HEICO

Aftermarket Opportunities Challenges (and Perceptions)

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Barriers to PMA Usage

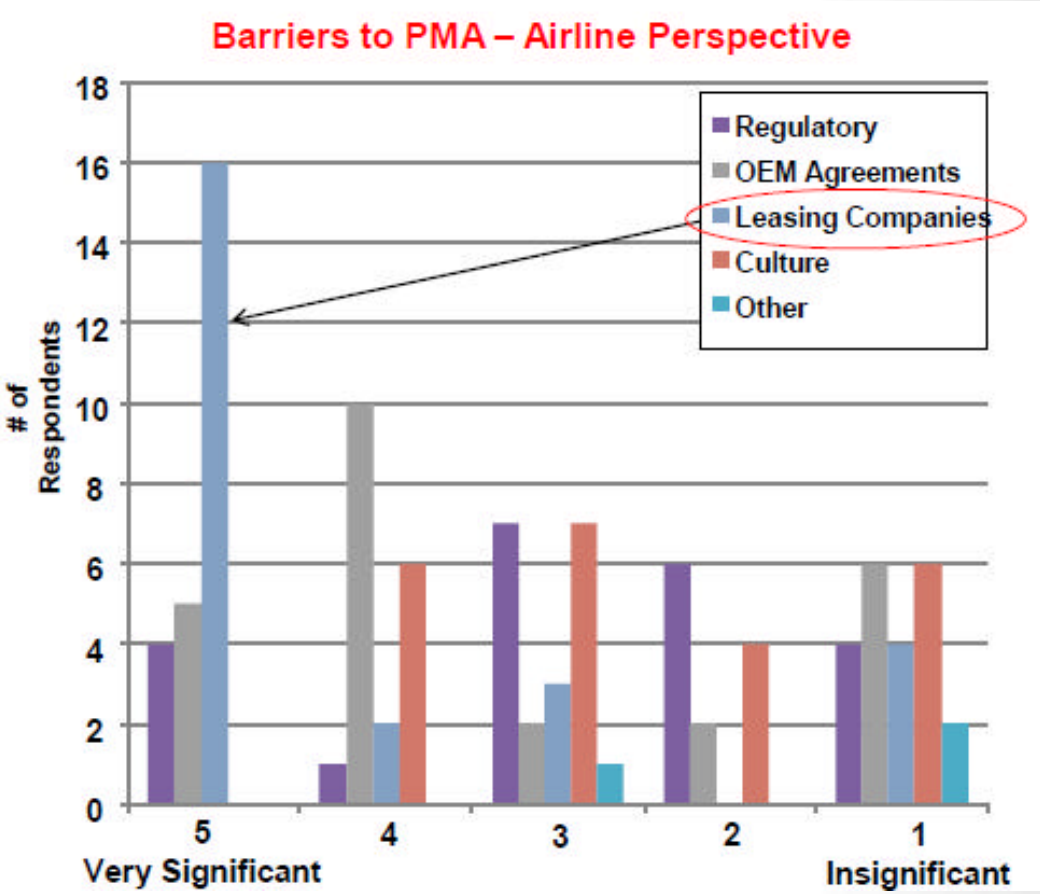
Lessor non-acceptance?
- •How strong is it?
- •Real? Perceived?
- •Self- fulfilling?

Remarketability
- •Regulatory Acceptance
- •Transferability
- •Airline Acceptance

Residual / Asset Value?
Financing Restrictions?

System Effects?

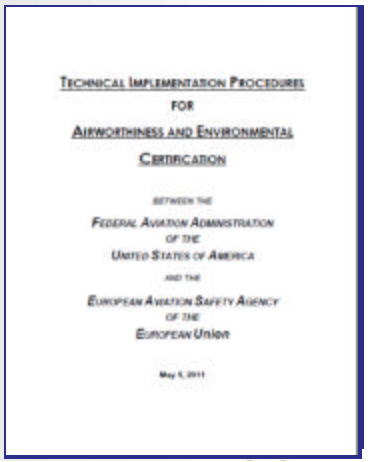
Field Support?



Source: Aerostrategy /IATA 2009 Inventory and Logistic Survey

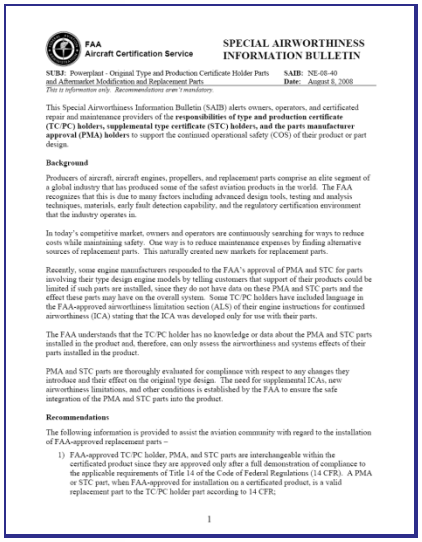
Perception, Perception, Perception

Strong Regulatory Acceptance and Perception


TECHNICAL IMPLEMENTATION PROCEDURES
FOR
AIRWORTHINESS AND ENVIRONMENTAL
CERTIFICATION
BETWEEN THE
FEDERAL AVIATION ADMINISTRATION
OF THE
UNITED STATES OF AMERICA
AND THE
EUROPEAN AVIATION SAFETY AGENCY
OF THE
EUROPEAN UNION

EASA/FAA TIPS 2011 BASA

FAA SAIB NE-08-40


FAA Aircraft Certification Service

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: Powerplant - Original Type and Production Certificate Holder Parts and Aftermarket Modification and Replacement Parts

SAIB: NE-08-40
Date: August 8, 2008

This is information only. Recommendations aren't mandatory.

This Special Airworthiness Information Bulletin (SAIB) alerts owners, operators, and certificated repair and maintenance providers of the **responsibilities of type and production certificate (TC/PC) holders, supplemental type certificate (STC) holders, and the parts manufacturer approval (PMA) holders** to support the continued operational safety (COS) of their product or part design.

Background

Producers of aircraft, aircraft engines, propellers, and replacement parts comprise an elite segment of a global industry that has produced some of the safest aviation products in the world. The FAA recognizes that this is due to many factors including advanced design tools, testing and analysis techniques, materials, early fault detection capability, and the regulatory certification environment that the industry operates in.

In today's competitive market, owners and operators are continuously searching for ways to reduce costs while maintaining safety. One way is to reduce maintenance expenses by finding alternative sources of replacement parts. This naturally created new markets for replacement parts.

Recently, some engine manufacturers responded to the FAA's approval of PMA and STC for parts involving their type design engine models by telling customers that support of their products could be limited if such parts are installed, since they do not have data on these PMA and STC parts and the effect these parts may have on the overall system. Some TC/PC holders have included language in the FAA-approved airworthiness limitation section (ALS) of their engine instructions for continued airworthiness (ICA) stating that the ICA was developed only for use with their parts.

The FAA understands that the TC/PC holder has no knowledge or data about the PMA and STC parts installed in the product and, therefore, can only assess the airworthiness and systems effects of their parts installed in the product.

PMA and STC parts are thoroughly evaluated for compliance with respect to any changes they introduce and their effect on the original type design. The need for supplemental ICAs, new airworthiness limitations, and other conditions is established by the FAA to ensure the safe integration of the PMA and STC parts into the product.

Recommendations

The following information is provided to assist the aviation community with regard to the installation of FAA-approved replacement parts –

1) FAA-approved TC/PC holder, PMA, and STC parts are interchangeable within the certificated product since they are approved only after a full demonstration of compliance to the applicable requirements of Title 14 of the Code of Federal Regulations (14 CFR). A PMA or STC part, when FAA-approved for installation on a certificated product, is a valid replacement part to the TC/PC holder part according to 14 CFR;

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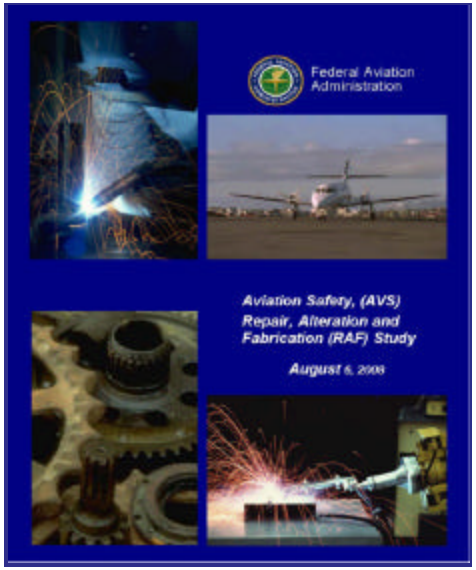


FAA RAF Study

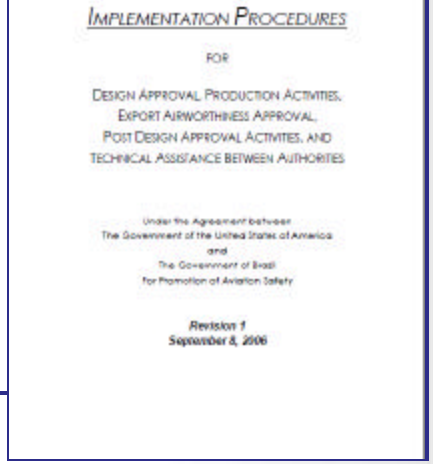
Korea / FAA

China / FAA

Hong Kong / FAA

~~Argentina~~/ FAA

Brazil/ FAA


IMPLEMENTATION PROCEDURES
FOR
DESIGN APPROVAL PRODUCTION ACTIVITIES,
EXPORT AIRWORTHINESS APPROVAL,
POST DESIGN APPROVAL ACTIVITIES, AND
TECHNICAL ASSISTANCE BETWEEN AUTHORITIES
Under the Agreement between
The Government of the United States of America
and
The Government of Brazil
for Promotion of Aviation Safety
Revision 1
September 8, 2006

(and many more)

Without Good performance we wouldn't have Regulator Support. We need Excellent Performance.

PMA Parts-Safety Record

There are over 140,000 identified, discrete PMA part numbers (developed/manufactured independent of the OEM)

A MARPA review of ADs issued on PMA parts[1] since 1941 has found that…

- There are 22 ADs that apply *exclusively*[2] to PMA products
- 11 are on GA (piston) applications, 4 on rotorcraft, 3 on biz jets
- 3 are on heavy airframe (hose nut, fire ext. cartridge and fuel cell)
- 1 is on a large commercial engine

Source: Aviation Data Research

Notes:

1. Includes PMA Replacement Parts Approved by a)Test and Computation and b) Identicality

2. Exclusive means either a design or manufacturing defect unique to the PMA part

PMA Parts-Safety Record

Since 1941 the total number of ADs on small and large aircraft is 14,213 (thru Dec 2008)

Of that total, 3 ADs issued on large airframe on PMA replacement parts and 1 on Large Engines over the past 67 years…

PMA Parts - AD on CFM International Product

AD issued December 19, 2006

AD became effective January 3, 2007

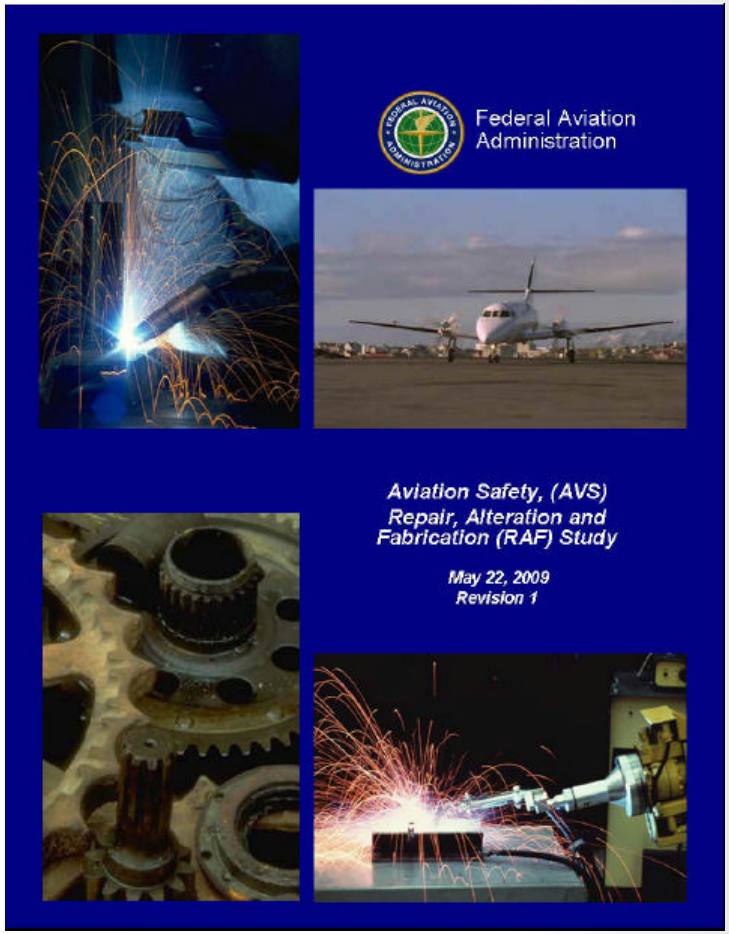
AD required replacing certain fuel filters manufactured under PMA by Western Filter and PTI Technologies that have failed in service on CFM56-7B engines since March 2006.

Source: Aviation Data Research / FAA AD Database

PMA Parts-Safety Record – RAF Study

The RAF Team also found that there have been some repairs, alterations, fabrications, and PMAs that were not properly classified or did not have a clearly documented showing of compliance.

However the team did not find any substantial evidence of failures or unsafe conditions arising from non-TC/PC holder developed data that would indicate a systemic lack of compliance or capability in either the non-TC/PC holders' designs or the FAA's oversight of compliance.



Pat's Challenge to you:

There is a Double Standard.
Live up to the Higher Standard.

Continued Operational Safety 8110.42

i. Continued Operational Safety Plan.

(1) PMA holders are responsible for the continued operational safety of their designs. Regardless of part complexity, PMA applicants, should develop a COS plan. The critical nature of a part sets the scope of this COS plan. This scope addresses problem prevention, part monitoring and problem response. The specific requirements for tracking, reporting and correcting failures and defects are in14 CFR §§ 21.3 and 21.99. These requirements include at least:

- Detailed records of all aspects of the manufacturing cycle,
- A record-keeping plan for the entire part life,
- Methods to isolate possible discrepant part populations, continually monitor the service use of parts, and review design assumptions based on service experience,
- Means for identifying possible failure modes and effects that account for the part's operating environment and interfaces to the next higher assembly and product, and
- Methods and resources used to identify causes of failures and to develop corrective actions, and means to carry out these actions quickly based on an assessment of the associated risks.

Continued Operational Safety AC 33-8

8. Continued Operational Safety. PMA holders must support the continued operational safety of their designs. We recommend applicants develop a COS plan to do this. To establish an effective COS plan, applicants should have the ability to assess design, manufacturing, and maintenance issues related to the operation of the engine on which their proposed PMA part is installed.

a. A COS plan generally includes a suitable management plan that includes continuous assessment of the part's performance in service relative to the applicant's design assumptions. If a failure, malfunction, or defect in service is identified, the PMA holder must report it as required by § 21.3.

b. A COS plan also includes appropriate methods and resources to identify the cause of a failure, malfunction or in-service defect, develop corrective actions, and implement those actions in a timely manner. Applicants should also validate that the corrective actions restore the engine to an acceptable level of safety.

c. Appendix 4 of this AC provides additional information on how to develop a successful COS plan. If applicants elect to submit a COS plan, they should submit their plan during the design approval phase of the PMA process.

Continued Operational Safety - MARPA

MARPA COS Outline Compared to Policy ANE-2004-33.4-4

Applicants should develop a COS plan that meets the following requirements:

ANE-2004-33.4-4 Paragraph 4.c.-Con
14 CFR 21.3 Reporting of failures, malfunctions, and
14 CFR 21.50 Instructions for continued airworthine manuals having airworthiness limitations sections
14 CFR 21.99 Defines required design changes (AD i
Ability to assess design, manufacturing, and mainte the product
An in-service management plan that includes the pa design assumptions
An ability to demonstrate the ability to evaluate failu
Identify the cause, corrective actions, and implemen
Knowledge of part function, manufacturing, and inte
Knowledge of the part operating environment
Obtain FAA approval of a risk assessment methodol

MARPA COS Workshop
October 3, 2012

For MAR

Where are We Today?

New Revision to MARPA's Guidance Material for a PMA Continued Operational Safety (COS) System

- MA-07-0316 Revision 2 was released on 8/31/12
- Updated to current FAA AC and Orders.
  - Changed "part" to "article" (per Part 21.1 (b))
- Re-ordered Problem Prevention section.
- Broke Design Review paragraph into three
  - Added FMEA & Safety Assessment paragraphs.
- Added Risk Analysis and Management Capability.
- Clarified System Effects up to the Product level.
- Added new Appendix for responsibility/accountability.

MARPA COS Workshop
October 3, 2012

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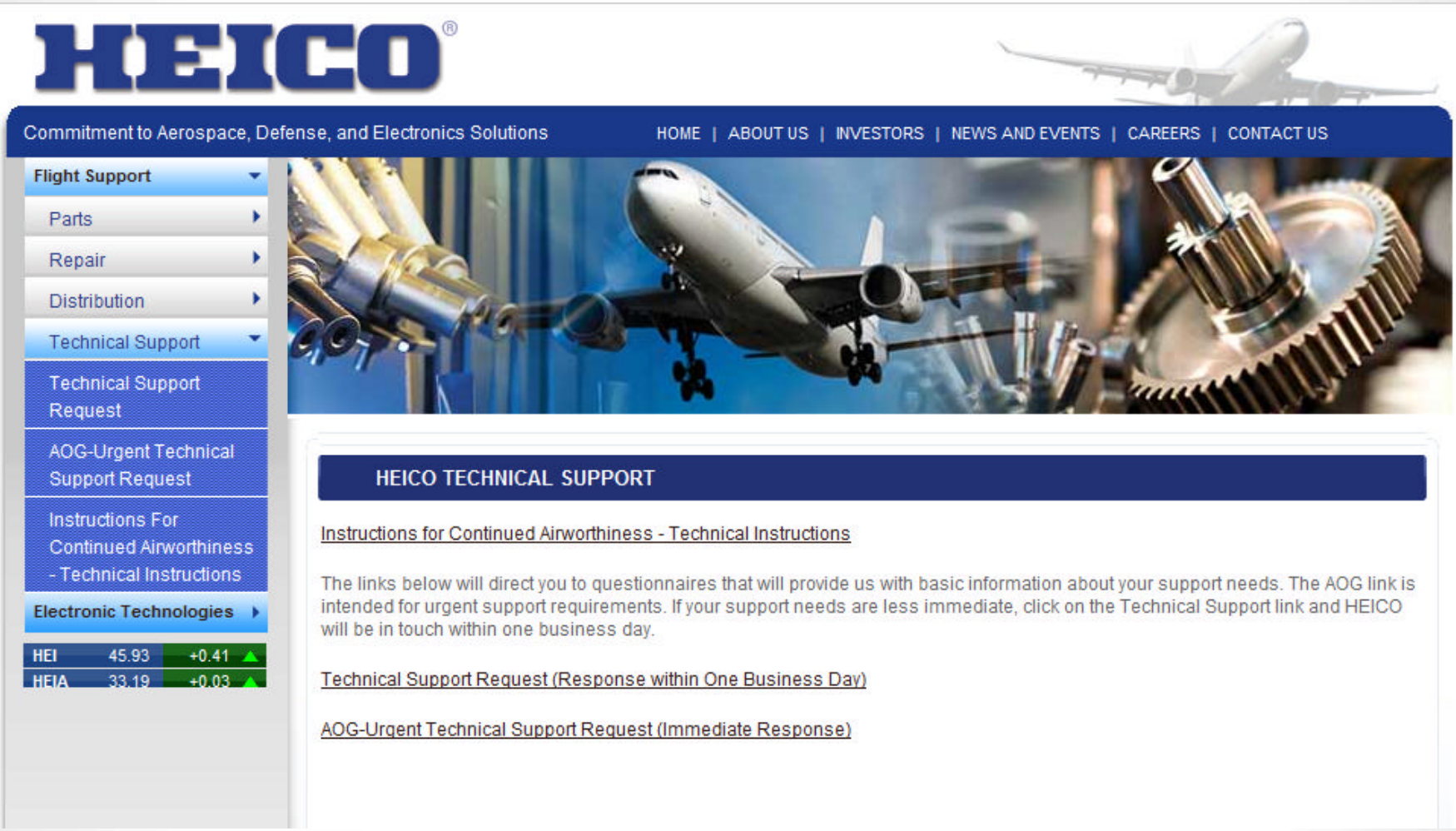
HEICO Internal Policies and Procedures

- HPG Quality Manual
- Policy 100 – Quality Program Requirements
- Policy 101 – Communicating and Reporting Part Quality Concerns
- Policy 102 – Material Testing: Quality Test Plans and Requirements
- Policy 103 – Continued Operational Safety System Requirements
- Policy 104 – Distribution Management
- Policy 105 – Safety Management Systems Requirements

Integrity is doing things RIGHT, even when no one is watching.

- C. S. Lewis

COS (online) Technical Services and Support



Changing Perception requires Excellence

- TC/PC holder, PMA and STC holders are responsible for the COS support for their parts and products which they have designed and produced
- HEICO routinely answers questions about our products, and supports any field inquiries or investigations
- **The Aftermarket Industry needs to respond with Excellence.**

Perception, Perception, Perception