



ICAO

International Civil Aviation Organization

Ninth Meeting of the Aerodromes Operations and Planning Sub-Group (AOP/SG/9)

Bangkok, Thailand, 30 June to 4 July 2025

- Agenda Item 5: State's/Aerodrome Operator's update and best practices on:**
- **Safety management oversight of ground handling services**

AIRPORT EQUIPMENT CERTIFICATION MANAGEMENT SYSTEM IN CHINA

(Presented by China)

SUMMARY

This paper presents the airport equipment certification management system in China. Considering that Ground Service Equipment (GSE), visual aids for navigation and other airport equipment impact airport operation and aircraft flight safety directly, China has established a strict standard certification and access system for airport equipment. Uncertificated airport equipment shall be prohibited from being used in the airports. This paper analyzes the potential safety impacts of various types of airport equipment, and challenges posed by technical development.

China call on all member States attach great importance to the safety management of airport equipment, for ensuring the stable operation and the safety development of civil aviation airports in Asia-Pacific Region jointly.

1. INTRODUCTION

1.1 Airport equipment is closely related to smooth airport operation and flight safety. In order to ensure the safety, reliability, stability and applicability of airport equipment, China implements a safety standard certification management system for airport equipment and enforces it strictly. Uncertified airport equipment shall not be used in the airports in China.

- 1.2 The airport equipment requiring safety standard certification mainly includes,
- a) Airport Ground Service Equipment (GSE), such as passenger boarding bridge, aircraft catering vehicle, elevating equipment, etc.
 - b) Visual aids for navigation, such as approach lights, PAPI (Precision Approach Path Indicator), runway lights, taxiway lights, etc.
 - c) Other airport equipment or system related to airport safety operations, such as passenger baggage handling system, FOD detection system, friction coefficient testing equipment, etc.

1.3 In terms of airport ground service equipment (GSE), there is a global common risk that it may scratch or collide with aircraft, causing damage and affecting flight safety. The relevant incidents include container loader transporter accidental damaging the aircraft, passenger boarding bridge damaging the aircraft boarding door, and ground servicing equipment like towing truck colliding with the aircraft during approaching. For such safety risks, IATA and ISO have issued numerous technical standards, and ICAO Ground Handling Manual (Doc 10121) also puts forward safety requirements.

1.4 In terms of visual aids for navigation, the optical characteristics of equipment, such as luminous intensity, color temperature and emission angle, all have strict requirements. This is done to ensure reliable safety visual aids for the aircraft. Incidents involving visual aids occur in the world, such as abnormal colors of PAPI providing wrong guidance, too strong or dim runway lights and approach lighting failing to provide visual references for pilots effectively. In recent years, due to the extensive use of LED lights worldwide, the problems of pilots being dazzled by too bright LED lights have occurred multiple times, and China is also facing the same issue. Therefore, ICAO requires all member States to follow the technical parameters specified in Annex 14, which ensures consistent universal safety standards adopt globally.

1.5 Other airport equipment or system, such as passenger baggage handling system, airport lighting control and monitoring system, FOD detection equipment, are becoming increasingly important for the safe operation of airports. With the development of global airports towards large-scale and complex configurations, these systems also become more complex. Compared with traditional simple systems, incidents caused by the complex system itself are more likely to occur. For example, once a failure of the passenger baggage handling system occurs in the large airport, it will lead to a large number of baggage being stranded and flights delayed. This issue will rise safety risks and affect efficiency and service quality. For another example, the malfunction of airport lighting control and monitoring system has given us many profound lessons, such as false opening/closing, similar incidents have occurred in global and in China. Therefore, ICAO, ISO and relevant countries have formulated safety standards.

1.6 At present, China has established airport equipment management regulations and safety technical standards, requiring 64 categories of airport equipment to comply with safety technical standards. Safety certification is implemented by standardization institutions accredited by China National Accreditation Service for Conformity Assessment (CNAS), International Laboratory Accreditation Cooperation (ILAC), etc. Once the airport equipment that has passed safety certification, the qualified certification reports will be published on the public website of the Civil Aviation Administration of China (CAAC). Airport operator, air operator or Ground Handling Service Provider (GHSP) can query, purchase, and use the equipment based on this information.

2. DISCUSSION

2.1 To enable airport operator, air operator and GHSP to know the certified airport equipment accurately, the Airport Equipment Information Management System website of CAAC allows the public to query airport equipment model number, manufacturer information, equipment physical photos, key technical parameters, and accompanied by the certification qualification reports from the certifying institution, etc. The entire website is presented in both Chinese and English.

2.2 To ensure the performance indicators of airport equipment comply with safety requirement, China has currently issued 99 standards for it. In addition, based on the technological development of various types of equipment and lessons summarized from incidents, China carries out dynamic revisions every year, with the number of revised standards reaching approximately 10 per year.

2.3 In recent years, after some incidents have occurred, such as luggage tractors unhooking causing the dragged equipment crashing into aircraft, or portable water truck driving away without unplugging the connector that damage the aircraft, China immediately revised standards. The revisions stipulate that connectors on the equipment must have alarm for unplugging or quick disconnection capabilities, and luggage tractors must have traction locking. After the incident of color filter offset of PAPI, China specified the fixing requirement for PAPI color filters. For aircraft docking equipment causing scratches or collisions, safety docking functions were stipulated, such as installing safety distance detection devices on the equipment and enforcing crawler-speed docking.

2.4 As China firmly implements global carbon reduction goals, and vigorously promotes the electrification policy for GSE, various types of GSE in China now basically have electric models. To avoid battery spontaneous combustion risk, China has formulated strict standards for batteries and electric equipment, including battery monitoring, thermal runaway alarms and performance requirement.

2.5 The airport equipment safety certification management system not only requires equipment samples to comply with technical standards, but also requires manufacturing factories to meet the requirements of quality consistency. The quality consistency need the management system certification which carried out for equipment production lines. So, only both gain the sample compliance certification and the quality consistency certification of manufacture can be informed on the Airport Equipment Information Management System website of CAAC.

2.6 With the global development of green, intelligent, and electrified civil aviation, airport equipment is evolving towards unmanned operation, full electrification, new materials, and new technologies. For example, unmanned passenger boarding bridges and unmanned luggage tractors have been widely applied at airports such as Hong Kong and Amsterdam. Electrified GSE is developing rapidly, which showing a trend of fully replacing fuel-powered vehicles. Meanwhile, the popularization of LED lights has brought new global challenges due to the dazzle problem it causes. In this regard, it is called that all member States can pay attention and conduct joint research. To ensure the stable operation of the equipment and the safety of airport operation, the safety performance indicators of new airport equipment should be specified by establishing regulations and technical standards.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper and:

- a) urged member States pay attention to the importance of the stable operation of airport equipment (i.e. GSE, visual aids for navigation, and key airport operation systems) to meet the requirements of flight safety;
- b) encourage member States to share their best practices on airport equipment safety certification management system to ensure the safe and reliable operation of airport equipment;
- c) encouraged member states to jointly participate in the research programme on safety technical indicators of airport equipment standards inviting organizations, such as ICAO, IATA, ISO, and IEC, to improve equipment reliability;
- d) discuss on any other relevant matters.

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