



**Agenda Item 7A: Innovation**

**PROMOTING THE SAFETY OF SMALL GENERAL AVIATION AIRCRAFT USING  
ALTERNATIVE STRATEGIES FOR PRODUCT REGULATION**  
(Presented by the Brazil)

**EXECUTIVE SUMMARY**

An ever-growing number of Civil Aviation Authorities have been using internationally recognized consensus standards, developed in collaboration with industry stakeholders and foreign aviation authorities for the airworthiness certification of light-sport aircraft. In most countries, as in Brazil, this aircraft category is not submitted to a type certification process or to a production certification of the manufacture. Instead, the Authorities accept the consensus standards and normally issue airworthiness certificates after reviewing the manufacturers' documentation of compliance with consensus standards presented under a declaration model. The use of this "regulated self-regulation" strategy minimizes certification and rulemaking costs for the small aviation industry and Authorities, while meeting an acceptable level of safety and reducing regulatory time. This approach has potential to promote the global safety, as well as industry development, of small general aircraft, particularly in developing countries. However, the lack of harmonization between the States on the procedures used to approve aircraft under alternative strategies for product regulation imposes a limitation on the development of this category to its full extent, especially limiting international commerce.

**Action:** The Authorities are invited to request ICAO Regional Office Lima to create a Working Group to study the regulatory model explained in this paper and to provide solutions aimed at reducing technical barriers to the international trade of safe aircraft approved under alternative product regulations, generating recommendations for amending SARPS or guidance material, as needed.

**ICAO Strategic  
Objectives:**

*A: Safety*  
*B: Economic Development of Air Transport*

## 1. INTRODUCTION

- 1.1. Most of the certified small general aviation aircraft have old certification basis. This category is being replaced by experimental aircraft in many places around the world. Certification authorities are struggling to create new regulation models capable of encouraging manufacturers to develop new safe small aircraft.
- 1.2. The light sport aircraft category was originally created by the United States Federal Aviation Administration (FAA) in 2004 focused on relatively small, slow, and simple aircraft, and since then, this category has been increasingly adopted by authorities around the world into their regulatory framework.
- 1.3. Over the years, this category has gained growing acceptance in the general aviation market mainly due to the simplicity of the regulatory model and its cost savings while meeting the level of safety appropriate for these aircraft. In most countries, this category is not submitted to a type certification process or to a production certification of the manufacture. Instead, the Authorities issue airworthiness certificates based on manufacturers' statements of compliance with the consensus standards accepted by the Authorities.
- 1.4. In 2023, through a risk-based approach, ANAC (Brazilian National Civil Aviation Agency) has established a rulemaking to expand this concept, allowing larger aircraft to be manufactured according to a declarative process. This initiative, like rulemaking project undertaken by other CAAs (FAA, EASA) aimed to encourage the emergence of new manufacturers and new, modern aircraft that meet acceptable safety levels for small general aviation. This segment of aviation has no longer been efficiently supported by the traditional type certification and production processes, mainly due to the high costs involved. Other aviation authorities worldwide, specially in developing countries, also face similar challenges and have increasingly shown interest in these ongoing initiatives. The traditional process has struggled to support this segment, highlighting the need for more flexible and cost-effective regulatory approaches.

## 2. AN ALTERNATIVE STRATEGY FOR PRODUCT REGULATION

- 2.1. The consensus standards for the light sport category have been developed and kept up to date by the ASTM International Committee F37 on Light-Sport Aircraft through global collaboration among civil aviation authorities and industry. Following publication or review of a consensus standard by the ASTM Committee F37, the Authorities publish their acceptance of that consensus standard for certification of a light sport aircraft.
- 2.2. In order to keep the consensus standards development process reliable and robust, the developing environment must continually ensure key aspects: openness, due process, balance of interest, an appeals process, and consensus. These aspects help avoiding any unfair competitive advantage or any bias towards few large manufacturers.
- 2.3. Below are some main positive aspects of the development of consensus standards for the light sport category:
  - Specific rules tailored to the needs of the category rather than all small general aviation
  - Standards can be adjusted more quickly to changing business environments

- Innovative designs and safety enhancing technology can be fostered
- 2.4. This approach allows manufacturers to self-declare that each of their aircraft meet consensus standards accepted by the Authority. The manufacturer is solely responsible for the review, testing and approval of the aircraft and manufacturing quality assurance system in accordance with the consensus standards. This is an alternative to the high costs associated to type and production certificate process and to provide greater safety than experimental aircraft without substantially increasing the burden on the industry.
- 2.5. An important fact to be highlighted is that experience has shown, over the years, that the accident rate of light sport aircraft tends to be the same as that of certified aircraft of same size in personal use, affirming the appropriate level of safety of this category.

### **3. HIGH-LEVEL PRINCIPLES FOR THE ALTERNATIVE STRATEGY FOR PRODUCT REGULATION**

- 3.1. The proposal presented in this WP is compatible with a risk-based approach, in the sense that these alternative strategies are aimed at scenarios where the risk exposure is low. Type and production certification approaches must still be applicable to all medium to high-risk scenarios, such as large aircraft for passenger transportation.
- 3.2. Based on the experience gained over the years with the light sport aircraft category, the following high-level principles are identified that need to be included in an alternative strategy for product regulation:
- Based on industry leadership in standards development and compliance.
  - Appropriate for straightforward aircraft in terms of design, manufacturing, maintenance, operation, and pilot licensing.
  - Compliance with consensus standards based on the manufacturer's statement.
  - Requirement for continued operational safety, with the Authority's capability to mandate actions to restore the aircraft's airworthiness.
  - Necessity for oversight of ongoing compliance with consensus standards by the manufacturer (including design, manufacturing, modifications) and the aircraft in service.

### **4. LIGHT SPORT AIRCRAFT WORLDWIDE**

- 4.1 Most countries have several similarities regarding the light sport aircraft category.
- Level of safety: Consensus standards developed by the ASTM International Committee F37

- Approval Costs: lower costs compared to those associated to type and production certificate process
- Technical characteristics: no more than two seats, a single engine, maximum take-off weight of not more than 600 kg (650 kg for amphibious aircraft), a non-pressurized cabin and a maximum stalling speed not more than 45 knots.
- Types of aircraft: airplanes, gliders, powered parachutes, weight shift aircraft, balloons and airships.
- Operational purposes: private use or commercial use limited to tow a glider or flight training. VFR only.

4.2 On the other hand, there are differences between national regulations.

- Technical characteristics: Some countries accept electrical engine, variable pitch propeller, retractable landing gear and maximum take-off weight up to 1,361 kg.
- Airworthiness requirements: Some countries require type and production certification instead of manufacturers' statements of compliance. Some countries impose additional requirements for technical features not covered by the consensus standards, such as retractable landing gear.
- Types of aircraft: Some countries consider only airplanes. Others include rotorcraft, gyroplanes, balloons, powered parachutes and electric vertical take-off and landing (eVTOL)

4.3 This lack of harmonization between the States imposes barriers to the international trade for the light sport aircraft. For those specific technical features not covered by current consensus standards, actions can be taken by the States to develop the necessary standards in a collaborative environment rather than each State developing its own. Given that most States rely on the compliance with consensus standards, the differences are primarily procedural while differences in safety outcomes are unclear and expected to be minimal.

4.4 Another barrier to the international trade is the absence of clear procedures on how to deal internationally with safety concerns, mainly regarding the responsibilities of the exporting party for providing safety solutions and Mandatory Continuing Airworthiness Information (MCAI).

4.5 These challenges point to a need for ICAO to develop international standards to a common approach to the approval of these aircraft, reducing or eliminating redundant approval activities between the Authorities. An international harmonization would bring potential benefits, especially for developing countries, fostering international trade, industry development and global safety: reduced costs, easier fleet renewal by safer aircraft and reduced barrier to industry development.

## 5. CONCLUSION

5.1 Alternative aircraft approval regulations have gained growing acceptance in the general aviation market, showing potential to promote the global safety, as well as industry development, particularly in developing countries. However, the lack of international harmonization on the procedures used by the Authorities to approve these aircraft are limiting their trade and benefits around the world.

5.2 The Authorities are invited to:

- a) Request ICAO Regional Office Lima to create a Working Group to study the regulatory model explained above and to provide solutions aimed at reducing technical barriers to the international trade of safe aircraft approved under alternative product regulations, generating recommendations for amending SARPS or guidance material, as needed.

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