The APID 60 VTOL UAV System

Vehicle Description

The APID 60 is a small unmanned helicopter capable of starting, landing and flying autonomously, without people on the ground providing real time support for flight control or navigation. The APID 60 helicopter can, when equipped with payload sensors and connected to a Ground Control Station, perform different tasks over land and sea such as aerial photography, border control, search and surveillance.

The helicopter is a fully autonomous multipurpose Vertical Take-Off and Landing Unmanned Aerial Vehicle (VTOL UAV). The vehicle has on-board systems for navigation and stabilization. It can, when connected to a Ground Control Station (GCS), carry out autonomous mission management. The APID 60 system consists of three different components: the APID 60 UAV, a Ground Control Station and an optional Payload System.

The helicopter is designed to carry a wide range of payload equipment such as: stabilized cameras, IR sensors, laser scanners, antennas and other equipment. The GCS is the work station for the vehicle operator who controls the vehicle and for the operator who controls the payload. Information and data in the GCS can be presented and logged to fit customer needs.

The APID 60 system can be used for intelligence surveillance and reconnaissance, in hostile environments, in bad sight conditions or wherever and whenever it for different reasons might be undesirable to send humans. The APID 60 system is easy to use, safe and cost efficient.

The APID 60 helicopter offers highly accurate positioning when hovering and accurate self-navigation between pre-programmed waypoints, which can be altered during flight via a user-friendly graphical interface. The APID 60 can also be operated semi-manually: in this mode the vehicle operator navigates the vehicle with a joystick. In all operating modes the Flight Control System provides automatic attitude stabilization and keeps the vehicle within safe operating limits.
The APID 60 system requires a minimum of operator training. It is exceptionally mobile without needs for special launch and recovery equipment and it can easily be transported in a hatched trailer or a hatchback/pick-up vehicle.

The helicopter is developed and tested in both sub-arctic and desert environments. Modular design of both the mechanical and the electronic subsystems gives outstanding flexibility and adaptability to specific customer needs.

Applications
The APID 60 VTOL UAV system is suitable for a large number of applications such as:

- Surveillance
- Target acquisition
- Mine detection
- Ground troop escort
- Hostile area surveillance
- Electronic warfare
- Anti terrorism operations
- Patrol
- Border and coast surveillance
- Communications relay
- Payload delivery
- Search Missions

Propulsion
Water-cooled, two-cylinder, two-stroke fuel injected engine. Power train: Drive shaft, drive belt and main gearbox. Bell-Hiller main rotor system with stabilizer bar and paddles.

Ground Control System
Graphical user interface and optional customized Payload Control System. Both systems are normally housed in the transport vehicle but can be operated at any desired location. Full autonomy permits total radio silence during mission operations.

Payload
Large under-fuselage mounting area for standard gyro-stabilized sensors or other customer-specified payloads. Available electrical power for payloads: 700 W.

Customers
The APID 60 system has been deployed in both military and civilian applications.

Specifications

**GENERAL APPLICATIONS**
Surveillance, reconnaissance, survey, aerial photography, mapping (2D and 3D), electronic warfare, target identification/designation, search and rescue, communications relay, power/pipeline survey, border/police control, riot control, environmental monitoring, radiation, chemical and biological hazard monitoring etc.

**FUSELAGE**
- Structural material: Carbon fiber, titanium and aluminum
- Total length incl. rotor disc: 4.0 m
- Height: 3.2 m (exc. rotor disc)
- Width: 0.95 m
- Rotor diameter: 3.3 m
- Empty weight: 105 kg
- MTOW: 160 kg
- Payload and fuel: Max 55 kg

**POWER PLANT**
- Power rating: 55 hp (41 KW)
- Fuel type: Gasoline
- Type: 2-cylinder, 2-stroke water-cooled, fuel injection, electric starter
- Fuel consumption: 10 l/h (at cruise conditions), 20 l/h (hovering or max speed with MTOW)
- Fuel capacity: 60 l

**PERFORMANCE**
- Max speed tested: 110 km/h
- Endurance: 3-6 h
- Service ceiling: ASL 3000 m
- Cruise speed: 90 km/h

**AVIONICS SYSTEM**
Gyros
Accelerometers
GPS
Compass
IR altitude meter
Barometric altitude
Guidance/tracking: Autonomous stabilization and waypoint navigation
Electrical power: 700 W available for payload

The specifications are subject to change without prior notice.

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