Brazilian Military Airworthiness Certification and KC-390 Project Challenge

MAWA Conference 2014

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Overview

• The Industrial Fostering and Coordination Institute - IFI
• Brazilian Certification History
• International Agreements
• FAB Aerospace Product Life Cycle
• Regulation Improvement
• KC-390 Certification Challenge
IFI's MISSION

To contribute in ensuring performance, safety and availability of aerospace products and systems of Brazilian Air Force concerns, by acting in the fields of Normalization, Metrology, Certification, Intellectual Property and Technology Transfer.
Located in São José dos Campos – São Paulo
One of the Air Force Command Institutes,
Inside Department of Science and Aerospace Technology
IFI’s Main Structure

DIRECTOR

Vice-Director

Technical Advisor

CSG
Division of Management System Certification

CMA
Division of Aerospace Metrology Confiability

CPA
Division of Aerospace Product Certification

CDI
Division of Industrial Development

CAD
Administrative Division

265 professionals
Brazilian Certification History

1941 – Creation of Aeronautics Ministry (MAER), in charge of Brazilian Air Force (FAB) and Department of Civil Aviation (DAC)

1950 – Creation of Technical Centre of Aeronautics - CTA (now Department of Science and Aerospace Technology - DCTA) and Technological Institute of Aeronautics - ITA.
Brazilian Certification History

1957 – Implementation of Certification Commission inside of Institute for Research and Development - IPD
1971 – Creation of Industrial Fostering and Coordination Institute - IFI
1975 – Certification activities were transferred to IFI
1976 – First Bilateral Airworthiness Agreement between Brazil and USA
Brazilian Certification History

1982 – Agreement Brazil - Italy to product AMX aircraft

1983 – Creation of Military Homologation Division – FHM (now CPA – Certification of Aeronautical Product Division) and Civil Homologation Division – FDH

2005 - Creation of National Agency of Civil Aviation – ANAC
(FDH Division was transferred to ANAC)
International Agreements

1976 – First Bilateral Airworthiness Agreement between Brazil and USA


2004 – Bilateral Aviation Safety Agreement (BASA) – Brazil - USA

2004 – Administrative Arrangement Brazil (DAC) - EASA focused in the EMBRAER commercial needs
International Agreements

1982 – Italy

1984, 2005 – France – DGA

2007 – Spain – INTA, DEGAM

2014 – Sweden – FLYGI (under negotiation)
Military Certification

1972 – Homologation of EMB-110 Bandeirante

1978 – EMB-110 validated by FAA (first FAA validation)

1979 - Homologation of EMB-121A Xingu

1985 - Homologation of EMB-120 Brasília
Military Certification

1996 – Homologation of Embraer 145

1998 – Homologation of MAA-1 Missile

2002 – EMB-314 Super Tucano followed a Verification and Acceptance Plan (PVA)

2004 – Homologation of ERJ-170
Military Certification

2010 – Validation of EC 725 (H-XBR) certification

2012 – Certification of C-130M Modification, including Self Defence
FAB Aerospace Product Life Cycle

1. Conceptual

2. Feasibility

3. Definition

4. Development / Procurement

5. Production

6. Implementation

7. Operation / Support

8. Modifications

9. Disposal

**DCA 400-6**
Life Cycle of Aeronautics Systems and Materials

**DCA 800-2**
Safety and Quality Assurance of Systems and Products within Aeronautics Commander

**AQAP**
Allied Quality Assurance Publications
IFI in Aerospace Product Life Cycle

1. Conceptual
2. Feasibility
3. Definition
4. Development / Procurement
5. Production
6. Implementation
7. Operation / Support
8. Modifications
9. Disposal

KC-390
F-X2
IFI in Aerospace Product Life Cycle

1. Conceptual
2. Feasibility
3. Definition
4. Development / Procurement

5. Production

6. Implementation
7. Operation / Support
8. Modifications
9. Disposal

A-DARTER

H-XBR
IFI in Aerospace Product Life Cycle

1. Conceptual
2. Feasibility
3. Definition
4. Development / Procurement
5. Production
6. Implementation
7. Operation/Support
8. Modifications
9. Disposal

HERMES 900
IFI in Aerospace Product Life Cycle

1. Conceptual
2. Feasibility
3. Definition
4. Development / Procurement
5. Production
6. Implementation
7. Operation / Support
8. Modifications
9. Disposal

A-29 SUP TUCANO
C-295
P-3
AC-319
IFI in Aerospace Product Life Cycle

1. Conceptual
2. Feasibility
3. Definition
4. Development / Procurement
5. Production
6. Implementation
7. Operation/Support
8. Modifications
9. Disposal

- F-5
- A-1
- C-95M
Regulation Improvement

DCA 800-2
Safety and Quality Assurance of Systems and Products within Aeronautics Commander
aproved in 2014, establishes guidelines for the approval, certification and conformity evaluation of all systems and products

ICA 57-21
Military Airworthiness Regulation – procedures for Aeronautical Product Certification
To be approved in 2014, is similar to RBAC21, PART21 and EMAR21

A STEP FORWARD
KC-390 Project Challenge

- RFP delivered in 2008
- KC-390 was designed to fill the Brazilian Air Force needs to replace old C-130 from 2016.
- needs of other air forces → niche market
- IFI will certificate the KC-390 to fly all over the world

EMBRAER and FAB MUST HAVE KC-390 ready as soon as possible.
Embassy of Science and Aerospace Technology

Industrial Fostering and Coordination Institute

EMBRAER
Brazil

Aero Vodochody
Czech Republic

EEA, OGMA
Portugal

FAdeA
Argentina

Suppliers

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KC-390 Project Challenge

“As civil as possible, as military as necessary.”

EMBRAER KC-390 shared certification:

Green aircraft – Part 25

Recognize Green Aircraft and Certificate all military specific conditions and mission accomplishment of RTLI
KC-390 Project Challenge

- EMBRAER applied to certificate KC-390 with ANAC in a conventional process

- IFI agreeded that EMBRAER apply to certificate KC-390 as an OPC (Organização de Projeto Credenciada - Qualified Design Organization) - similar to DOA

Expected reduced time to certificate with improved certification confidence level
EMBRAER OPC Basic Rules

• Process based on the EMBRAER maturity and confidence relation between IFI and EMBRAER

• EMBRAER and IFI discuss all MoCs inside Certification Plan analysis

• IFI involvement focused on critical activities and audits to the all certification activities

• Programmed audits to the hole process
IFI intends to celebrate Mutual Certification Acceptance Agreements with Military Airworthiness Authorities over the world