The “Viator Series” UAS

Viator Products

ALL COMPOSITE FLYING WING

The Viator Series

The Viator Series is our new UAS family

Viator is a flying wing and command & control system of our own design

Viator is a second generation UAS, based on our “Inventus Series” airframes, which have been in service with several military, intelligence and civil agencies in the United States, since their development in 2001

UAS Design and Advantages

Summary

- **Proprietary Flying Wing UAV Blended Body Design**

  Incorporates fuselage into the wings to yield low power consumption, larger payloads volumes and weight, slower stall speeds for improved loitering and lower damage rates under all flight conditions

- **Proprietary Advanced Carbon Composite Monocoque Design**

  Facilitates the scaling of the airframe from three feet (3’) up to forty feet (40’) with no changes in design or construction thereby significantly reducing the cost and time of designing and manufacturing larger airframes

- **Proprietary Plug and Play Command & Control System**

  Features our custom designed advanced communications and flight management system that offers exceptional control of all mission flight and recovery events

- **Proprietary Plug and Play Multiple Payload System**

  Accommodates multiple mission requirements on a single flight and facilitates quick in-out changes of payloads between flights of a single mission

UAS Design and Advantages

Proprietary Flying Wing UAV Blended Body Design

Incorporates fuselage into the wings, to yield low power consumption, larger payloads volumes and weight, slower stall speeds for improved loitering, and lower damage rates under all flight conditions

- Efficient air foil
- High reliability and durability of airframe
- Thirty per cent lower fuel consumption
- Large usable volume and larger payload-to-weight ratio
- Lower minimal loitering speeds
- Lower take off and landing speeds

UAS Design and Advantages

Proprietary Advanced Carbon Composite Monocoque Design

Facilitates the scaling of the airframe from three feet (3’) up to forty feet (40’) with no changes in design or construction thereby significantly reducing the cost and time of designing and manufacturing larger airframes

- Unidirectional graphite using proprietary molding process
- Stronger and more rugged platform than conventional aircraft using fiberglass, aluminium or Kevlar
- Good penetration of rough air
- Reduced drag of fuselage and absence of stabilizer
- Compact design and lighter structure
- Simple mechanical interfaces maximizing reliability
- 15G wing load without failure
- Stall speed of 15 mph to permit “helicopter” style loitering in figure 8 or oval pattern

UAS Design and Advantages

Proprietary Plug and Play Command & Control System and Links

Features our custom designed advanced communications and flight management system that offers exceptional control of all mission flight and recovery events

Mission Computer

- Enables integration of multiple sensor types
- Multiplexes all digital sensor data and telemetry through a single link
- Allows on board storage of sensor data
- Enables AIB (Autonomous Intelligent Behavior) of the UAV based on mission parameters and sensor inputs
- Provides routines for loss of GPS signal and loss of communications link

Data Link

- Real-time 2-way communications between ground station and UAV mission computer, autopilot and sensors
- COTS 900 MHZ or 1.3GHZ 1 watt spread spectrum IP radio provides range of 60 miles LOS
- Option for software defined IP radio that is JTRS SCA compliant.
- Radio is available in an unclassified but secure mode, or with Type 1 encryption

Video Link

- NTSC video and audio
- Available in L, S, C or X band
- Up to 5W power output
- Range up to 20+ miles depending on power and antenna selection
- COFDM encrypted digital link available

UAS Design and Advantages

Proprietary Plug and Play Multiple Payload System

Accommodates multiple mission requirements on a single flight and facilitates quick in-out changes of payloads between flights of a single mission

Some of the sensors and cameras available

- High resolution electro-optical pan tilt zoom (PTZ)
- Forward looking infra-red (FLIR) cameras
- Thermal imaging cameras and devices
- Miniature Imaging Synthetic Aperture Radar (Mini-SAR)
- Biological, Chemical and Radiological sensors
- Hazmet detection devices

UAS Civil Applications

Civilian

- Aerial survey & mapping
- Flood & disaster assessment
- Air sampling & early warning: Chemical, biological, radiation
- Weather data collection
- Environmental monitoring
- Railway, pipeline, power line monitoring
- Commercial security at large installations

Police

- Border patrol
- Anti-drug trafficking
- Large crowd venues and crowd control
- Terrorist threat monitoring

Maritime & Wilderness/Parks

- Routine patrol
- Foliage density monitoring
- Search & rescue
- Surveillance of ports, vessels, facilities and events

UAS Military Applications

Military

- Reconnaissance and surveillance
- Damage assessment & early warning
- Submarine spotting
- Mine detection
- Combat support
- Rapid smoke camouflage disbursement

Representative Inventus Missions

Inventus™ UAS/RPA has successfully completed 163 missions with our personnel in attendance, at the following

- U.S. Government and Military Ranges
- Nevada Test Site, Hazmat Spill
- Center, Frenchman Flats, NV
- Nellis Range, NV
- FBI Academy, Quantico, VA
- White Sands Missile Range, NM
- Redstone Arsenal, Huntsville, AL
- Bolling Air Force Base, District of Columbia
- US Army Center for Air Defense, El Paso, TX
- UAV Battle Lab, Creech Air Force Base, NV

Representative Inventus Sales

56 Inventus™ UAS/RPA Systems owned and operated by the following U.S. Government Organizations

- The Office of Defense Nuclear Non-proliferation (DNN)
- Department of Energy (DOE)
- Air Force Research Lab, Wright-Patterson Air Force Base (AFRL, WPAFB)
- Federal Bureau of Investigation (FBI)
- Department of Homeland Security (DHS)
- North American Aerospace Defense Command (NORAD)
- Federal Aviation Administration (FAA)
- National Security Agency (NSA)
- National Aeronautics and Space Administration (NASA)
- U.S. Marine Corps (USMC)
- U.S. Naval Research Laboratory (NRL)
- U.S. Air Force (USAF)
- U.S. Army (USA)
- Joint Theater Air Missile Defense Organization (JTAMDO) (recently re-named Joint Integrated Air)
- Missile Defense Organization (JIAMDO)
- Naval Air Warfare Center Weapons Division, China Lake, CA (NAWCWD)
- 46th Test Wing, Eglin Air Force Base (USAF)

The “Viator Series” UAS

Research, Development and Manufacturing Costs

The Viator Series has the lowest cost of Research, Development and Manufacturing of any large portfolio of UAS’s.

The entire Viator Series of twelve airframes are scaled from a single fixed design.

The airframes are all-composite and each model is constructed from a single mold.

The range of airframes models meets most military, civil and civilian mission and operational requirements without any changes to the design.

The airframes can carry a large number of different ISR payloads without changes to the design.

Most of the same manufacturing assets and human skill sets can be used across the entire range of models.

Shaping of the air foil and use of different material in the composite weave, to satisfy special mission requirements, can be done quickly and cost effectively without changing the design.

All of these factors materially minimize the cost of R&D and manufacturing and contribute to the Viator being the lowest cost per airframe across the line in the market.

The “Viator Series” UAS

ISR Payload, Command & Control and Propulsion Systems Costs

The Viator Series has the lowest overall cost of employable payloads, Command & Control , and Propulsion Systems.

The sensors, cameras and propulsion systems are all modular and can be inserted in the airframe through a number of all purpose hatches or on the top or bottom of the airframe.

The entire Viator Series can accommodate almost all types of off the shelf sensors, cameras, and special payloads in its hatches without changes to the airframe.

The Viator Series can accommodate our own C&C, which has many off the shelf components, or a third party C &C, and without changes to the airframe.

The Viator Series accommodates modular electric, petrol, and heavy oil propeller propulsion systems which can be slotted in the rear of the UAS without any changes to the airframe.

This degree of modularity, flexibility, and use of our own C&C or off the shelf payloads and propulsion systems contribute materially to the overall low cost of the UAS.

The “Viator Series” UAS

Training, Support, Operations, Repair, Maintenance and Transport Costs

The Viator Series delivers the lowest overall operational and support costs.

Training, including flight, command & control, autonomous and LOL operations, ISR operation, missile management, and propulsion systems is the same across Viator’s twelve models, minimizing significantly the time, costs and personnel numbers, while maximizing highly skilled staff in a growing trend toward all-composite UAS’s.

The operational simplicity of the airframe, plug and play payloads, and C&C require fewer in-theatre and out-of-theatre operations and support staff, contributing to lower costs for both.

The blended flying wing structure dramatically minimizes damage to normal fuselage, wings and tail structures of typical airframes. The all-composite construction offers an exceptionally strong airframe with minimal damage characteristics. Together, the all composite and blended wing construction contributes to very low repair and maintenance costs.

The Advanced Carbon Composite Monocoque, whereby the outer skin is the actual airframe creates an exceptionally large internal volume, accommodating greater payloads and fuel capacity, in a very compact airframe. As importantly, the compact airframe can be transported to theatre less expensively.

FURTHER INFORMATION

More detailed technical and commercial information refer to the following documents

- **UAS IP Technical Presentation**
- **Detailed Specifications Viator**
- **Introducing Viator Series UAS**