Engine/APU Halon Replacement
Industry Consortium –
Halon Alternatives for
Aircraft Propulsion Systems
(HAAPS)

May 2017
INTERNATIONAL AIRCRAFT SYSTEMS FIRE PROTECTION WORKING GROUP MEETING
Cologne, Germany

By
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In Review…Industry is leading a broad stakeholder approach

The consortium will . . .

• Define common non-halon fire extinguishing solution(s) for use in engine/APU fire zones that...
  • is compliant to basic industry and regulatory requirements
  • meets multiple OEM (airframe, engine, APU, nacelle, etc.) requirements
  • meets multiple governmental agency regulatory requirements;
  • provides a viable business solution for Consortium partners; and
  • is production-ready

• Engage...
  • Primary Stakeholders = Airframer OEMs
  • Members = Firex Agents/System Suppliers, Airlines, engine companies, nacelle suppliers, airworthiness authorities, etc.
  • A focal point, facilitator & fiscal/contracting “Managing Entity” (ME)

Ohio Aerospace Institute (OAI) Selected 1 Oct. 2014 as ME

• Services Agreement signature initiated activities to form the Halon Alternatives for Aircraft Propulsion Systems (HAAPS) consortium
• Signatories: OAI and founding OEM Airframers (Airbus SAS, The Boeing Company, Bombardier Inc., Embraer S.A., Textron Inc.)
In Review…Executing to a Plan

- Phase I – initial engagement, confirm interest, launch consortium formation activities, engage ME, business & working together agreements
- Phase II – develop technical statement of work (requirements, performance validation, down selection criteria, certification path, suppliers requests for proposal, etc.)
- Phase III – execute activities required to produce the solution(s)

**Consortium Proposal to Industry**
IASFPWG Meeting, Cologne, Germany; (HARC) sponsored Aviation Stakeholder’s Meeting Chicago, Illinois, U.S.A.

**Phase I**
- initial engagement, confirm interest, launch consortium formation activities, engage ME, business & working together agreements

**Phase II**
- develop technical statement of work (requirements, performance validation, down selection criteria, certification path, suppliers requests for proposal, etc.)

**Phase III**
- execute activities required to produce the solution(s)

**Consortium Proposal Updates**
IASFPWG Meetings, Bremen, Germany; Atlantic City, NJ; Dresden May 2015; Atlantic City, October 2015; Toulouse, May 2016; Cologne May 2017

**Est 2020**
Phase I Status

• HAAPS Joint Collaboration Agreement (JCA) in Approval Signature Cycle at OAI and Founding OEM Airframers
  • Primarily a working together agreement between air framers and OAI:
    • Administration and governance rules
    • Proprietary data sharing & protection
    • Intellectual Property protection & ownership
    • Member rights, benefits, integration
    • Cost & resource sharing
    • Etc.

• JCA Approval Enables Next Steps – Phase II Initiation
  • Formal creation of Technical and Non-Technical Task Teams
Phase II Overview

• Builds Upon Previous & Ongoing Technical Activities
  • IASFPWG, CCHWRG, NIST, FAA ARC
  • Halon replacement certification test challenges lessons learned
  • Advance engagement with airworthiness authorities to develop certification paths

• What’s Different or New?
  • Single formal working together agreement between signatory airframers and other TBD signatory stakeholders
  • Sharing of knowledge (data, lessons learned, etc.) and resources
  • Joint development of information that will support on-airplane implementation

• Two Task Teams to be Created
  • Technical & Non-Technical
  • Technical Task Team will synergize with past & ongoing CCHRWG activities where applicable
Phase II - Task Team Activities

• Technical Task Team
  • Define Workscope, Operating Rules, Documentation Requirements, & Timeline
  • Define High Level Solution(s) Strategy
  • Define Regulatory Requirements
    • Compile applicable airworthiness and environmental requirements
  • Define Design Requirements
  • Define Draft Certification Path (Airworthiness)

• Non-Technical Task Team
  • Define Workscope, Operating Rules, Documentation Requirements, & Timeline
  • Develop Deliverables (Assist from Technical Task Team)
    • Development of Industry and Advisor Member agreements
    • Engagement terms & conditions, working together agreements, development of RFI/RFP content
Contacts, Announcements & History

• Ohio Aerospace Institute (OAI) http://www.oai.org/
  • Carol Cash, HAAPS Project Manager CarolCash@oai.org, Phone: 440-962-3073

• OAI’s HAAPS Press Release

• ICCAIA Support of HAAPS Consortium

• IASFPWG Meeting, Cologne, Germany, May 22-23, 2013 – Consortium Proposal
  • https://www.fire.tc.faa.gov/pdf/systems/May13Meeting/BennettMacias-0513-ICInterestEngineAPU.pdf

• Halon Alternatives Research Corporation (HARC) sponsored Aviation Stakeholder’s Meeting

• 2013 ICAO Assembly recognized consortium commitment, Resolution 31/1: Halon replacement (link)
Thank you!