today’s dynamic battlefields,” said GA-ASI President David R. Alexander. “Eagle-Eye and the rest of our MDO upgrades can provide reliable performance,

ease of operation and true overmatch capability for the U.S. Army.”

Many of the MDO capabilities showcased in this demo are featured in the latest Gray Eagle model, the Gray Eagle 25M, which is designed to meet the range and accuracy to Detect, Identify, Locate & Report (DILR) stationary and moving targets. The Gray Eagle 25M’s Open Architecture allows easy implementation of Future Airborne Capability Environment (FACE) standards across control interfaces, avionics, datalinks, and provides the ability to integrate a customizable suite of multi-INT sensors providing the Stand-Off Survivability with Stand-In Capability required for Multi-Domain Operations.

Tyto Robotics Gets \$400,000 Grant to Develop eVTOL Thrust Stand



Granby-based Tyto Robotics received a significant contribution from the Consortium for Research and Innovation in Aerospace in Quebec (CRIAQ) in order to develop test equipment for large propulsion systems. The \$400,000 grant will fund the R&D portion of the project, which they are completing in collaboration with Mejzlik Propellers of Czechia and l'Université de Sherbrooke of Quebec.

The full title of the project, “Research and development of an electrical propulsion system, including a reliable propeller, a thrust stand, and an AI model to analyze performance data, for heavy-duty cargo UAVs or eVTOL”, outlines the scope of the work to be done. Tyto Robotics will design a thrust

stand capable of testing motors for large cargo drones and electric vertical takeoff and landing (eVTOL) vehicles, up to 500 kgf of thrust and 320 kW of power.

Together, Tyto Robotics and Mejzlik Propellers will perform tests on powertrain components used on eVTOL to study how factors like motor Kv, voltage, and propeller finish affect overall performance and reliability.

Concurrently, the team at l'Université of Sherbrooke will design an AI model capable of predicting a propulsion system's performance based on machine learning from data generated by the physical tests.

The goal of the project is to develop test equipment that can be used by manufacturers in the heavy-lift cargo drone and eVTOL industries. One of

the major barriers to the widespread adoption of eVTOL as a mode of transportation is the low flight time of aircraft, caused in part by limited battery capacity and unoptimized propulsion systems.

Another barrier is the uncertainty surrounding reliability, as one of the key factors required to make eVTOL commercially viable is to have reliable powertrain components that prevent mid-air failure.

The test equipment developed during this project will allow eVTOL manufacturers to test their propulsion systems and find the most efficient combination of motors, propellers and electronics. This will get them one step closer to having a commercially available solution in the air.

Marine Band Communications, GPS and Navigation Equipment for USV



Garmin is a leading developer of cutting-edge navigation equipment and communications solutions for USVs (uncrewed surface vessels). For more than 30 years, Garmin has been the worldwide leader in GPS and Navigation technology. Our robust marine-grade products provide enhanced collision avoidance and situational awareness capabilities, ensuring safer unmanned and autonomous missions at sea.

Cortex® Neuro is an advanced communications gateway that provides unmanned vessel operators with remote command and control capabilities from anywhere in the world. The smart solution combines VHF, DSC, GPS, AIS and heading data with intelligent processing to provide proactive collision avoidance, making it an essential tool for safe autonomous operations.

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The smart solution combines VHF, DSC, GPS, AIS and heading data with intelligent processing to provide

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Marine VHF Communication for USV Guidance

Robust marine band VHF and AIS communications for safe operations

Cortex® Neuro enables efficient monitoring and control of the USV, allowing full access to vessel AIS, DSC and VHF data via Ethernet. Operators can check vessel status, receive alerts, and remotely control system settings for squelch, channel selection, transmit power and more.

Our proprietary VHF over IP protocol enables VHF voice communications over Ethernet, allowing a remote operator to communicate with local marine traffic in the vicinity of the USV. The system also broadcasts AIS, providing other vessels with clear situational awareness. GPS position is updated at 10Hz thanks to a high-accuracy multi-constellation GNSS receiver.

Low-SWaP rugged design : Cortex® Neuro has been engineered with a rugged design that ensures longevity and robust performance even under the

most challenging of marine conditions. Rated to IPX7 water ingress protection, the system is enclosed within a heat- and corrosion-resistant thermal polymer housing.

Communications ports and crucial internal components are galvanically isolated to protect both Cortex® Neuro and any connected equipment from electrical shorts and circuit damage in damp and corrosive maritime environments.

The compact Cortex® hub has been designed to draw minimal power from the vessel's electrical system, ensuring that mission endurance and payload performance are impacted as little as possible. The hardware will operate on 12- and 24-volt power supplies, providing plug-and-play compatibility with a wide range of electrical systems on USVs of all sizes.

A comprehensive SDK (software development kit) is provided, simplifying integration with your command and control systems. Garmin also provides comprehensive support, enabling you to work with our expert engineers for integration guidance and answers to your queries.



Infostorm Spatial Solutions provides a wide range of geospatial data acquisition and management services to support development projects and businesses. The company has expertise in drone surveying and mapping, DPR for Water Supply Scheme, Sewerage Network.

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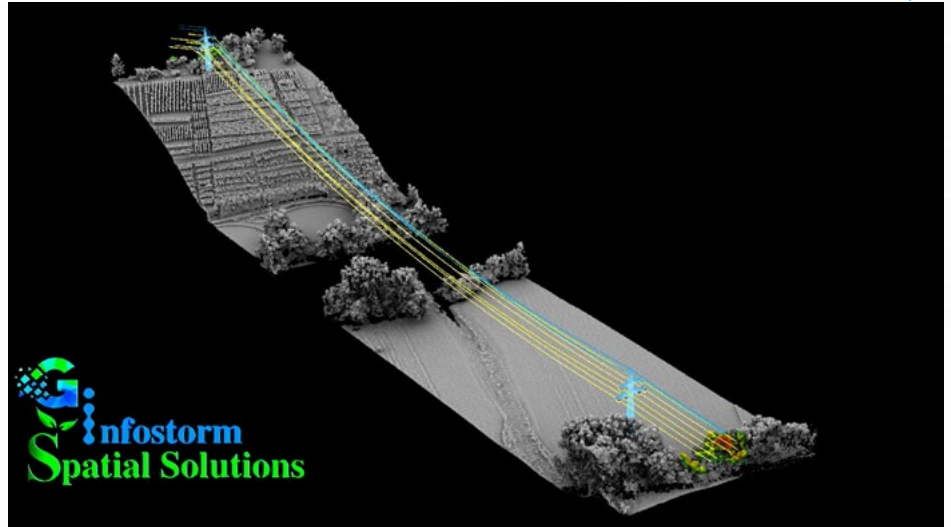
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- Idea Forge–RhinoDrone1nos. (PPK)
- Phantom 4 v2 advance plus-2no.
- MAVIC–Dualenterprisemulti-spectraldrone-1no.
- 4 workstations for Data processing with pix4d softwares.
- Leica Digital Auto Levels
- South DGPS,1Base5rovers
- Spectra DGPS.
- Topcon DGPS for static Survey
- Hydrobox single beam sonar

GROUND PENETRATION RADAR (GPR)

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- 4no. Leica T06 Total Station (5"accuracy)
- 3no.Sanding SRC750 Total Station (2"accuracy).
- Geomax Zoom 20 Pro Total Station (2"accuracy).
- Gramin Etrex10,30



GPSDevices.

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Surveying Staff:

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- Total Station / DGPS Operators (All BEcivil)-8No.
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- Drone video surveys

Mostly we are working and focusing on drone survey for carbon credit project life cycle

management from conservation.

The objective of this proposal is to outline the various stages of the project, including feasibility assessment, estimation/quantification of carbon, project design, implementation, monitoring, validation and verification, and issuance of carbon credits.

ESTIMATION/ QUANTIFICATION OF CARBON:

The second stage of the project will involve estimating and quantifying the carbon emissions from the project area. This will involve using Geoinformatics techniques such as remote sensing and GIS to map the project area, estimate the amount of carbon stored in the vegetation and soil, and calculate the potential carbon emissions from the restoration activities.

Lidar Survey

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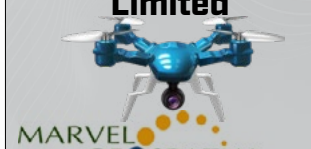
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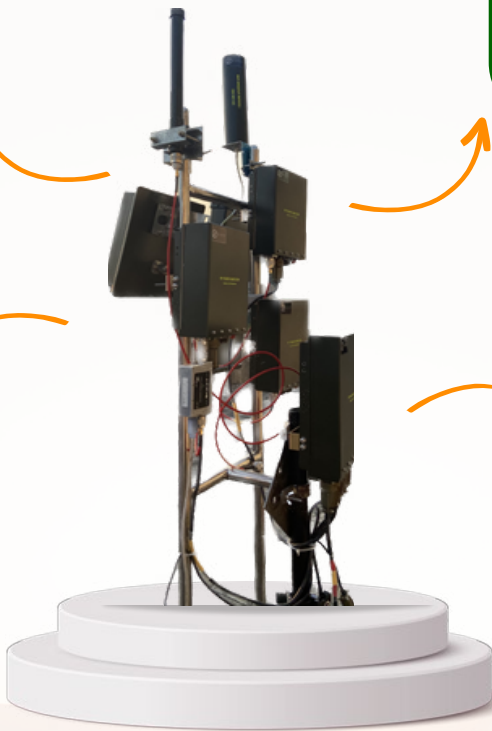


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