ASTM International Committee F38 Unmanned Aircraft Systems

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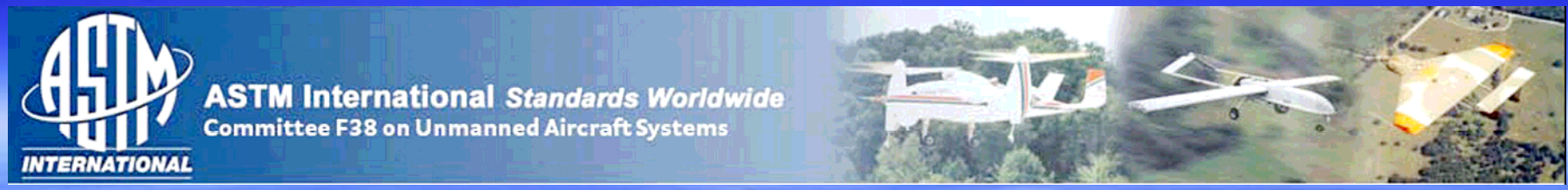
ASTM International Committee F38 on Unmanned Aircraft Systems Mission Statement.

The mission of Committee F38 is to produce cost-effective consensus standards that, when applied, will enhance the safe design, manufacture, maintenance, and operation of unmanned aircraft systems (UAS). This will be accomplished In the following steps:

1. Define terms and scope of UAS standards
2. Adopt current, safe practices and guidance as formal UAS standards
3. Develop additional UAS standards as needed
4. Maintain currency and relevancy of standards

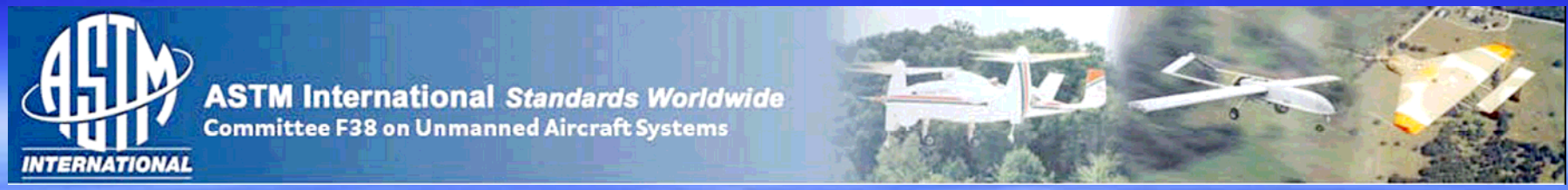


F38 Committee on Unmanned Aircraft Systems Scope

The Scope of the Committee shall be the development of standards and guidance materials for unmanned aircraft systems. The work of this Committee will be coordinated with other ASTM Committees and organizations having mutual interest.

The focus of F38 shall be the development of technical publications Including (but not limited to):

1. Minimum safety, performance, and flight proficiency requirements
2. Quality Assurance
3. Production acceptance tests and procedures
4. A baseline plan for continued airworthiness systems



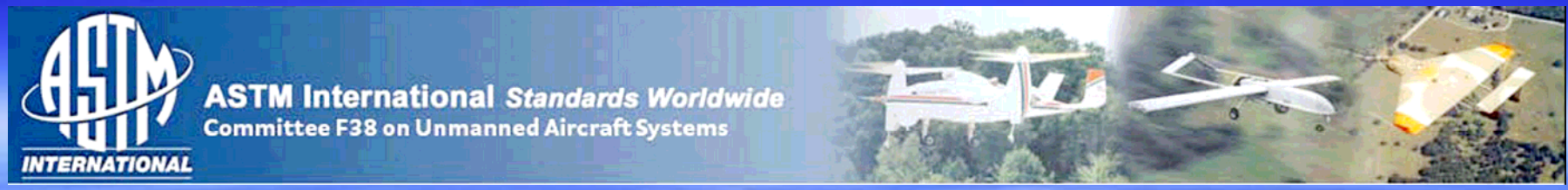
ASTM F38 Overview:

- Airworthiness Standards
  - Focus: Safe design, construction, test, modification, and inspection of individual components, aircraft, or system; hardware oriented.
- Operations Standards
  - Focus: Safe employment of the system within the aviation environment among other aircraft and systems; procedure/performance oriented.
- Qualification Standards
  - Focus: Safe practices by the individuals responsible for employing the systems; procedure oriented.

ASTM International *Standards Worldwide*
Committee F38 on Unmanned Aircraft Systems

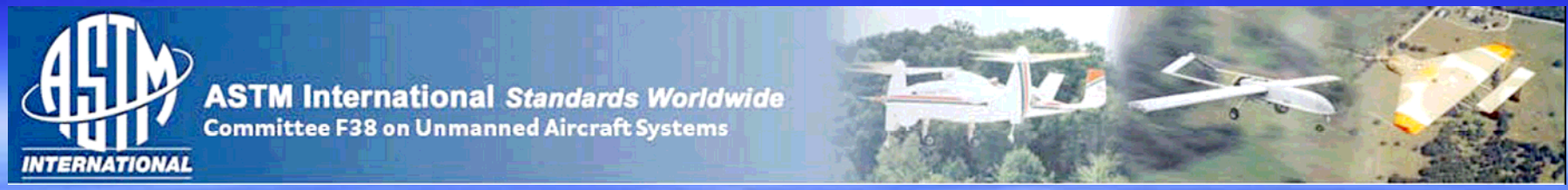
- Airworthiness Stds.
  - Materials
  - Structures
  - Landing gear
  - Launch Devices
  - Recovery Devices
  - Maintenance
  - Environmental
  - General

- F38.01 Airworthiness
  - Approved Standards
    - F2411-04 Std. for Design & Performance of Airborne Sense-and-Avoid System
    - F2505-06 Std. Practice for Application of FAA FAR 21 Requirements for UAS (April, 2006)
    - F2501-06 Recommended Practices for UAS Airworthiness



- F38.01 Airworthiness
  - Drafts in Progress (pl. www.astm.org/uav.htm for listing)
    - WK5673 Std. Guide for Mini-UAS Airworthiness
    - WK6741 Std. for Design & Performance of UAS Data Link Sys.
    - WK7066 Quality Assurance in Manufacture of UAS
    - WK9560 Std. Practice for Design & Manufacture of Turbine Engines for UAS
    - WK9561 Std. Practice for Design & Manufacture of Compression Ignition Engines for UAS.

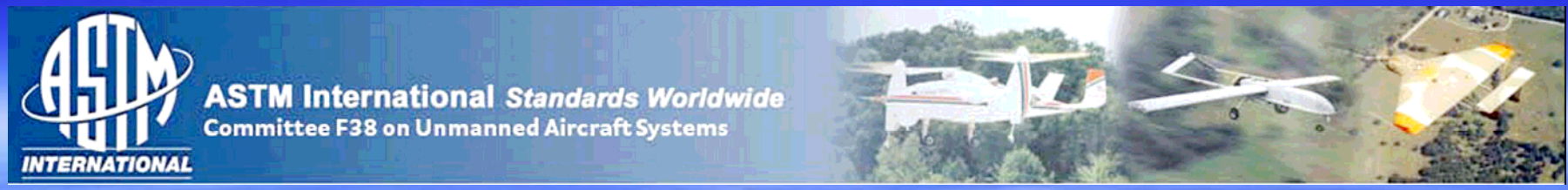
- Operations Stds.
  - General
    - Terminology
    - Symbology
  - Flight
    - VFR
    - IFR
    - Payloads
  - Ground
    - Taxi
    - Takeoff
    - Landings



- F38.02 on Flight Operations
  - Approved Standards
    - F2395-05 Std. Terminology for UAS
  - Drafts in Progress
    - WK7067 Continued Operational Safety Monitoring of Light UAS
    - WK 10505 Std. Practice for UAS liability and flight insurance application
    - WK 10504 Std. Practice for UAS visual range operations

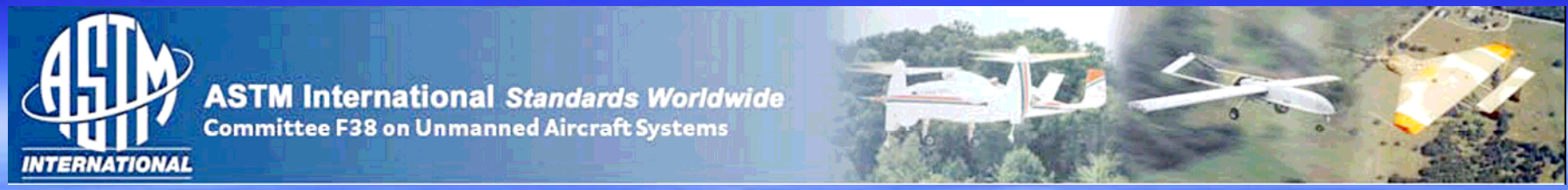
ASTM International *Standards Worldwide*
Committee F38 on Unmanned Aircraft Systems

- Qualification Stds.
  - Crew
    - Pilots
    - Non-Pilots
    - Schools
    - Human Factors
  - Maintainers
    - A&P Mechanics
    - Schools
    - General
  - Operations
    - Commercial

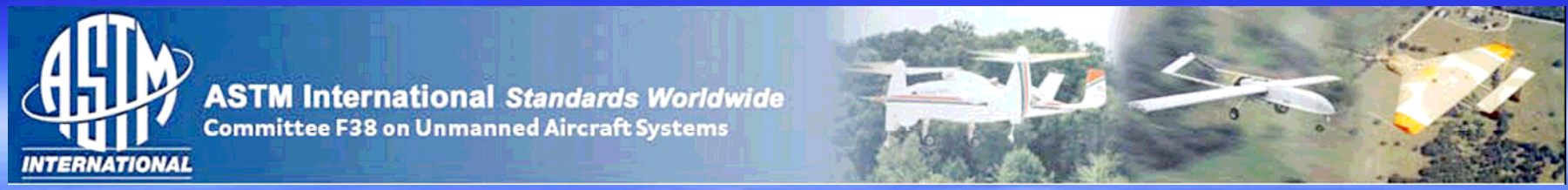


- F38.03 Operator Qualifications
  - Drafts in Progress:
    - WK5423 Certificates & Ratings issued for UAV pilots and operators
    - WK7044 ASTM F38.03 Operator Survey
      - Information collection initiative under way
    - WK8962 Std. Practice for Remote Control Pilots operating within Visual Range
    - WKxxxx Conversion of FAA training standards for UAVs
      - Task group concept being sketched

- Standards yet to be developed:
  - Catapults (pneumatic, hydraulic, bungee)
  - Arresting Gear (wire, net, halyard)
  - C2 and Data Link Security (advertent, inadvertent, recovery)
  - Weapon arming and safeing
  - Photovoltaic cells and fuel cells
  - UA accommodation at alternate airfields



- Conclusion
  - Majority of UA-relevant topics are covered in existing standards.
  - Much of the documentation gap for ‘airworthiness’ is now covered in F2501, incorporating over 300 stds.
  - F38 will focus on addressing the gaps identified and finding any gaps in the future.
    - 3 approved standards to date
    - 20 drafts in the workflow; 6 near completion
    - Standard development times averaging 9 months for currently approved standards.



QUESTIONS?

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