



International Civil Aviation Organization

WORKING PAPER

A40-WP/516
TE/210
10/9/19
(Information paper)
English only

ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission

STATUS OF THE CERTIFICATION PROGRESS FOR SMALL GENERAL AVIATION AIRPLANE USING PERFORMANCE-BASED RULES IN THE ROK

(Presented by the Republic of Korea)

EXECUTIVE SUMMARY

This information paper presents the progress status of certification for small general aviation airplane in terms of applying consensus standards (PART /CS-23) reflecting the new performance-based rules.

<i>Strategic Objectives:</i>	This information paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	This information paper has no significant financial implications.
<i>References:</i>	

1. INTRODUCTION

1.1 Recently, the airworthiness standard for general small aviation airplane was developed as new consensus standards (PART/CS-23) in cooperation between industry, users, Federal Aviation Administration (FAA), European Union Aviation Safety Agency (EASA) and other relevant authorities. The purpose of the new airworthiness standard for small general aviation airplane is to amend the airworthiness standards for normal, utility, acrobatic, and commuter category airplanes certified under CS/Part 23 by removing the current prescriptive design requirements and replacing them with performance-based airworthiness standards.

1.2 The new rules are expected to expedite the adoption of innovative designs and safety enhancing technology in type-certificated products, while reducing regulatory time and cost burdens for the aviation industry and the Airworthiness Authority.

1.3 The ROK has completed the revision of the airworthiness standard of KAS (Korean Airworthiness Standards) PART 23 in alignment with internationally recognized consensus standards, to advance general aviation safety and reduce the costs associated with product certification for global regulatory harmonization in 2018. The ROK aims to introduce the status of the certification process for small general aviation airplane, which is currently applied under the new rules.

2. DISCUSSION

2.1 Certification overview of small general aviation airplane

2.1.1 The ROK has been in the process of certifying the type certification of small general aviation airplane since September 2018 based on the KAS PART 23, which reflects the new performance-based rules. The airplane currently in progress for Level 1 certification is low speed airplane KLA-200. This airplane is a low wing conventional type aircraft consisting of composite structure that uses a wet lay-up fabrication method. The corresponding aircraft type code, defined in the ASTM (American society for testing materials), is "1SRLLDLN".

2.1.2 The goal is to keep this new certification period relatively short, not exceeding two years and four months, and complete the certification process by December 30, 2020. An applicant's proposed means of compliance may be submitted to the airworthiness authority for KAS PART 23 acceptances, based on 258 items. The airworthiness authority reviews whether the applicant's proposed means of compliance is in accord with the accepted means of compliance based on ASTM consensus standards, and completes the final stage through consultation with the applicant.

2.1.3 This series of proceedings were subject to six months of consultation from the time of the application due to difficulties in reaching an agreement with the applicant on how to demonstrate the means of compliance, as was expected as a concern by the FAA and EASA about the amended Part 23.

2.2 Potential difficulty in the certification process

2.2.1 In the case of an application related to new technology, the applicant can propose a new means of compliance based on the safety standards. However, due to the vague definition of the new PART 23, there may be differences in the interpretation of the means of compliance and/or method of compliance, making it controversial between applicants wanting to simplify the compliance and the airworthiness authority whose stance is based on performance-based safety standards

2.2.2 The new consensus standards (PART/CS-23) have the advantage of autonomy to develop and demonstrate compliance with safety standards. However, this autonomy may not only serve as an advantage. As an example, based on ASTM (F3114-15), which is consensus standards, if special factors of safety are applied and selected by using statistical basis or coefficient of variation to prove the material strength property of composite material structure, the applicant's autonomy can be expanded because the basic criteria for specific test methods (number of specimens/size/test types, etc.) are not given. On the other hand, the uncertainty of a basic criterion for a specific test method may result in differences in opinion between the applicants and the airworthiness authorities.

2.2.3 If the applicant proposes a PART 23 accepted means of compliance based on something not included in the consensus standards, the verification by airworthiness authorities may not be difficult when the certifying authorities have an extensive experience, sizable data access, and appropriate technical skills. Conversely, it may take more time and resources to prove the means of compliance by airworthiness authorities with insufficient certification experience.

3. CONCLUSION

3.1 Although performance-based regulations for small general aviation airplane are reflected in the airworthiness standards in many States, practical applications are available only through limited channels such as Advisory Circulars or guidance materials. The possibility of a mismatch easily exists between various States, or across various projects, in the certification process of small airplanes.

3.2 Therefore, international cooperation will be needed for the development of guidance materials and of education and training materials to share examples of means of compliance methods determined by discussions between the Airworthiness Authorities and the applicants of certification projects applying the performance-based regulations.

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