

Unmanned Aerial Systems

Eric Newton

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Overview

- Classes of UAVs
- Large UAVs
- Small Unmanned Aerial Vehicles(SUAVs)
- Honeywell's Micro-Air Vehicle(MAV)
 - History
 - Current Applications
 - Fukushima NPP application

Classifications of UAVs

- Large UAVs
 - Long flight time
 - Recon and weaponized operational uses
 - Remotely flown from around the world
 - Fixed wing aircraft
- Examples
 - Predator systems
 - Reaper systems
 - Global Hawk systems



Classifications of UAVs

- Small UAVs
 - shorter flight time
 - Recon and weaponized operational uses
 - Often flown as in line-of-sight applications
 - Fixed wing and rotary wing aircraft
- Examples
 - Raven systems
 - Shadow systems
 - T-Hawk systems



Large UAVs

- Predator Systems
 - Predator A & B
 - Speeds:
 - Max: 135 mph
 - Stall: 62 mph
 - Max payload: 1120 lbs
 - Endurance: 24 hours
- Reaper System



Large UAVs

- Reaper System
 - Based on Predator - B drone
 - Speeds:
 - Max: 300 mph
 - Stall: 100 mph
 - Max payload: 3000 lbs
 - Endurance: 24+ hours



Large UAVs

- Global Hawk System
 - LM inspired by U-2
 - Strictly recon operations
 - Speeds:
 - Max: 500 mph
 - Stall: 150 mph
 - Max payload: 2k-9k lbs
 - Endurance: 36 hours



SUAVs

- Fixed Wing Systems
 - Raven
 - Shadow
 - Warrior



AeroEnvironment - Raven

- Raven system
 - Wingspan: 55 inches
 - Speeds:
 - Max: 28 mph
 - Stall: 10 mph
 - Max payload: unknown
 - Endurance: 60-90 minutes
 - Range: 6 miles
 - Limitations



AAI - Shadow

- Shadow
 - Wingspan: 14 feet
 - Speeds:
 - Max: 135 mph
 - Stall: 60 mph
 - Max payload: 150 lbs
 - Endurance: 6 hours
 - Range: 68 mi
 - Limitations



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

gMAV/T-Hawk

- System Overview
 - Ducted, rotary wing
 - 2 stroke, 2 cylinder engine
 - Fuel capacity of 2.2lbs(1/3 gallon)
 - 40 minute flight duration
 - Hover and stare capability
 - Backpackable or mounted
 - Remote launch capable

gMAV/T-Hawk

- Capabilities
 - Wingspan: 18 inches
 - Speeds:
 - Max: 45 mph
 - Stall: n/a
 - Max payload: 0-2 lbs
 - Endurance: 40 minutes
 - Range: 6.3 mi
 - Limitations



Current Applications

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



New Development

- New payloads
 - Cameras
 - Additional sensors
- Higher efficiency
 - Fuel delivery
 - Engine endurance



New Development



New Development



Class I UAV

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

Class I UAV - Update

- First flight successful 4/1/2011
- Rotary engine
- Noise reduction
- Future uncertain

T-Hawk in Japan

- Systems sent and utilized
- Recon of Fukushima reactor
- Featured on various media outlets around the world including, CNN, London Daily News, Wall Street Journal, and many more

T-Hawk in Japan



T-Hawk in Japan



T-Hawk in Japan

