EASA
European Union Aviation Safety Agency

DESIGN & CERTIFICATION *newsletter*

INDUSTRY

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AGENCY

CERTIFICATION NEWS

TECHNICAL INFORMATION

EXPERT TIPS

4rd edition
JANUARY 2024

Welcome to our latest EASA Design & Certification Newsletter, the fourth issue since the start of this initiative, all of which we hope helped to keep you updated on our latest certification news.

In this issue you will find some articles related to technical subjects as well as updates coming from recent certification events.

I would like to thank particularly Nicolas DUPREZ, Christian GUNITZBERGER, Thomas OHNIMUS, Rodrigo PRIEGO and Jean-Louis AMMELOOT for their time and contribution to the articles in this edition.

We welcome your comments and suggestions.

Should you have further questions, please contact your PCM or DOA Team Leader.

Yours faithfully,

Rachel DAESCHLER

IMPORTANT!!!

If you wish to receive this bi-annual newsletter in the future you need to register via our website and click on news feed

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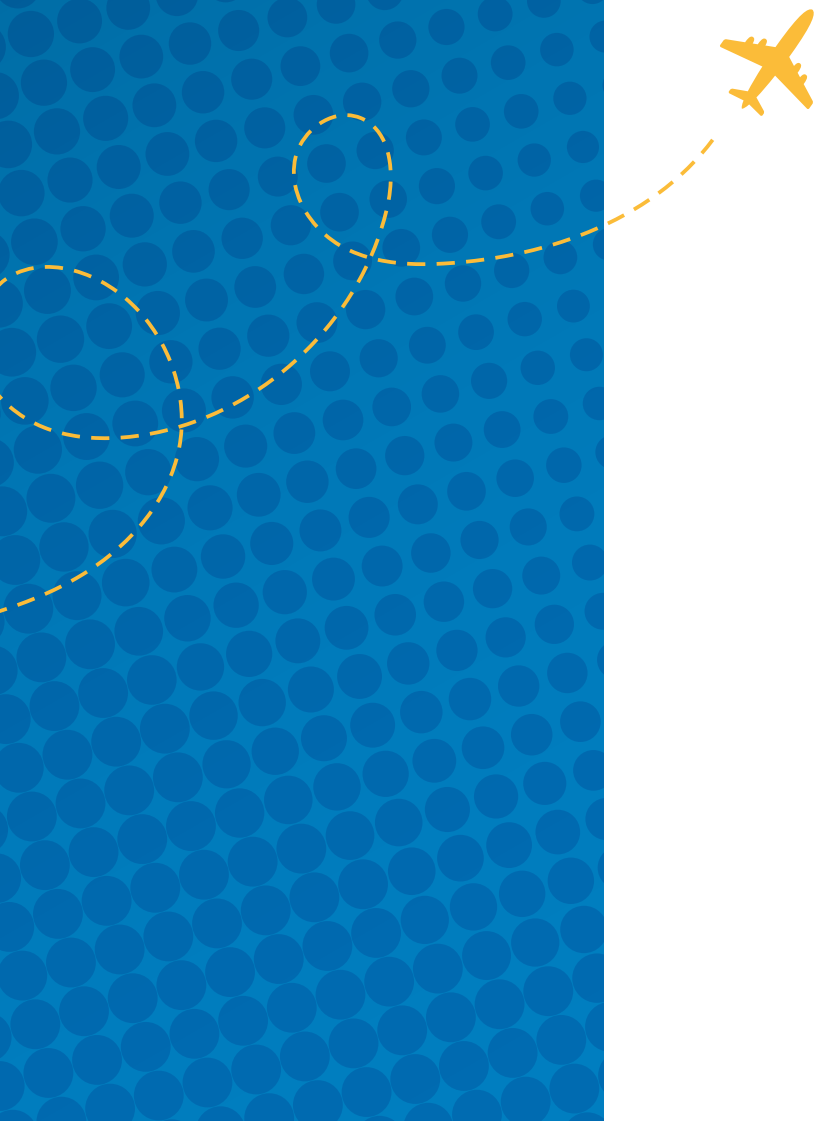

1 Air Medical Services with Large Aeroplanes

Airliners can be used for medical services with permanent or flexible installations.

EASA published the updated Certification Memorandum CM-CS-012 Issue 3 earlier this year.

Guidance from EASA for Air Medical Services certification published

Large Aeroplanes are frequently used in a Medical Evacuation or Ambulance conversion configuration to perform Air Medical Services.

The primary purpose of the Medical Evacuation or Ambulance flights is the transport of patients.

The primary purpose of flights where airlines supplement their cabin with temporary stretcher installations is transporting passengers.

However, both share several common design peculiarities that are not addressed in the CS-25 certification requirements.

EASA published in 2011 a Special Condition (SC-D25.803-01 on our website) for large aeroplanes that are modified by the installation of a Medical Evacuation configuration. Guidance for Air Medical Services was added to the Statement of Issue of this Special Conditions during later revisions.

Later in 2020, with provision of this Certification Memorandum, this guidance was made available for all Air Medical Services.

Supporting Design Organisation with detailed guidance material

One challenge in preparing the certification dossier for such Air Medical Services installation is the multitude of topics to be addressed with the associated interpretative materials supports published separately by the Agency.

In an effort to ease this task of the Office of Airworthiness staff, this Certification Memorandum gives a handy overview of those topics that need to be systematically addressed:

- EASA changes embedded in Non-EASA approved design
- Direct view
- Strength requirements
- Ventilation
- Cabin signs
- Installation provisions vs. approved configuration
- Carry-on/loose items
- Oxygen bottles
- Evacuation
- Approved Model Lists STC
- permanent installations vs. temporary installations
- installation of seats on pallets or plinth

Please note that other topics may need to be discussed additionally, depending on the characteristics of each installation.

Your design, our review

Please check this Certification Memorandum on our website.

This will allow you to improve the efficiency of your next certification project dealing with such installations.

Should you have any question about this topic, please contact our Senior PCM Christian.Gunitzberger@easa.europa.eu

2 EASA is ready to certify retractable seatbelts

Have you ever wondered why your car has retractable seatbelts while your aircraft passenger seat does not? Until very recently so-called "expandable pelvic restraint systems" were not certified by EASA as they pose a number of challenges regarding the applicable aviation authorities requirements.

THE CHALLENGES

The seats are equipped with an expandable pelvic restraint including a design feature designated as Rotary Length Adjuster (RLA). When the passengers bring the seat from the position for taxi, take-off and landing (TTL) into the recline position, the seat pan slides forward ("slouching"). As the pelvic restraint is attached to the seat spreader and not the seat pan, the pelvic restraint needs to be adjusted (lengthened) in order to avoid the application of excessive load on the passengers belly/ hip/torso while seated.

The RLA provides this function and can be activated and deactivated by the seat occupant by pressing and releasing the recline button. From the review of the design of the restraint system it is clear how certain functions of a typical restraint system, e.g. self-alignment capability, can be provided only in combination with the geometry and the design of the seat model under certification.

The minimum performance standards of ETSO C114 A1, ETSO C22g and, in turn, of ETSO C127b have not been developed taking into account a similar design.

Therefore, the EASA Cabin Safety experts proposed a set of special conditions in order to complement the existing

applicable certification bases. In particular, there is an impact on the Aircraft Flight Manual to be taken into account.

THE SPECIAL CONDITIONS

The following special conditions were published (the consultation period expired already):

1. The harness system must meet the Technical Conditions specified in Section 3 of ETSO C114 A1, Torso Restraint System, dated 12th July 2013.

2. Protection of Occupants other than 50th Percentile

A range of stature from a two-year-old child to a ninety-five percentile male shall be considered in the design and evaluation of the torso restraint system. In addition, it shall be demonstrated that the expandable pelvic restraint does not introduce any hazard when:

i. The seat occupant is holding an infant, including the case where a supplemental loop infant restraint is used;

ii. the seat occupant is a child in a child restraint device;

iii. the seat occupant is a pregnant woman.

3. The seating system must be designed to ensure that the activation of the Rotary Length Adjuster (RLA) is prevented during taxi, take-off, turbulence and landing.

4. The effects of manufacturing tolerances and of wear and tear on the RLA mechanism must be considered with respect to performance of the system in dynamic testing conducted to meet CS 25.562.

5. The Aircraft Flight Manual must include any limitations and procedures that may be necessary to ensure that proper use is made of the torso restraint system provided with the expandable pelvic restraint.

All details are published under reference SC-D25.785-01 on our website, including the Interpretative Material giving additional information about the Agency's expectations.

Should you have any question about this topic, please contact our Senior Cabin Safety expert Thomas.Ohnimus@easa.europa.eu .

3 Cabin Safety – Cabin Signs ESF published

If you install cabin signs, you need to be aware of the existence of this Equivalent Safety Finding (ESF).

A pragmatic approach to exit signs installation

For photoluminescent exit signs, some installations might not be fully compliant with the applicable brightness requirements (see the EASA Design and Certification Newsletter issue 1 article 1.09). A common application need for such signs is on Moveable Class Dividers (MCD).

However, the level of safety provided by such signs can be deemed equivalent to fully compliant electrically powered signs in some cases:

EASA has published an Equivalent Safety Finding on the website (referenced ESF-D25.812-01) providing details about the compensating factors that allow your organisation to install those signs despite the identified non-compliances.

The design features to be considered

The installation of photoluminescent exit signs that are not fully compliant with CS 25.812(b)(1)(ii) and CS 25.812(i) is possible if the certification team considers that the following design features are provided as compensating factors:

a) The photo luminescent exit signs used on MCDs that prevent fore and/or aft view on electrically illuminated exit signs are

legible by any passenger approaching along the aisle and after initial charging provide guidance to the emergency exits considering the maximum flight time plus at least 10 minutes after a possible emergency landing at the critical ambient conditions.

b) The minimum required charging time and lighting condition to ensure the initial brightness have to be established in the Aeroplane Flight Manual operating procedures.

c) The background of the photo luminescent exit signs shall not decrease the legibility of the sign in comparison to a sign that is in compliance with 25.811 and 25.812.

d) In an emergency evacuation situation, the electrical emergency lighting system shall be powered "ON" and provide a level of illumination which ensures that the photoluminescent exit signs are legible from the maximum viewing distance. In addition, testing conducted under worst case scenario conditions, i.e. no emergency lighting operational (black out), demonstrated an additional safety benefit provided by photoluminescent signs.

e) In case where MCDs obscure the view on electrical exit locators, information about the next emergency exit(s) will be provided to the passengers through photo luminescent exit signs on the MCD. The aisle length where such MCD partially or fully obscure the view on electrical exit locators shall not exceed 70% (for the 95th percentile male population) of the distance between two required electrically illuminated emergency exit locator signs [as per CS 25.811(d)(1)].

Your design, our review.

Should you be encountering the non-compliances mentioned in this article while defining your cabin interior, please make sure to review closely the contents of the final ESF publication on our website.

This will allow you to understand whether or not your intended design is eligible to the use of this ESF. If yes, the certification team and in particular the cabin safety expert will be involved in order to ensure the appropriate implementation of the above-mentioned design features. A Certification Review Item will be used for compliance recording.

Should you have any question about this topic, please contact our Senior Cabin Safety expert Thomas.Ohnimus@easa.europa.eu .

4 CMT

In 2024, EASA will host the CMT week from 28 to 31st October.

CMT stands for Certification Management Team. It was created in September 2015 between the Agência Nacional de Aviação Civil (ANAC), European Aviation Safety Agency (EASA), Federal Aviation Administration (FAA), and Transport Canada Civil Aviation (TCCA). The CMT oversees and manages collaboration efforts to permit the development and implementation of regulatory and policy solutions common to certification issues and support greater harmonization of our systems. The CMT vision is to use active confidence building initiatives and risk-based validation principles to accept partner certification activities with limited or no technical involvement. The CMT understands that maximizing the use of existing bilateral partnerships to accept approvals and findings made by our partners is essential to reducing the resources currently expended on validation programs.

The CMT is lead by the respective Certification Directors of each Authority and supported by the CMTS Secretariat (for EASA Mario Colavita and Jean-Louis Ammeloot).

The CMT Leaders hold remote meetings every month and meet face to face in Fall of each year: during this meeting a session is held with industry representatives. The CMT secretariat holds remote meetings every month.

In addition, the CMT created some working groups to develop some harmonised guidance:

3 CAGs (Certification Authorities Groups) which are standing Groups:

- CATA for Transport Aircraft
- CAPP for Engines
- IOEPB for International Operational Evaluation Practices Board

4 TSTs (Task Specific Teams) which are focused groups with a limited duration:

- EHPS for Electric and Hybrid Propulsion System
- Interpretation Differences in Addressing Common Modes Errors in Critical Systems
- Interpretation Differences in 25.1322, Flight Crew Alerting
- LSA, light sport aircraft Compatibility

Usually, these groups hold monthly remote meetings and one yearly face to face meetings. Their recommendations are presented to the CMT Secretariat for endorsement. Then, they are published by the FAA and EASA on their website (https://www.easa.europa.eu/en/document-library/bilateral-agreements).

Should you have any question about this topic, please contact Jean-Louis Ammeloot (jean-louis.ammeloot@easa.europa.eu)

5 INITIAL AIRWORTHINESS REGULATORY DIGEST 2023

FEBRUARY

7 FEB

CS-27 and CS-29

EDD

On **7 February** EASA published EDD 2023/001/R, amending CS-27 (Amendment 10) and CS-29 (Amendment 11). with the following objectives:

- provide proportionate and cost-efficient rules in the field of the **safety assessment** provisions for equipment, systems and installations for rotorcraft that also maintain an overall high level of safety;
- reflect the state of the art of small and large rotorcraft certification based on experience gathered from in-service occurrences and certification projects.

To achieve these objectives, this Decision amends the Certification Specifications and Acceptable Means of Compliance for Small Rotorcraft (CS-27) and the Certification Specifications and Acceptable Means of Compliance for Large Rotorcraft (CS-29) to introduce:

- amendments to the CSs related to the safety assessment of equipment, systems, and installations along with AMC that introduces proportionality into the safety objectives for small CS-27 rotorcraft;
- certification provisions and guidance material for which sufficient experience has been gained through certification (e.g. they were included in Certification Memoranda, equivalent safety findings, special conditions) or that were necessary to address Safety Recommendations.

MARCH

7 MAR

CS-23

EDD

On **7 March** EASA issued EDD 2023/002/R, amending CS-23 (Amendment 6) and the related AMC & GM (Issue 4).

This Decision amends CS-23 and the Acceptable Means of Compliance and Guidance Material to CS-23 to incorporate 6 new and 23 revised **consensus standards** that are issued by the American Society for Testing and Materials (ASTM) International as an acceptable means of compliance with CS 23. EASA reviewed those amendments to the referenced standards that introduce state-of-the-art means of compliance, supporting global standardisation and harmonisation. In some cases, EASA complemented the incorporated ASTM consensus standards by remarks, to identify differences or limitations due to EASA's interpretation of these standards.

29 MAR

Part 21

NPA

On 29 **March** EASA consulted NPA 2023-101 with its Advisory Bodies

The consultation included a series of packages relating to the Acceptable Means of Compliance and Guidance Material for **Part 21 Light**. Several info sessions were organised as part of the consultation.

APRIL

11 APR

Part 21 and Part 26

TOR

On 11 **April** EASA launched a new rulemaking task by publishing ToR RMT.0740.

The ICAO Council regularly adopts new Standards and Recommended Practices (SARPs) in the Annexes to the Chicago Convention (e.g. Annex 8 'Airworthiness of Aircraft', Annex 6 'Operation of Aircraft' and Annex 19 'Safety Management'), which may need to be transposed in Commission Regulations (EU) No 748/2012 and (EU) 2015/640 and the associated acceptable means of compliance (AMC) and guidance material (GM), as well as CS-26 as relevant for the newly adopted SARPs and as reflected in the dedicated subtask as described in the EPAS.

The objective of this RMT is to maintain and increase the level of safety and ensure the recognition in 3rd countries of certificates issued i.a.w. the above Regulations by transposing ICAO SARPs. This will be done after an assessment of the changes proposed by ICAO. This RMT is a permanent vehicle to address newly adopted airworthiness SARPs, except those related to continuing airworthiness.

The first subtask addresses the transposition of the related new ICAO Standards and Recommended Practices in Amendment 109 to Annex 8 'Airworthiness of Aircraft' to the Convention on International Civil Aviation into Commission Regulation (EU) 2015/640 and CS-26 'Additional airworthiness specifications for operations' for design approval holders to make available to operators information on **cargo compartment fire protection** capabilities, as certified, of aeroplanes and helicopters.

MAY

25 MAY

Part 21

EU REG

On **25 May** Commission Delegated Regulation (EU) 2023/1028 was published**.** This regulation incorporates the definition of **complex motor-powered aircraft** which existed in the previous Basic Regulation into Part 21. It also corrects several errors introduced during the adoption process of Part 21 Light

JUNE

21 JUN

CS-E

NPA

On **21 June** EASA published NPA 2023-06 proposing to amend CS-E to modernise the applicable engine certification test requirements as follows:

- update the **turbine-engine endurance test** specifications taking into account modern turbofan-engine design characteristics;
- improve the level of confidence in the robustness of turbine-engine designs prior to entry into service by requiring a test to demonstrate the **engine's initial maintenance programme** (IMP);
- ensure that EASA oversees IMP tests and benefits from the corresponding knowledge gained that can help understand the potential required corrective actions when turbine-engine continuing airworthiness issues are discovered;
- ensure a robust and harmonised substantiation of **piston-engine time between overhauls** (TBO) / time between replacements (TBR) intervals and the related maintenance programme;
- ensure as much as possible harmonisation with the corresponding FAA regulations and certification policies.

27 JUN

Part-26

NPA

On **27 June** EASA consulted NPA 2023-105 with its Advisory Bodies.

NPA 2023-105 proposes the transposition of the related new ICAO Standards and Recommended Practices in Amendment 109 to Annex 8 'Airworthiness of Aircraft' to the Convention on International Civil Aviation into Commission Regulation (EU) 2015/640 and CS-26 'Additional airworthiness specifications for operations' for design approval holders to make available to operators information on **cargo compartment fire protection** capabilities, as certified, of aeroplanes and helicopters.

JULY

13 JUL

Part 21

EDD

On **13 July** EASA published Acceptable Means of Compliance and Guidance Material (AMC/GM) to assist organisations and authorities in complying with the **Part-IS** regulatory package contained in Delegated Regulation (EU) 2022/1645 and Implementing Regulation (EU) 2023/203.

The AMC and GM to Part-IS consists of three documents issued with different ED Decisions (ED Decision 2023/008/R, ED Decision 2023/009/R and ED Decision 2023/010/R). Organisations and Authorities should consider both the AMC and GM to the Cover Regulations and the AMC and GM related to the domain specific Regulations.

These documents have been developed in close coordination with the European Strategic Coordination Platform (ESCP) on cybersecurity in aviation, which includes representatives from the civil and military aviation community. They have been developed over a period of two years, which included a focused consultation.

AUGUST

30 AUG

CS-25

TOR

On **30 August** EASA launched a new rulemaking task by publishing ToR RMT.0741 on the topic of **take-off performance parameters and position errors for large aeroplanes**.

This new rulemaking seeks to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused using erroneous take-off performance parameters, and by erroneous take-off positions. Such errors have the potential to result in runway excursions, aeroplane upsets, with subsequent loss of control and collision with terrain or obstacles.

Considering design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing means to timely inform or alert the flight crew. Design requirements will be considered to address new large aeroplane designs. An analysis and impact assessment will be conducted to assess the feasibility and the benefit of design requirements applicable to existing (already type certificated) large aeroplane designs.

31 AUG

Part 21

OP

On **31 August** Opinion No 03/2023 was published. This Opinion introduces a regulatory framework for the operation of **drones.** It proposes amendments to existing EU aviation regulations and the establishment of two new ones to address:

- the initial airworthiness of UAS subject to certification in accordance with Article 40 of Commission Delegated Regulation (EU) 2019/945;
- the continuing airworthiness of UAS subject to certification and operated in the 'specific' category; and
- the operational requirements applicable to manned VTOL-capable aircraft (VCA).

The Opinion is currently under discussion by the European Commission and Member States.

OCTOBER

20 OCT

Part 21

EDD

On **20 October** the second set of Part 21 AMC/GM was published with EDD 2023/014/R.

This ED Decision complements ED Decision 2022/021/R. It provides AMC & GM to amended/introduced competent authority requirements in Part 21 on the following topics: initial certification procedures; oversight principles; oversight programme; management systems; changes to the management system; record-keeping; finding, corrective actions, observations; suspension, limitation, and revocation. In addition, this ED Decision corrects editorial errors. This Decision also removes the remaining 'AMC-ELA' and 'GM-ELA' to Part 21 introduced with ED Decision 2019/003/R since they are not up to date.

The objectives of this ED Decision are to further support the implementation of the **safety management system** and occurrence-reporting requirements that were introduced by Commission Delegated Regulation (EU) 2022/201 and Commission Implementing Regulation (EU) 2022/203.

20 OCT

Part 21

EDD

On **20 October** EASA issued acceptable means of compliance and guidance material to Annex Ib (**Part 21 Light**) to Regulation (EU) No 748/2012 and and to Annex I (Part-M), Annex II (Part-145), Annex III (Part-66), Annex Vb (Part-ML), Annex Vc (Part-CAMO) and Annex Vd (Part-CAO) to Regulation (EU) No 1321/2014 with the objective to provide affected stakeholders with cost-efficient and proportionate means to comply with the regulatory requirements in the fields of the initial and continuing airworthiness of aircraft intended primarily for sport and recreational purposes.

These AMC and GM are expected to facilitate the application of the new initial airworthiness and amended continuing airworthiness requirements, and contribute towards reducing the regulatory burden for designers and manufacturers of aircraft intended primarily for sport and recreational purposes and other stakeholders involved in continuing airworthiness while continuing to ensure a high level of safety as intended by **Part 21 Light** and Regulation (EU) No 1321/2014. This Decision is expected to facilitate the implementation of the amended regulations

NOVEMBER

15 NOV

Part 21

NPA

On **15 November** EASA published NPA 2022-09 enabling the implementation of the latest **CAEP** amendments to **ICAO Annex 16 Volumes I, II, and III**.

This Notice of Proposed Amendment (NPA) proposes to update the applicable environmental protection requirements for the certification of products in Regulations (EU) 2018/1139 and (EU) No 748/2012, and the associated acceptable means of compliance (AMC) and guidance material (GM).

DECEMBER

18 DEC

CS-E

EDD

On 18 **December** EASA issued EDD 2023/020/R.

This Decision amends CS-E to improve the certification of turbine engines to better assess and mitigate the potential hazards from **blade failures**, especially by better integrating the analysis and identification of the potential threats to the aircraft on which the engine is to be installed. The objective is to ensure a more robust certification process and decrease the risk of substantial aircraft damage and fatalities.

In addition, CS-E is amended to reflect the state of the art of engine certification, improve the harmonisation of CS-E with the Federal Aviation Administration (FAA) regulations and make some editorial corrections.

- Amendments are made in the following areas:
- assumptions — oil consumption
- instrument provisions
- piston engine failure analysis
- approval of engine use with a thrust reverser
- fuel specifications for compression-ignition piston engines
- ice protection
- damage tolerance of critical parts, and
- engine critical parts — static pressure loaded parts.

DECEMBER

19 DEC

CS-25

EDD

On 19 **December** EASA issued EDD 2023/021/R.

The objective of this Decision is to reflect the state of the art of large aeroplane certification based on information gathered from in-service occurrences and certification projects.

This Decision amends the Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (CS-25) in order to:

1. provide consolidated specifications, guidance and acceptable means of compliance related to **survivability after ditching** (i.e. emergency landing on water);
2. improve the specifications, guidance and acceptable means of compliance applicable **to installed systems and equipment for use by the flight crew**;
3. make various amendments dealing with the following topics:

- development assurance
- performance and handling characteristics in icing conditions
- brakes and braking systems certification tests and analysis
- oxygen equipment and supply
- the maximum period during which the air conditioning is off and
- cabin crew portable oxygen equipment;

19 DEC

Detailed Technical Specifications

EDD

On 19 **December** EASA issued a Decision containing Detailed Technical Specifications and Guidance Material for declaration of design compliance in accordance with **Part 21 Light**.

This Decision provides the Detailed Technical Specifications to enable an aircraft manufacturer to declare compliance of their design in accordance with Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.

The recently adopted Part 21 Light permits an aircraft manufacturer, for a defined scope of simple aircraft, to declare that their design complies with the Detailed Technical Specifications that have been published by EASA. EASA is not involved in the verification of compliance of the design, and this remains the responsibility of the person making the declaration.

Part 21 Light requires that EASA publishes the Detailed Technical Specifications against which an aircraft manufacturer can declare compliance. These Detailed Technical Specifications are the same Certification Specifications that are used for the certification of equivalent aircraft under the type-certification process and are not amended (but limited in some cases to simpler designs).

6 SAVE THE DATE!

EUROPEAN ROTORS
THE VTOL SHOW AND SAFETY CONFERENCE

Amsterdam, The Netherlands

4-7 Nov, Exhibits Open 5-7 Nov

organised by EHA European Helicopter Association · EASA European Union Aviation Safety Agency

FEDERAL AVIATION ADMINISTRATION · EASA European Union Aviation Safety Agency

Joint FAA – EASA Workshop

Qualification / Certification of Additively Manufactured Parts

September 17 – 19 2024

At Wichita State University's National Institute for Aviation Research

NIAR Wichita State University

EASA Certification Workshop & Conference

Save the Date November 26-27, 2024

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European Union Aviation Safety Agency

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