Future Systems: Small Unmanned Aerial Vehicles

Eric Newton

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Overview

- History of UAVs
- Small Unmanned Aerial Vehicles(SUAVs)
- Honeywell's Micro-Air Vehicle(MAV)
  - History
  - Current Applications
  - Future Uses

History of UAVs

- Converted Drones
  - AQM-34 series (1960s)
  - F-4 Drones (early 1990s)
    - Honeywell ABQ
- Predator Systems
  - Predator A
  - Predator B

SUAVs

- Fixed Wing Systems
  - Raven
  - Shadow
  - Warrior

SUAVs

- Rotary Wing Systems (VTOL)
  - gMAV(T-HAWK)
  - Class I

Honeywell's MAV

- Defense Advanced Research Projects Agency(DARPA) concept
- Afghanistan/Iraq War
  - Joint Urgency Operational Needs Statement(JUONS)
- Honeywell Albuquerque awarded contract

TMAV

- Rapid Prototyping used
- Proving of possible system
- Limited capabilities
  - 20 minute endurance
  - Fixed camera system
  - Susceptible to winds

gMAV

- System Overview
  - Ducted, rotary wing
  - 2 stroke, 2 cylinder engine
  - Fuel capacity of 2.2lbs(1/3 gallon)
  - 40 minute flight duration
  - Max ceiling of 10,000 ft(1/2 fuel load)

gMAV

- System Overview
  - Backpackable or mounted
  - Carbureted or ECU fuel delivery
  - Pull start engine
  - Remote launch capable

gMAV

- System Overview
  - Panasonic Toughbook interface
    - Touchscreen
    - Common Controller
  - Military spec GPS system
    - Ground Data Terminal
    - Payload pod
  - Autonomous or manual flight
    - NAV solution uses GPS
  - Line of Sight communications
    - 10 km range

Current Applications

- Surveillance(gMAV)
  - 25th Infantry Division/PAANG
- Explosive Ordinance Disposal(T-HAWK)
  - NAVY SEALS/UK Special Ops

Current Development

- Continued Defense contracting
  - Army systems
- Commercial MAV(cMAV)
  - Miami-Dade Police
  - FAA certification

Commercial Applications

- Police/Border Patrol
- Inspections
- Forest Service Surveillance
- Air Sampling
  - Re-engineer pod structure
  - Overcome weight issues with sampling system

Future of Commercial MAV

- Cost/Price reduction
- Weight reduction
  - Cast molding vs. Injection molding
- Develop modular systems
  - Higher speed processing
  - Radio frequency interference
  - Air Sampling system

Class I UAV

- First Prototype Airframe(4/29/09)
- Software Development continues
- Projected First Flight
  - Nov/Dec 2009
- Organic battlefield

Class I UAV

- Non-packable
- Turbo-prop Engine
- Larger payload
- Possible configuration changes based on need

Summary

- Military future
- Commercial future
- Future development