Gorham-Tech

2012 PMA Workshop Session

What's New & What's Coming?
New 14 CFR 21 Rules changes and
There affect on 14 CFR Part 21 sub-part K
Modification & Replacement Parts Rules

Streamlined Process for Parts Manufacturer Approval
(PMA)
8110-spma-draft

March 21, 2012

Instructor : Dominick P. DaCosta ~ FAA DERT/DARF

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About your Instructor

Dominick P. DaCosta

- **FAA DER-T Engines Chart E, Powerplant Chart B, Systems Chart C1, Structures Chart A ~ PMA Findings Authority & Major Repair/Alterations multiple use and RS-DER.**
- **FAA DAR-F ~ Class I, II, and III Parts . [Function Codes 8 thru 22]**
- **26+ years Aerospace Manufacturing Engineering**
- **16+ years Engine/APU Maintenance & Repair Engineering**
- **Worked with GE, P&W, Textron/Lycoming, Rolls Royce, Honeywell, Garrett, Bendix/Allied Signal, Hamilton Std., CTL Inc., United Airlines, CRT, American Airlines, Exotic Metals, Soundair, Lufthansa, MTU, Alitalia, Air France FedEx, Iberia, ITT, Hamilton Std., Parker, ACS, WindJet, MOOG, and others.**
- **ASNT Level III Since 1976**
- **Licensed FAA Mechanic**
- **Certified by National Institute for the Certification of Technologist [NICET~NSPE]**
  - **Senior Welding Engineering Technologist ~ 1979 ~ 2012**
- **Indiana University – BGS - 1983**
- **Ohio State University – Welding Engineering – Certification Program - 1980**

Acronym's

AC-FAA	FAA Advisory Circular
ACO	Aircraft Certification Office [A FAA Branch]
ACE	Aircraft Certification Engineer [FAA-ACO]
AD-FAA	Advisory Directive - Issued by FAA
AEG	Aircraft Equipment Group [A FAA Branch]
APIS	Approved Production Inspection System
AMM	Aircraft Maintenance Manual
AS	National Aerospace Standards
ASI	Airworthiness Safety Inspector
BAA	Bilateral Airworthiness Agreement
BASA	Bilateral Aviation Safety Agreement
CAA	Civil Aviation Authority
CAR	Civil Air Regulation
CMACO	Certificate Mgmt ACO
CMM	Component maint manual
DAR	Designated Airworthiness Representative
DAR-F	Designated Airworthiness Representative(Manufacturing)
DAR-T	Designated Airworthiness Representative(Maintenance)
DAS	Delegated Alteration Station
DER	Designated Engineering Representative
DER-T	Consultant Designated Engineering Representative
DER-Y	Company Designated Engineering Representative
DMIR	Designated Manufacturing Inspection Representative
EASA	European Aviation Safety Adm
FAA	Federal Aviation Authority
FAR	Federal Aviation Regulations
FIS	Fabrication Inspection System
FOIA	Freedom of Information Act
FSDO	Flight Standard District Office [A FAA Branch]
IFCAW	Instructions for Continued Airworthiness [aka: ICA]
IPC	Illustrated Parts Catalog
JAA	Joint Aviation Authority
MARPA	Modification and Replacement Parts Association
MIDO	Manufacturing Inspection District Office [A FAA Branch]
MIS	Manufacturing Inspection Specialist [A FAA Staff Position]
MS	Military Standard
MRP	Modification and Replacement Parts [14 CFR Part 21.303]
NPRM	Notice to Proposed Rule Making
ODAR	Orginizational Designated Airworthiness Representative
ODAR-F	Orginizational Designated Airworthiness Representative(Manufacturing)
ODAR-T	Orginizational Designated Airworthiness Representative(Maintenance)
OEM	Original Equipment Manufacturer
Orders-FAA	FAA Orders issued to define methods or procedures to accomplish rules
PACO	Project Aircraft Certification Office
PC	Production Certificate
PM's	Policy Memo's - FAA driven guidance to accomplish FAR, Orders, AC's
PMA	Parts Manufacturing Approval
PMI	Principle Maint Inspector [FAA FSDO]
RFC	Request For Conformity issued by ACO to MIDO/FSDO
SB	Service Bulletin [Issued by OEM, TC, STC, TSO, or PMA]
SRM	Structural Repair Manual
STC	Supplement Type Certificate

What is a PMA ?

A Modifications and Replacement Part or (Parts Manufacturing Authority) And is one of the eleven (11) ways the FAA uses to **control** and **approve** replacement or modification parts manufactured for and installed on a Type Certificated Product following its initial Airworthiness Approval.

14 CFR 21.303 QMS changes see Reference AC 21-42, & AC 21-43 for details to proper transition.

14 CFR 21 Amendment 21-92 has radically changed 21 rules.

There are two types of PMA's by Rule and by Order

MAJOR – PMA – Developed from an STC. Invoked under 14 CFR Part 21.95, & 21.97, and guidance given under Order 8110.4C. This PMA which is developed from a STC is a Major Change Designed Component. When this STC-PMA is installed you should follow 43 Appendix B, and issue to the TC product a Form 337, and the 8130-3 should be annotated in Box 13, that it is a Major Design Change Component, in some Bi-laterals this statement is mandatory.

MINOR – PMA – Developed from a TC or TSO sub component which does not go beyond 14 CFR Part 21.93, and is considered under Order 8110.42C as a minor change to the original TC or TSO. With the exception of LLP's most Bi-laterals allow the use of these types of PMA's without restrictions or re-validations.
Only a 8130-3 be executed upon installation to a TC product.

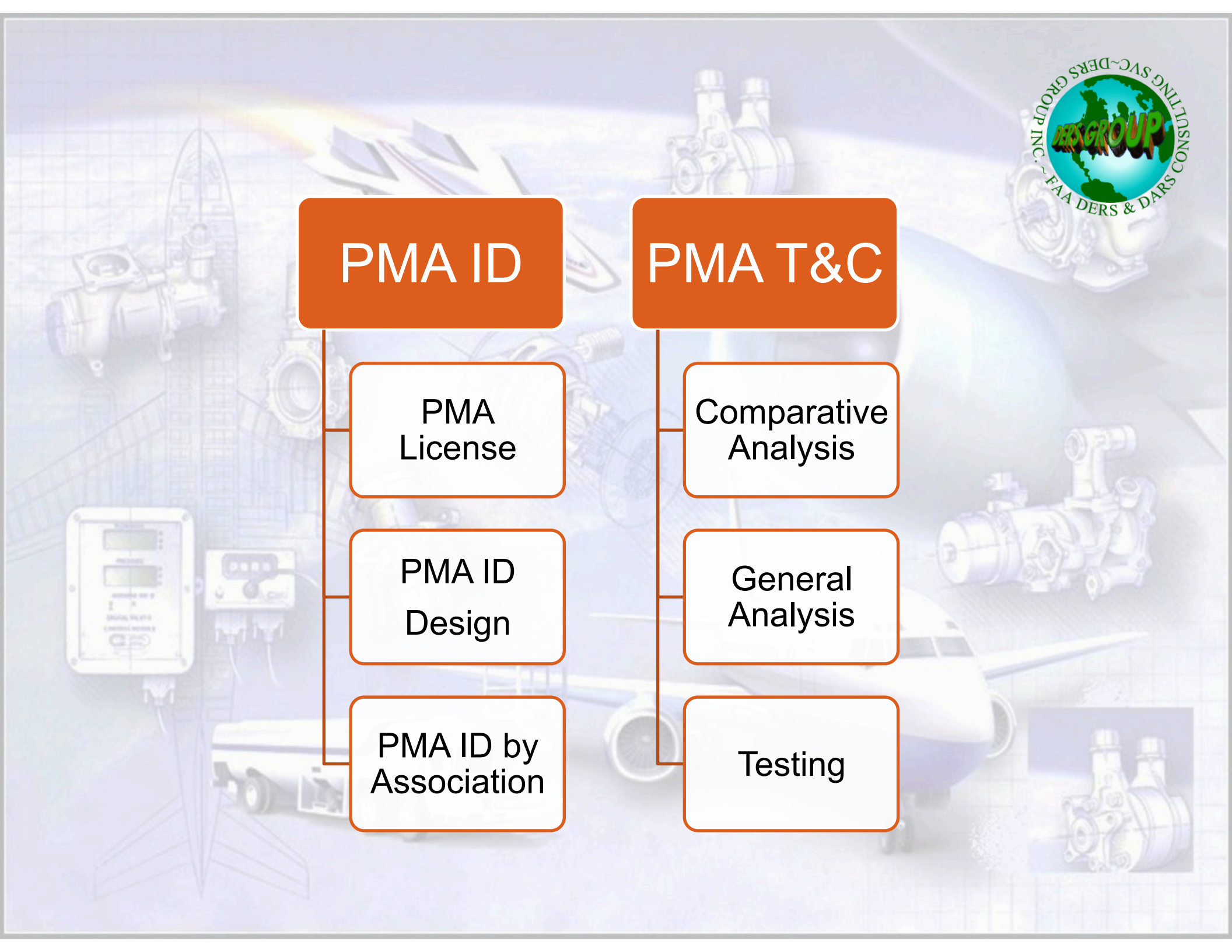
Note: Licensed PMA on LLP's are normally accepted without restriction in most Bi-laterals.

A PMA [Parts Manufacturing Authority] therefore is a specific way to obtain FAA approval to replace or modify a component to be installed onto a Type Certificated Product.

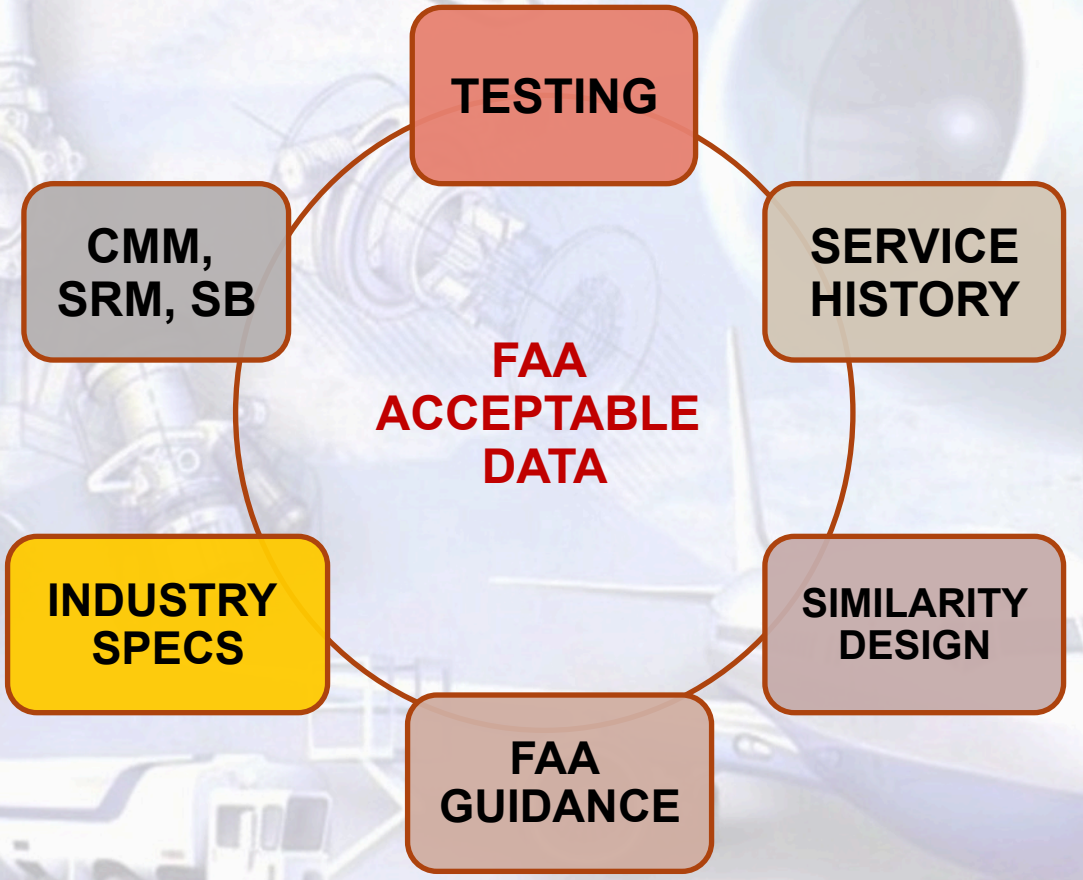
There are <u>two</u> (2) fundamental ways to apply for a PMA.

1. **Identicality [Which has three (3) subsets]**
   - **Identicality by License Agreement**
   - **Identicality by Design without a License agreement**
   - **Identicality by Associative Means [OCM evidence]**

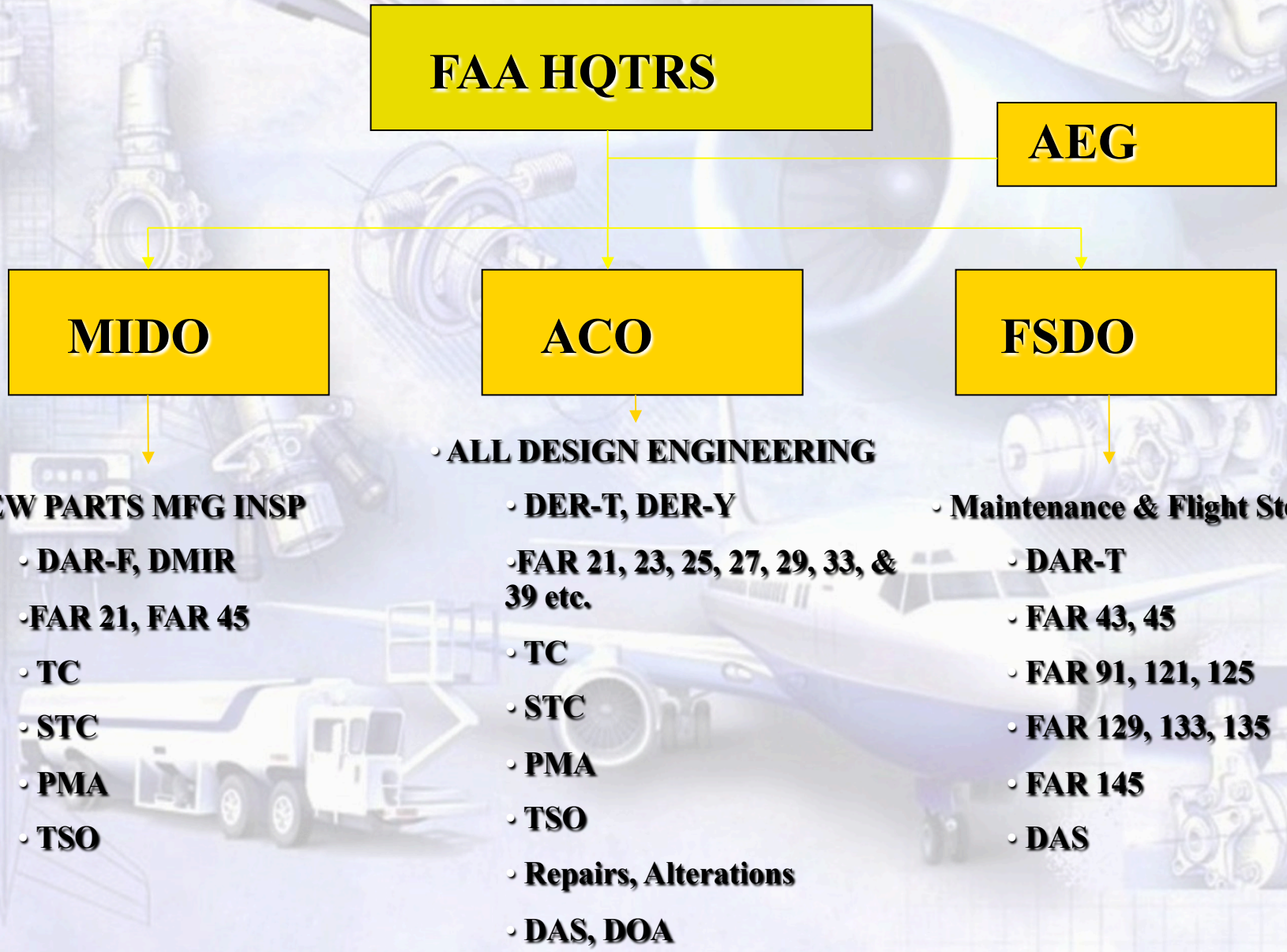
2. **Test & Computation Method [Which has three (3) subsets]**
   - **Comparative Analysis Method**
   - **General Analysis Method**
   - **Testing**


PMA ID
PMA License
PMA ID Design
PMA ID by Association
PMA T&C
Comparative Analysis
General Analysis
Testing

ACCEPTABLE DATA



What Branches of The FAA are Responsible for various Designee's



FAA HAS AMENDED CERTAIN CERTIFICATION PROCEDURES

SUMMARY: The FAA is amending its certification procedures and identification requirements for aeronautical products and articles. The amendments will update and standardize those requirements for production approval holders (PAHs), revise export airworthiness approval requirements to facilitate global manufacturing, move all part marking requirements from part 21 to part 45, and amend the identification requirements for products and articles. The intent of these changes is to continue to promote safety by ensuring that aircraft, and products and articles designed specifically for use in aircraft, wherever manufactured, meet appropriate minimum standards for design and construction. As a result of this action, the FAA's regulations now better reflect the current global aircraft and aircraft products and articles manufacturing environment.

DATES: This rule became effective **April 14, 2010**

Background To The Rule Changes:

Over the last several decades, the aircraft manufacturing industry has evolved significantly. Years ago, most transport category aircraft were manufactured in the United States. A typical business model consisted of a production certificate (PC) holder with a relatively small number of suppliers. Today, the number of aircraft manufacturing suppliers has increased dramatically. Conversely, through the years, the aircraft industry has seen a steady decline in the number of U.S.- based transport category aircraft manufacturers. Those manufacturers, who once predominantly oversaw the production of replacement articles for their aircraft, now witness the ever increasing production of replacement and modification articles by independent parts manufacturers. Suppliers, including parts manufacturers, were located mainly in the United States decades ago; now, they are located all over the world. Suppliers are manufacturing greater percentages of aircraft products and articles. As a result, aircraft are now manufactured in an increasingly global environment.

BACKGROUND CONTINUED:

When the certification rules were first promulgated in 1964 we don't think the FAA

envisioned the rapid growth and globalization of the aerospace industry. This is substantiated by the present numerous International Bilateral Agreements. This rule change incorporate is the FAA's response to the changing dynamics of the aircraft manufacturing industry, and this final rule contains requirements that reflect the current global environment. Evolution of the manufacturing industry prompted the FAA to publish in the Federal Register a notice of proposed rulemaking (NPRM) on ``Production and Airworthiness Approvals, Parts Marking, and Miscellaneous Proposals'' (71 FR 58914, October 5, 2006). Comprehensive changes to certification procedures and identification requirements for aeronautical products and articles

Under new Rules In general, the FAA proposes to:

1. Standardize quality system requirements for all Production Approval Holders (PAH)
2. Require PAHs, including those producing under Type Certificate, to mark all articles, including sub-assemblies and components
3. Require PAHs to issue airworthiness approvals for aircraft engines, propellers, and other aviation articles;
4. Require PAHs to create a certifying staff to issue those approvals; and
5. Revise export airworthiness approval requirements to facilitate global manufacturing.

PRIMARY AREAS BEING AMENDED BY THE NEW 21 RULE CHANGE

List of Amended Rules Change Subjects:

14 CFR Part 1 “General Definitions”

14 CFR Part 21 “Production Aircraft, Aviation safety, Exports, Imports, Reporting and recordkeeping requirements.”

14 CFR Part 43 “Aircraft, Aviation safety, Reporting and recordkeeping requirements”

14 CFR Part 45 “ Parts Marking, Aircraft Identification, Exports, Signs and symbols”

Example Of Definition CFR 1.1, Changes:

Approved, unless used with reference to another person, means approved by the FAA or any person to whom the FAA has delegated its authority in the matter concerned, or approved under the provisions of a bilateral agreement between the United States and a foreign country or jurisdiction.

Example Of PART 21 Changes -CERTIFICATION PROCEDURES FOR PRODUCTS, ARTICLES, AND PARTS;

Removing the word ``Administrator'' and adding in its place the word ``FAA'' wherever it appears.

Removing the word ``shall'' and adding in its place the word ``must'' wherever it appears

Sec. 21.8 Approval of articles.

If an article is required to be approved under this chapter, it may be approved--

(a) Under a PMA;

(b) Under a TSO;

(c) In conjunction with type certification procedures for a product; or

(d) In any other manner approved by the FAA.

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11. Amend subpart A by adding Sec. 21.9 to read as follows:

Sec. 21.9 Replacement and modification articles.

(a) If a person knows, or should know, that a replacement or modification article is reasonably likely to be installed on a type-certificated product, the person may not produce that article unless it is--

(1) Produced under a type certificate;

(2) Produced under an FAA production approval;

(3) A standard part (such as a nut or bolt) manufactured in compliance with a government or established industry specification;

(4) A commercial part as defined in Sec. 21.1 of this part;

(5) Produced by an owner or operator for maintaining or altering that owner or operator's product; or

(6) Fabricated by an appropriately rated certificate holder with a

EXCEPTIONS

quality system, and consumed in the repair or alteration of a product or article in accordance with part 43 of this chapter.

(b) Except as provided in paragraphs (a)(1) through (a)(4) of this section, a person who produces a replacement or modification article for sale may not represent that part as suitable for installation on a type-certificated product.

(c) Except as provided in paragraphs (a)(1) through (a)(4) of this section, a person may not sell or represent an article as suitable for installation on an aircraft type-certificated under Sec. Sec. 21.25(a)(2) or 21.27 unless that article--

(1) Was declared surplus by the U.S. Armed Forces, and

(2) Was intended for use on that aircraft model by the U.S. Armed Forces.

14 CFR Part 21 Sub Part K - NEW

45. Revise subpart K to read as follows:

Subpart K--Parts Manufacturer Approvals

Sec.

21.301 Applicability.
21.303 Application.
21.305 Organization.
21.307 Quality system.
21.308 Quality manual.
21.309 Location of or change to manufacturing facilities.
21.310 Inspections and tests.
21.311 Issuance.
21.313 Duration.
21.314 Transferability.
21.316 Responsibility of holder.
21.319 Design changes.
21.320 Changes in quality system.

Existing Sub Part K

21.301 Applicability
21.303 Replacement and modification parts.
21.305 Approval of materials, parts, processes, and appliances.
21.307 [Deleted.]

Subpart K--Parts Manufacturer Approvals

Sec. 21.301 Applicability.

This subpart prescribes--

(a) Procedural requirements for issuing PMAs; and

(b) Rules governing holders of PMAs.

Sec. 21.303 Application.

(a) The applicant for a PMA must apply in a form and manner prescribed by the FAA, and include the following:

(1) The identity of the product on which the article is to be installed.

(2) The name and address of the manufacturing facilities at which these articles are to be manufactured.

(3) The design of the article, which consists of--

(i) Drawings and specifications necessary to show the configuration of the article; and

(ii) Information on dimensions, materials, and processes necessary to define the structural strength of the article.

(4) Test reports and computations necessary to show that the design of the article meets the airworthiness requirements of this subchapter. The test reports and computations must be applicable to the product on which the article is to be installed, unless the applicant shows that the design of the article is identical to the design of a article that is covered under a type certificate. If the design of the article was obtained by a licensing agreement, the applicant must provide evidence of that agreement.

(5) An applicant for a PMA based on test reports and computations must provide a statement certifying that the applicant has complied with the airworthiness requirements of this subchapter.

(b) Each applicant for a PMA must make all inspections and tests necessary to determine--

(1) Compliance with the applicable airworthiness requirements;

(2) That materials conform to the specifications in the design;

(3) That the article conforms to its approved design; and

(4) That the manufacturing processes, construction, and assembly conform to those specified in the design.

Sec. 21.305 Organization.

Each applicant for or holder of a PMA must provide the FAA with a document describing how its organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.

Sec. 21.307 Quality system.

Each applicant for or holder of a PMA must establish a quality system that meets the requirements of Sec. 21.137.

Sec. 21.308 Quality manual.

Each applicant for or holder of a PMA must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA.

Sec. 21.309 Location of or change to manufacturing facilities.

(a) An applicant may obtain a PMA for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The PMA holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The PMA holder must immediately notify the FAA, in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its PMA article.

Sec. 21.310 Inspections and tests.

(a) Each applicant for or holder of a PMA must allow the FAA to inspect its quality system, facilities, technical data, and any manufactured articles and witness any tests, including any inspections or tests at a supplier facility, necessary to determine compliance with this subchapter.

(b) Unless otherwise authorized by the FAA, the applicant or holder--

(1) May not present any article to the FAA for an inspection or test unless compliance with Sec. 21.303(b)(2) through (4) has been shown for that article; and

(2) May not make any change to an article between the time that compliance with Sec. 21.303(b)(2) through

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(4) is shown for that article and the time that the article is presented to the FAA for the inspection or test.

Sec. 21.311 Issuance.

The FAA issues a PMA after finding that the applicant complies with the requirements of this subpart and the design complies with the requirements of this chapter applicable to the product on which the article is to be installed.

Sec. 21.313 Duration.

A PMA is effective until surrendered, withdrawn, or the FAA otherwise terminates it.

Sec. 21.314 Transferability.

The holder of a PMA may not transfer the PMA.

Sec. 21.316 Responsibility of holder.

Each holder of a PMA must--

(a) Amend the document required by Sec. 21.305 as necessary to reflect changes in the organization and provide these amendments to the FAA;

(b) Maintain the quality system in compliance with the data and procedures approved for the PMA;

(c) Ensure that each PMA article conforms to its approved design and is in a condition for safe operation;

(d) Mark the PMA article for which an approval has been issued.

Marking must be in accordance with part 45 of this chapter, including any critical parts;

(e) Identify any portion of the PMA article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;

(f) Have access to design data necessary to determine conformity and airworthiness for each article produced under the PMA;

(g) Retain each document granting PMA and make it available to the FAA upon request; and

(h) Make available to the FAA information regarding all delegation of authority to suppliers.

Sec. 21.319 Design changes.

(a) Classification of design changes. (1) A ``minor change'' to the design of an article produced under a PMA is one that has no appreciable effect on the approval basis.

(2) A ``major change'' to the design of an article produced under a PMA is any change that is not minor.

(b) Approval of design changes. (1) Minor changes to the basic design of a PMA may be approved using a method acceptable to the FAA.

(2) The PMA holder must obtain FAA approval of any major change before including it in the design of an article produced under a PMA.

Sec. 21.320 Changes in quality system.

After the issuance of a PMA--

(a) Each change to the quality system is subject to review by the FAA; and

(b) The holder of the PMA must immediately notify the FAA, in writing, of any change that may affect the inspection, conformity, or airworthiness of its article.

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46. Revise subpart L to read as follows:

Subpart L--Export Airworthiness Approvals

Sec.

21.321 Applicability.

21.325 Export airworthiness approvals.

21.327 Application.

21.329 Issuance of export certificates of airworthiness.

Sec. 45.10 Marking.

No person may mark a product or article in accordance with this subpart unless--

(a) That person produced the product or article --

(1) Under part 21, subpart F, G, K, or O of this chapter; or

(2) For export to the United States under the provisions of an agreement between the United States and another country or jurisdiction for the acceptance of products and articles; and

(b) That product or article conforms to its approved design, and is in a condition for safe operation; and, for a TSO article; that TSO article meets the applicable performance standards.

Sec. 45.15 Marking requirements for PMA articles, TSO articles, and Critical parts.

(a) PMA articles. The manufacturer of a PMA article must permanently and legibly mark--

(1) Each PMA article, with the PMA holder's name, trademark, symbol, or other FAA approved identification and part number; and

(2) The letters ``FAA-PMA''.

(b) TSO articles. The manufacturer of a TSO article must permanently and legibly mark --

(1) Each TSO article with the TSO holder's name, trademark, symbol, or other FAA approved identification and part number; and

(2) Each TSO article, unless otherwise specified in the applicable TSO, with the TSO number and letter of designation, all markings specifically required by the applicable TSO, and the serial number or the date of manufacture of the article or both.

(c) Critical parts. Each person who manufactures a part for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness must permanently and legibly mark that part with a serial number (or equivalent) unique to that part in addition to the other applicable requirements of this section.

(d) If the FAA finds a part or article is too small or otherwise impractical to mark with any of the information required by this part, the manufacturer must attach that information to the part or its container.

Advisory Circular

Subject: Transition Document for 14 CFR Parts 1, 21, 43, and 45

Date: 10/16/09
Initiated by: AIR-200

AC No: 21-42

1. Purpose.

a. This advisory circular (AC) provides information about Title 14, Code of Federal Regulations (14 CFR), part 21, Certification Procedures for Products, Articles, and Parts (part 21). The intent of this AC is to briefly describe the following changes and to facilitate the transition from the former part 21 rule to the new part 21 rule published in the Federal Register under docket number FAA-2006-25877-0114. The summary information in this AC is not a substitute for the text of the adopted CFRs, and persons subject to those rules should refer to the cited CFRs for exact compliance requirements. Also, while this AC summarizes some of the reasons for the rule changes, the complete description of the intent of these changes can be found in the Federal Register preamble for the rule.

(1) This AC provides information concerning changes to the following parts as they relate to the revised part 21 rule: 14 CFR part 1, Definitions and Abbreviations; 14 CFR part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration; and 14 CFR part 45, Identification and Registration Marking.

(2) This AC provides information for both an applicant for and a holder of a production approval, and refers to both as a PAH. This information includes instructions on how to develop and maintain their quality system.

b. This AC is not mandatory and does not constitute a regulation. This AC describes an acceptable means, but not the only means, to comply with these requirements. However, if you use the means described in the AC, you must follow it in all important respects.

Advisory Circular

Subject: Production Under 14 CFR Part 21, Subparts F, G, K, and O

Date: 10/16/2009

Initiated by: AIR-200

AC No: 21-43

This advisory circular (AC) provides information for production approval holders (PAH) under Title 14, Code of Federal Regulations (14 CFR) part 21, Certification Procedures for Products, Articles, and Parts. This AC guides PAHs in developing and maintaining quality systems for the products and articles they produce. This guidance aids the applicant for a production approval or current PAH in developing a quality system that both meets the needs of the PAH and is compliant with the regulations. You can find this AC at http://www.faa.gov/regulations_policies/advisory_circulars/.

/s/
Frank P. Paskiewicz
Manager, Production and Airworthiness Division

Advisory Circular

Subject: Issuance of Export Airworthiness Approvals Under 14 CFR Part 21 Subpart L

Date: 10/16/2009 **AC No:** 21-44

Initiated by: AIR–200

1. Purpose. This advisory circular (AC) provides information about Title 14, Code of Federal Regulations (14 CFR) part 21, Certification Procedures for Products, Articles, and Parts. The AC covers subpart L, Export Airworthiness Approvals. This AC is not mandatory and does not constitute a regulation. This AC describes an acceptable means, but not the only means, to comply with these requirements. However, if you use the means described in the AC, you must follow it in all important respects.

2. Audience. This AC affects persons and organizations who export a product or article under the provisions of 14 CFR, part 21, subpart L.

3. Effective Date. This AC is effective 180 days after the publication of Production and Airworthiness Approvals, Part Marking, and Miscellaneous Amendments; Final Rule in the Federal Register under docket number FAA-2006-25877-0114.

4. Related Publications.

a. Part 21, Certification Procedures for Products, Articles, and Parts.

b. Order 8130.2, Airworthiness Certification of Aircraft and Related Products.

c. Order 8130.21, Procedures for Completion and Use of the Authorized Release Certificate, FAA Form 8130-3, Airworthiness Approval Tag.

d. AC 21-2, Requirements of Importing Countries or Jurisdictions.

5. Subpart L Regulations. Part 21, subpart L contains procedural requirements for issuing export airworthiness approvals and the rules governing the holders of those approvals. This includes requirements that address the different types of export airworthiness approvals, the application process, the issuance of export airworthiness approvals, and the responsibilities of exporters.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy

ORDER 8120.17

Effective Date: 1/14/2010

SUBJ: Implementation of Changes to the Revised 14 CFR Part 21

This order provides guidance to all Aircraft Certification Service personnel to assist in the implementation of the requirements pertaining to the quality system described in the revised Title 14, Code of Federal Regulations (14 CFR) part 21, Certification Procedures for Products, Articles, and Parts, published on 10/16/2009.

Frank P. Paskiewicz
Manager
Production and Airworthiness Division, AIR-200

Distribution: Electronic Only

Initiated By: AIR-200

QUESTIONS REGARDING THIS PRESENTATION

FAADER@DERS-GROUP.COM
WWW.DERS-GROUP.COM

812-645-4864

Dominick DaCosta