

# Type Certification and Entry into Service

**Ing. Giuseppe Serpico**

## AUTORITA' AERONAUTICHE

### ICAO(International Civil Aviation Organization)

**The International Civil Aviation Organization (ICAO) is a UN specialized agency, created in 1944 upon the signing of the Convention on International Civil Aviation (Chicago Convention).**

**ICAO works with the Convention's 191 Member States and global aviation organizations to develop international Standards and Recommended Practices (SARPs) which States reference when developing their legally-enforceable national civil aviation regulations.**

## AUTORITA' AERONAUTICHE

### EASA (European Aviation Safety Agency)

The European Aviation Safety Agency is the centrepiece of the European Union's aviation safety system comprised of the Agency, the European Commission and the National Aviation Authorities (NAAs).

The main tasks of the Agency currently include:

Drafting aviation safety legislation and providing technical advice to the European Commission and to the Member States;

Inspections and training to ensure uniform implementation of European aviation safety legislation in all Member States;

Airworthiness and environmental type-certification of aeronautical products, parts and appliances;

Approval of aircraft design organisations world-wide and of production and maintenance organisations outside the EU;

Coordination of the European Community SAFA (Safety Assessment of Foreign Aircraft) programme;

Coordination of safety programmes, data collection, analysis and research to improve aviation safety.

## AUTORITA' AERONAUTICHE

### ENAC (Ente Nazionale Aviazione Civile)

L'Ente Nazionale per l'Aviazione Civile, unica Autorità di regolazione tecnica, certificazione, vigilanza e controllo nel settore dell'aviazione civile in Italia, è stato istituito il 25 luglio 1997 con [Decreto Legislativo n. 250/97](#).

## EASA MEMBERSHIP

### JAA-EASA Membership situation per 1 January 2007



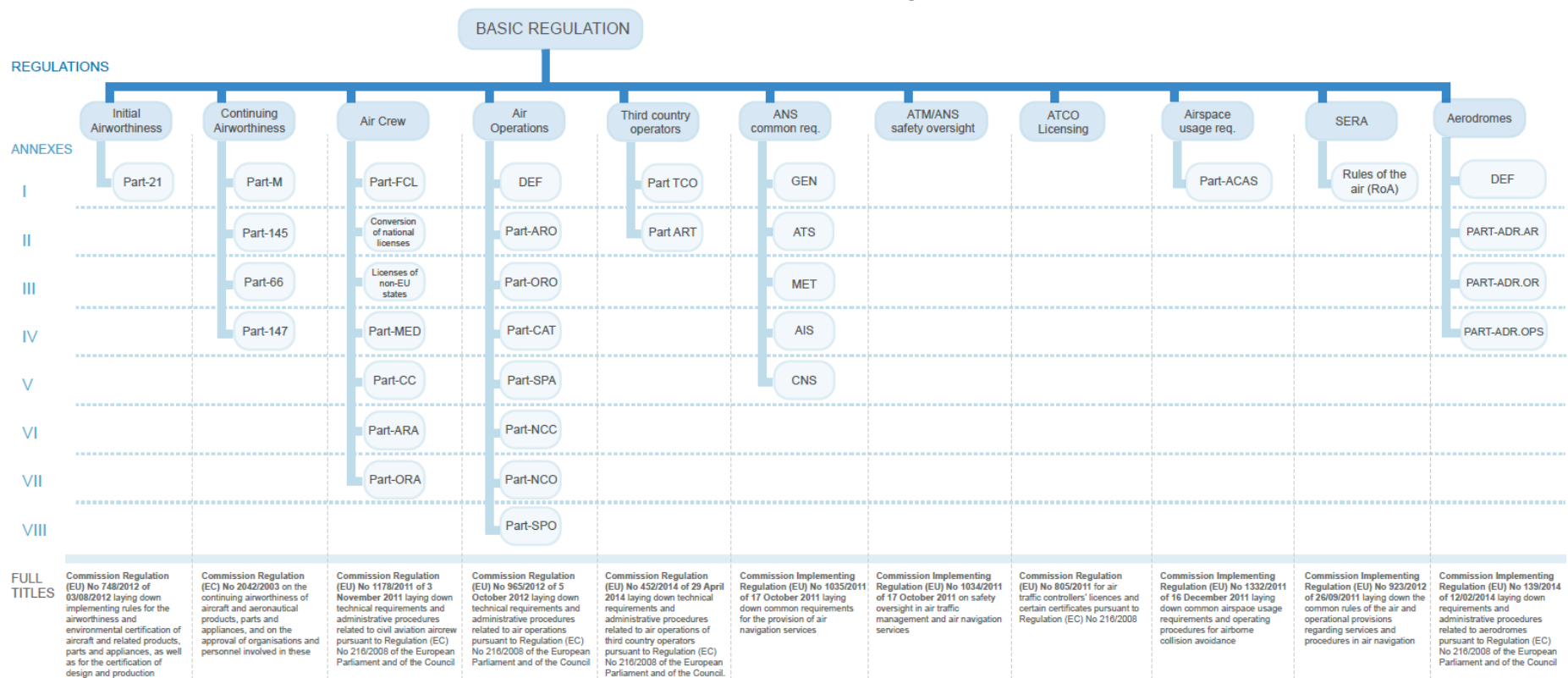
It is assumed that per 1 January 2007 JAA will consist of all 42 ECAC members + EASA of which  
 1) 30 countries have become EASA member and  
 2) 5 countries have signed ECAA agreement and, if JAA full member, are eligible for EASA membership;

# EASA REGULATION

## Regulations Structure

Each Part to each implementing regulation has its own Acceptable Means of Compliance and Guidance Material (AMC/GM). These AMC and GM are amended along with the amendments of the regulations. These AMC/GM are so-called 'soft law' (non-binding rules), and put down in form of EASA Decisions. A comprehensive explanation on AMC in form of questions and answers can be found on the FAQ section of the EASA website.

Furthermore, Certification Specifications are also related to the implementing regulations, respectively their parts. Like AMC/GM they are put down as Decisions and are non-binding.



## I

(Acts adopted under the EC Treaty/Euratom Treaty whose publication is obligatory)

## REGULATIONS

REGULATION (EC) No 216/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 20 February 2008

on common rules in the field of civil aviation and establishing a European Aviation Safety Agency,  
and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive  
2004/36/EC

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE  
EUROPEAN UNION,

Having regard to the Treaty establishing the European Commu-  
nity, and in particular Article 80(2) thereof,

Having regard to the proposal from the Commission,

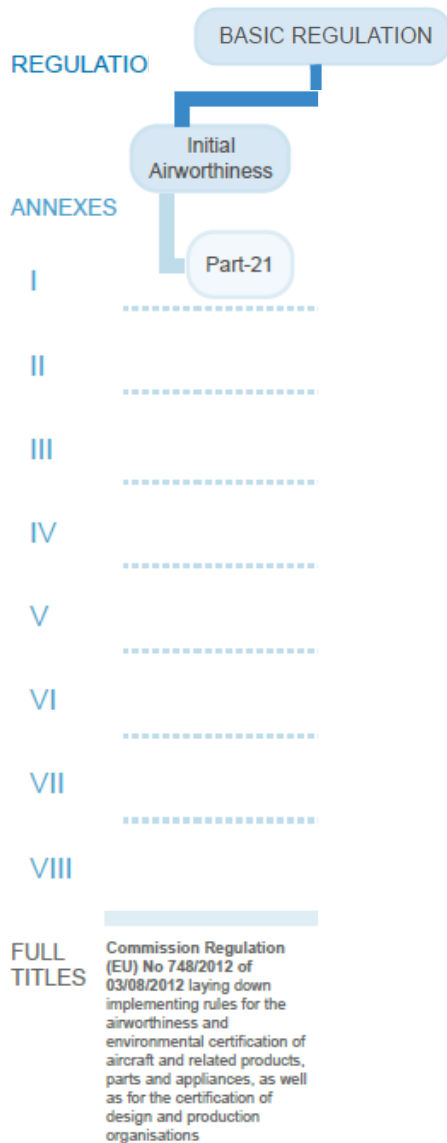
Having regard to the Opinion of the Economic and Social  
Committee <sup>(1)</sup>,

After consulting the Committee of the Regions,

the limits set by the Convention on International Civil  
Aviation, signed in Chicago on 7 December 1944 (the  
Chicago Convention), to which all Member States are  
parties.

- (3) The Chicago Convention already provides for minimum  
standards to ensure the safety of civil aviation and  
environmental protection relating thereto. Community  
essential requirements and rules adopted for their imple-  
mentation should ensure that Member States fulfil the  
obligations created by the Chicago Convention, including  
those vis-à-vis third countries.

# Initial Airworthiness



21.8.2012

EN

Official Journal of the European Union

L 224/1

## II

(Non-legislative acts)

## REGULATIONS

### COMMISSION REGULATION (EU) No 748/2012 of 3 August 2012

laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations

(recast)

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

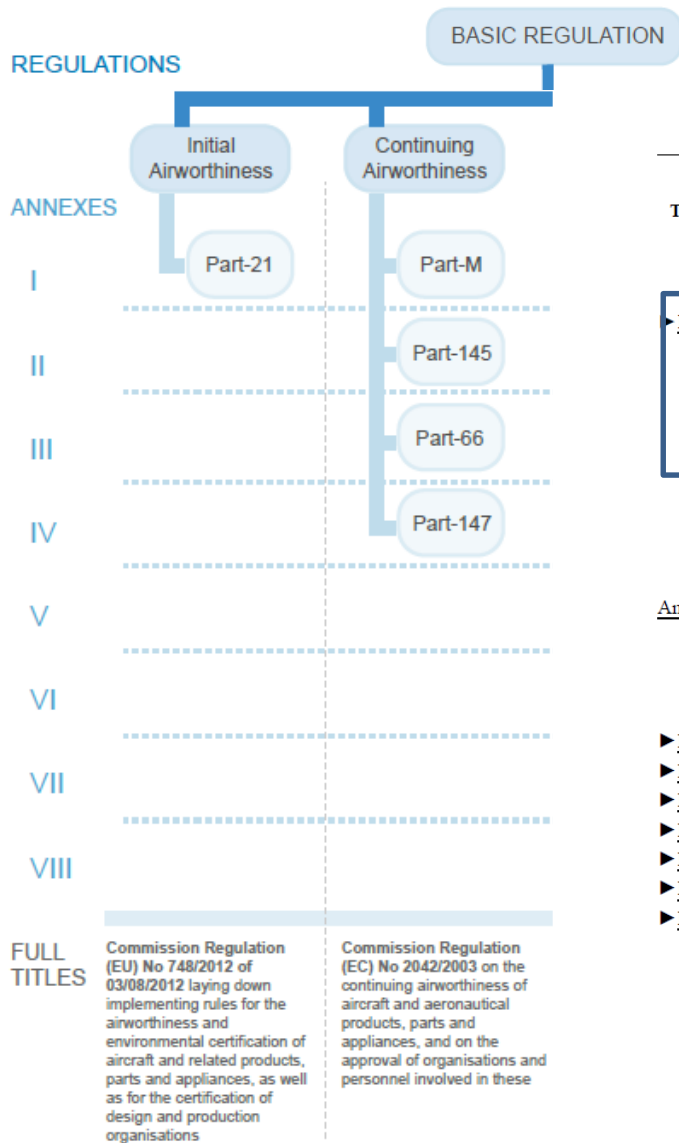
Having regard to Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC <sup>(1)</sup>, and in particular Articles 5(5) and 6(3) thereof,

(3) It is necessary to lay down common technical requirements and administrative procedures to ensure the airworthiness and environmental compatibility of aeronautical products, parts and appliances, subject to Regulation (EC) No 216/2008. Such requirements and procedures should specify the conditions to issue, maintain, amend, suspend or revoke the appropriate certificates.

(4) Organisations involved in the design and production of products, parts and appliances should be required to comply with certain technical requirements in order to



# Continuing Airworthiness



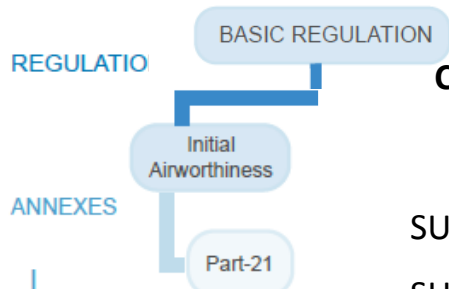
2003R2042 — EN — 01.08.2012 — 007.003 — 1

This document is meant purely as a documentation tool and the institutions do not assume any liability for its contents

**B** COMMISSION REGULATION (EC) No 2042/2003  
of 20 November 2003  
on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks  
(Text with EEA relevance)  
(OJ L 315, 28.11.2003, p. 1)

Amended by:

Official Journal			
	No	page	date
► <b>M1</b>	Commission Regulation (EC) No 707/2006 of 8 May 2006	L 122	17 9.5.2006
► <b>M2</b>	Commission Regulation (EC) No 376/2007 of 30 March 2007	L 94	18 4.4.2007
► <b>M3</b>	Commission Regulation (EC) No 1056/2008 of 27 October 2008	L 283	5 28.10.2008
► <b>M4</b>	Commission Regulation (EU) No 127/2010 of 5 February 2010	L 40	4 13.2.2010
► <b>M5</b>	Commission Regulation (EU) No 962/2010 of 26 October 2010	L 281	78 27.10.2010
► <b>M6</b>	Commission Regulation (EU) No 1149/2011 of 21 October 2011	L 298	1 16.11.2011
► <b>M7</b>	Commission Regulation (EU) No 593/2012 of 5 July 2012	L 176	38 6.7.2012



## ANNEX I

### PART 21

#### Certification of aircraft and related products, parts and appliances, and of design and production organisations

SUBPART A — GENERAL PROVISIONS

SUBPART B — TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

SUBPART D — CHANGES TO TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

SUBPART E — SUPPLEMENTAL TYPE-CERTIFICATES

SUBPART F — PRODUCTION WITHOUT PRODUCTION ORGANISATION APPROVAL

SUBPART G — PRODUCTION ORGANISATION APPROVAL

SUBPART H — CERTIFICATES OF AIRWORTHINESS AND RESTRICTED CERTIFICATES OF AIRWORTHINESS

SUBPART I — NOISE CERTIFICATES

SUBPART J — DESIGN ORGANISATION APPROVAL

SUBPART K — PARTS AND APPLIANCES

SUBPART M — REPAIRS

SUBPART O — EUROPEAN TECHNICAL STANDARD ORDER AUTHORISATIONS

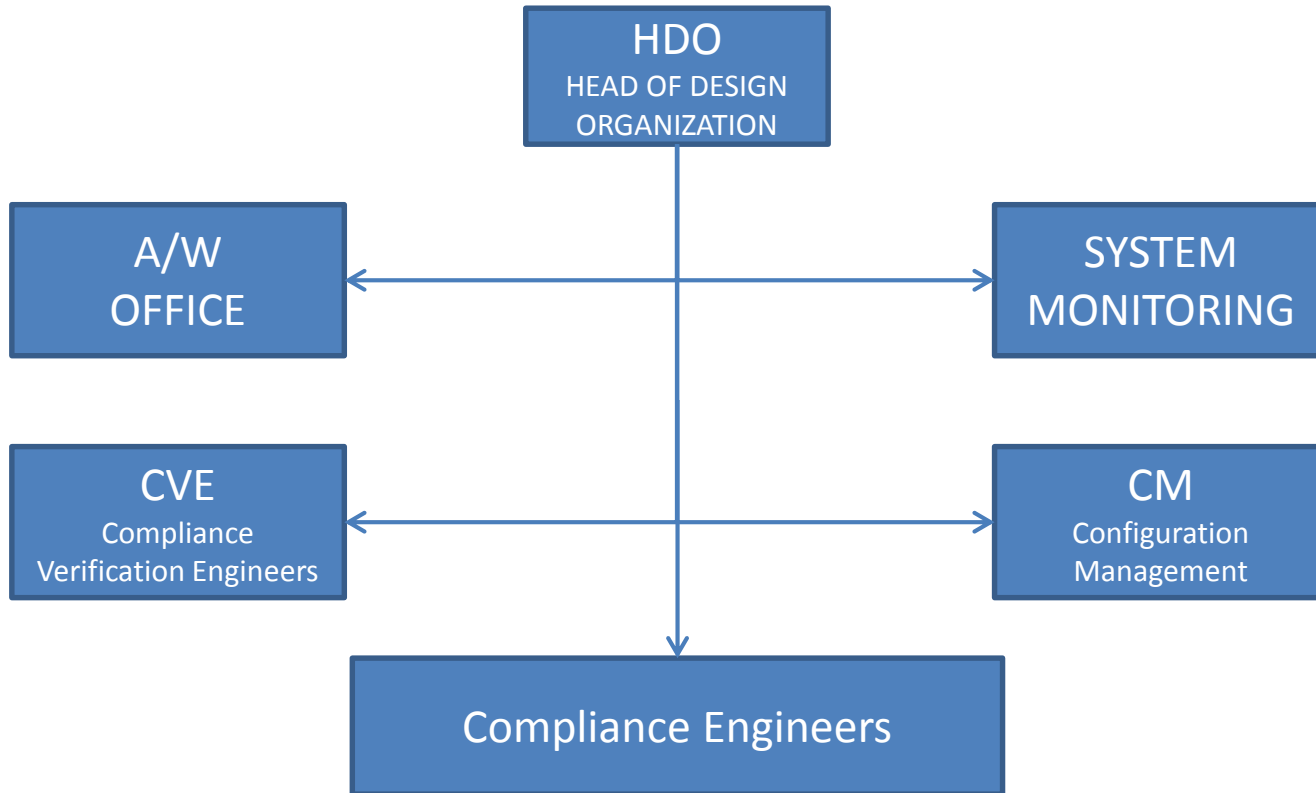
SUBPART P — PERMIT TO FLY

SUBPART Q — IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

## SUBPART B — TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

21.A.11	Scope .....	15	
21.A.13	Eligibility .....		SUBPART J DESIGN ORGANISATION APPROVAL
21.A.14	Demonstration of capability .....	10	
21.A.15	Application .....	16	
21.A.16A	Airworthiness codes .....	16	CERTIFICATION SPECIFICATIONS
21.A.16B	Special conditions .....	16	
21.A.17	Type-certification basis .....	17	
21.A.18	Designation of applicable environmental protection requirements and certification specifications .....	17	
21.A.19	Changes requiring a new type-certificate .....	18	
21.A.20	Compliance with the type-certification basis and environmental protection requirements .....	18	CERTIFICATION PROCESS
21.A.21	Issue of a type-certificate .....	18	
21.A.23	Issue of a restricted type-certificate .....	18	
21.A.31	Type design .....		SUBPART G PRODUCTION ORGANISATION APPROVAL
21.A.33	Inspection and tests .....		
21.A.35	Flight tests .....		SUBPART P PERMIT TO FLY
21.A.41	Type-certificate .....		
21.A.44	Obligations of the holder .....	20	
21.A.47	Transferability .....	20	
21.A.51	Duration and continued validity .....	20	
21.A.55	Record-keeping .....	20	
21.A.57	Manuals .....	21	
21.A.61	Instructions for continued airworthiness .....	21	

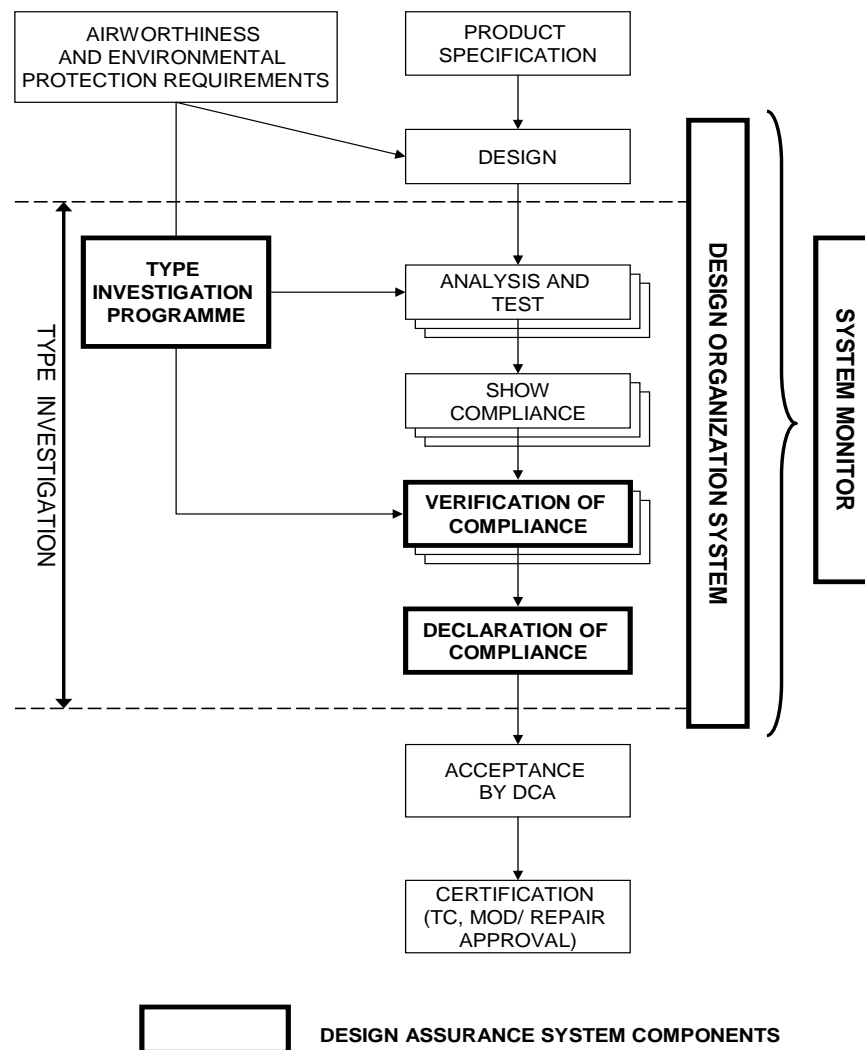
## SUBPART J – DOA DESIGN ORGANISATION APPROVAL



## SUBPART J – DOA DESIGN ORGANISATION APPROVAL

Technical Specialisation	Panel
PCM	0
Flight Test Pilot	1/P
Flight	1
Handling quality and performance	2
Structures	3
Hydro-mechanical System	4
Electrical System/HIRF	5
Avionics	6
Power plant and Fuel system and Fire Protection system	7
Cabin Safety	8.1
Environmental control systems	8.2
Noise	9
Software	10

## SUBPART J – DOA DESIGN ORGANISATION APPROVAL



## CERTIFICATION SPECIFICATIONS

*European Aviation Safety Agency*

---

# Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes CS-25

Amendment 15  
21 July 2014<sup>1</sup>

# CERTIFICATION SPECIFICATIONS

CS-25

## LARGE AEROPLANES

### PREAMBLE

#### BOOK 1 – CERTIFICATION SPECIFICATIONS

SUBPART A	–	GENERAL
SUBPART B	–	FLIGHT
SUBPART C	–	STRUCTURE
SUBPART D	–	DESIGN AND CONSTRUCTION
SUBPART E	–	POWERPLANT
SUBPART F	–	EQUIPMENT
SUBPART G	–	OPERATING LIMITATIONS AND INFORMATION
SUBPART H	–	ELECTRICAL WIRING INTERCONNECTION SYSTEMS
SUBPART J	–	AUXILIARY POWER UNIT INSTALLATION
APPENDIX A		
APPENDIX C		
APPENDIX D		
APPENDIX F		
APPENDIX H	–	INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
APPENDIX I	–	AUTOMATIC TAKEOFF THRUST CONTROL SYSTEM (ATTCS)
APPENDIX J	–	EMERGENCY DEMONSTRATION
APPENDIX K	–	INTERACTION OF SYSTEMS AND STRUCTURE
APPENDIX L		
APPENDIX M	–	FUEL TANK FLAMMABILITY REDUCTION MEANS
APPENDIX N	–	FUEL TANK FLAMMABILITY EXPOSURE

#### BOOK 2 – ACCEPTABLE MEANS OF COMPLIANCE (AMC)

INTRODUCTION
AMC – SUBPART B
AMC – SUBPART C
AMC – SUBPART D
AMC – SUBPART E
AMC – SUBPART F
AMC – SUBPART G
AMC – SUBPART H
AMC – SUBPART J
AMC – APPENDICES
GENERAL AMCs



# **Certification Specifications for Auxiliary Power Units**

**CS-APU**

# **Certification Specifications for All Weather Operations**

## **CS-AWO**

# CERTIFICATION SPECIFICATIONS

Annex to Decision 2010/014/R

*European Aviation Safety Agency*

---

## **Definitions and abbreviations used in Certification Specifications for products, parts and appliances**

### **CS-Definitions**

Amendment 2  
23 December 2010

## CERTIFICATION SPECIFICATIONS

*European Aviation Safety Agency*

---

# Certification Specifications for Propellers

## CS-P

Amendment 1  
16 November 2006

***European Aviation Safety Agency***

---

# Certification Specifications for Engines

## CS-E

Amendment 3  
23 December 2010

*European Aviation Safety Agency*

---

**Certification Specifications  
and  
Acceptable Means of  
Compliance**

**for**

**Aircraft Engine Emissions and  
Fuel Venting**

**CS-34**

Amendment 1  
29 January 2013

*European Aviation Safety Agency*

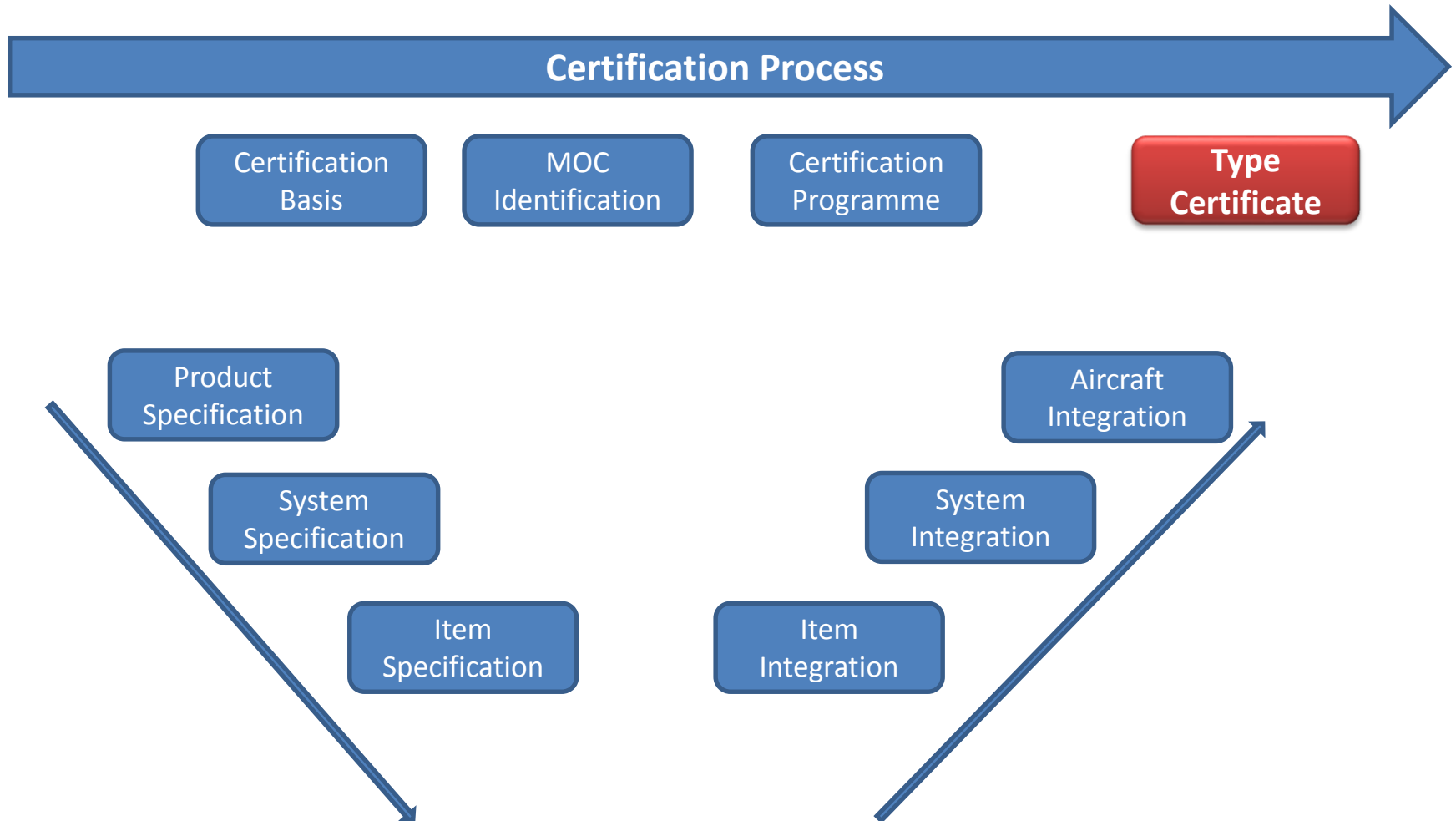
---

**Certification Specifications  
and Acceptable Means of  
Compliance  
for  
Aircraft Noise**

**CS-36**

Amendment 3  
29 January 2013

## CERTIFICATION PROCESS





## CERTIFICATION PROCESS

TYPE OF COMPLIANCE	MEANS OF COMPLIANCE	ASSOCIATED COMPLIANCE DOCUMENTS
Engineering Evaluation:	MC 0 = Compliance Statement MC 1 = Design Review MC 2 = Calculation/Analysis MC 3 = Safety Assessment	Reference to type design Description Notes, Drawings Substantiation Reports Safety Analysis
Tests :	MC 4 = Laboratory Tests MC 5 = Ground Tests MC 6 = Flight Tests MC 8 = Simulation	Test: Programme/Report/Interpretation
Inspection :	MC 7 = Design Inspection	Inspection Reports
Equipment Qualification :	MC 9 = Equipment Qualification	See Note

**Note :** Equipment Qualification is a process which may include all previous means of compliance.

## TYPE CERTIFICATE

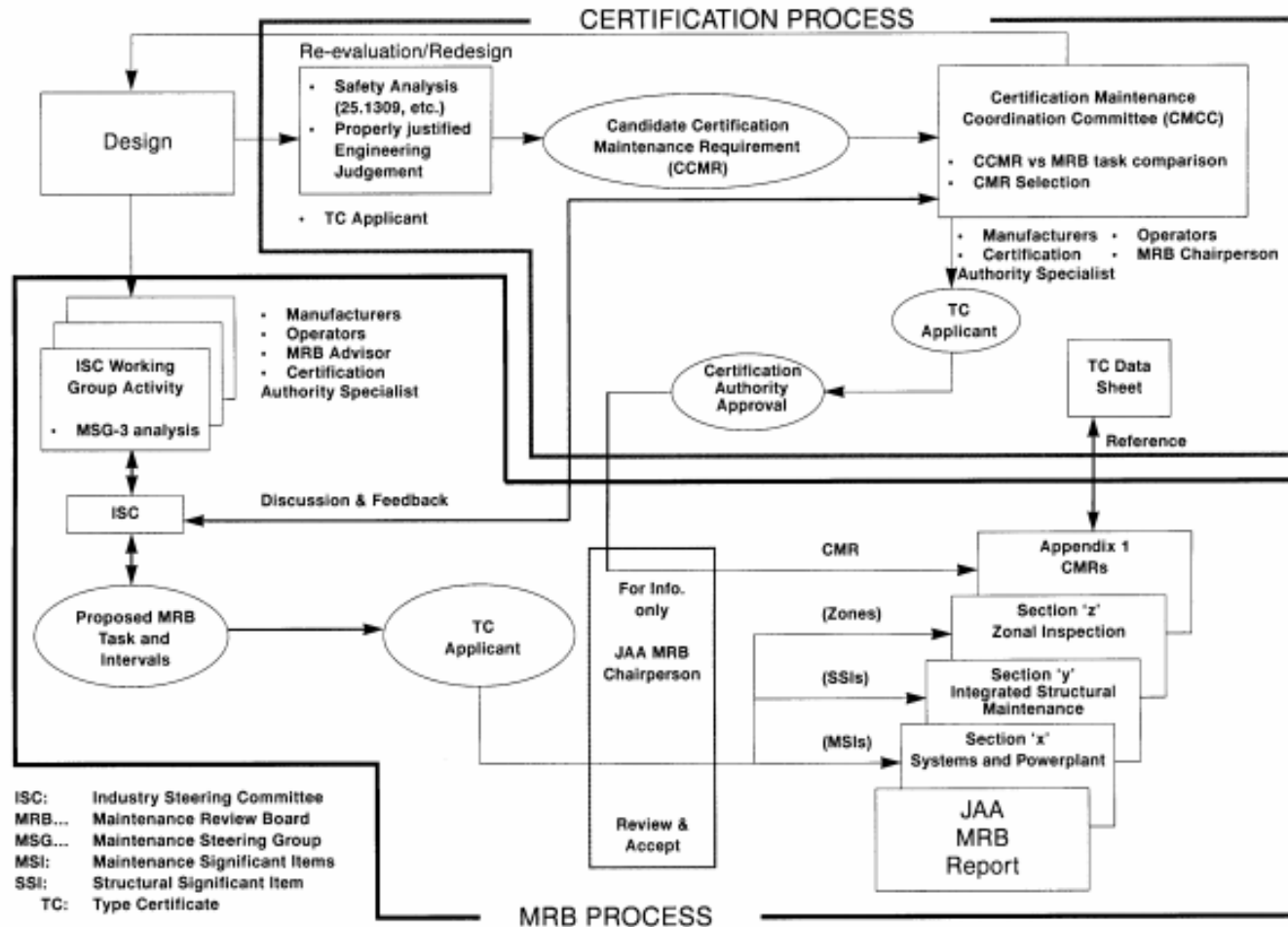


Figure 1 SCHEDULED MAINTENANCE TASK DEVELOPMENT

## TYPE CERTIFICATE

- A/C Type Configuration
- Engine TC
- Propeller TC
- APU TC (if necessary)
- AFM
- A/W Limitations
- C.M.R.
- Equipment List
- Maintenance Planning Document (MSG-3)

## ENTRY INTO SERVICE

- AFM (Aircraft Flight Manual)
- MMEL (Master Minimum Equipment List)
- FCD (Flight Crew Data)
- CCD (Cabin Crew Data)
- AMM (Aircraft Maintenance Manual)

---

**Certification Specifications**  
**and**  
**Guidance Material**  
**for**  
**Cabin Crew Data**  
**CS-CCD**

Initial Issue  
31 January 2014

*European Aviation Safety Agency*

---

**Certification Specifications  
and  
Guidance Material  
for  
Master Minimum Equipment List  
CS-MMEL**

Initial Issue  
31 January 2014

*European Aviation Safety Agency*

---

**Certification Specifications  
for  
Operational Suitability Data (OSD)  
Flight Crew Data  
CS-FCD**

Initial Issue  
31 January 2014

**Grazie**

A.De.Sy. Consulting srl

Ing. Giuseppe Serpico