Airgility

Highly Maneuverable and Agile Quad UAV

AIRGILITY: CAPABILITY DESCRIPTION

Working at the intersection of aerodynamics, advanced manufacturing, electric propulsion, software and artificial intelligence, Airgility is developing a vertical takeoff and landing (VTOL) autonomous unmanned aerial system (UAS) for the military, public and commercial service sectors. Their modular designs are rapidly prototyped and built and combined with unique lifting body and tilt wing designs. With this combination, Airgility creates vehicles that offer greater range, endurance, speed, maneuverability and ease of launch coupled with a lower price point.

Airgility is developing a highly maneuverable and agile quad UAS with independent thrust vectoring that allows the aircraft to become a gimble, thereby reducing weight and complexity. Its modular plug-and-play design allows for a range of payloads.

- Maneuverability, VTOL, and hover capability of a quad-copter combined with the speed and mission endurance of a fixed-wing lifting body UAV

- Supports enhanced mission capability to protect, monitor and survey

- Modular design and payload capacity allows for multi-mission role and payloads

- Leading edge sensor payload with sight and sound sensors allows detection of threats other UAS may miss

- Security and hardening efforts protect against cyber threats with proprietary cyber-physical test bench

MISSION-RELATED USE CASES

In general, the emerging market for indoor solutions to have the capability to detect, monitor and analyze passive and active threats and hazards at incident scenes in real-time.

- Target objectives and potential solutions include the use of UAS to detect and continuously monitor threat and hazards on the incident scene in real times.

- Assess threat and hazard data to provide appropriate guidance and decision support to responders and commanders and finally provide visualization capability of threat location and proximity to responders.

- Indoor GPS denied, autonomous use cases such as search & rescue, inspections in hazardous areas

- Outdoor autonomous use cases, i.e. search & rescue

- Cross-Domain capability to operate in the air and on the ground

- Multiple security use cases

- CBP ISR

SCITI LABS

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PRODUCT SPECIFICATIONS

Value Metric Differentiation Impact	Value Metric Differentiation Impact	Value Metric Differentiation Impact
Affordability Raise above Only using minimal hardware needed for given mission	Affordability Raise above Only using minimal hardware needed for given mission	Affordability Raise above Only using minimal hardware needed for given mission
Multi-mission Raise above Promote multiple market/DoD use	Multi-mission Raise above Promote multiple market/DoD use	Multi-mission Raise above Promote multiple market/DoD use
Modularity Raise above Only fly hardware specific to the mission & tactics, as needed	Modularity Raise above Only fly hardware specific to the mission & tactics, as needed	Modularity Raise above Only fly hardware specific to the mission & tactics, as needed
Scalability Raise above Functional attributes are not lost with sizing up or down	Scalability Raise above Functional attributes are not lost with sizing up or down	Scalability Raise above Functional attributes are not lost with sizing up or down
Disposability New factor	Disposability New factor	Disposability New factor
Focus on mission success rather than vehicle safety; perform hazardous	Focus on mission success rather than vehicle safety; perform hazardous	Focus on mission success rather than vehicle safety; perform hazardous

Value Metric	Customer ROI
Affordability	Low pricing of aerial asset leads to lower entry point & greater product penetration
Multi-mission	Greater operational breadth of system, single point flight training
Modularity	Adopt new hardware and new technologies, as needed
Scalability	Ease of dimensional scaling without loss enables wider applications, as needed
Disposability	Promote volume fabrication & drive down unit cost; single or low lifecycle use effectively eliminates post flight maintenance costs
3D Printed	Engineering and tactical level modifications can be rolled out in theater; send CAD file(s) for part printing on location; evolve product alongside growth in need

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SMART CITY INTERNET OF THINGS INNOVATION (SCITI) LABS

The Smart City Internet of Things Innovation (SCITI) Labs program is a collaboration between the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) and its industry partners to develop smart technologies for public safety and related missions. The program focuses on adapting commercially viable products to meet mission needs in three areas:

- **Smart Buildings**, including sensors and communications;
- **Unmanned Aerial Systems** for indoor and outdoor search and rescue; and
- **Mobile SmartHubs**, combining communications & sensors to increase situational awareness

Airgility is one of the Unmanned Aerial Systems technology performers for SCITI labs. For more information on Airgility, visit: www.airgility.com.

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