

**CAAC** 

July 2025 Bangkok, Thailand



## **CONTENTS**





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#### **Airport equipment: three categories:**

- Airport ground support equipment (GSE)
- Visual aids for navigation
- Other airport equipment or system related to airport safety operation







- Safety standard certification management system for airport equipment
- Uncertificated airport equipment shall be prohibited from being used



1 航空器地面服务设备(Aircraft ground support equipment) 2 目视助航设备(Visual aids for navigation) ■ 1.1 飞机地面电源机组(Aircraft ground power Supply Unit) ■ 2.1 航空灯标(Aeronautical beacons) ■ 1.2 飞机静变电源机组(Aircraft Static Power Supply Unit) □ 2.2 进近灯(Approach lights) ■ 2.3 順序闪光灯系统(Sequence flashing lighting system) ■ 1.3 飞机地面气源机组(Air start equipment/Air start unit) □ 1.4 飞机地面空调机组(Air conditioning equipment/Aircraft air-conditioning unit) ■ 2.4 精密进近航道指示器(Precision approach path indicator) ■ 1.5 飞机牵引设备 (Aircraft movement equipment) 2.5 跑道入口识别灯(Runway threshold identification lights) ■ 1.6 飞机清水车(Aircraft Potable water service Equipment) ■ 2.6 跑道入口翼排灯(Runway threshold wing bar lights) ■ 1.7 飞机污水车(Aircraft Lavatory service equipment) ■ 2.7 跑道入口灯(Runway threshold lights) ■ 2.8 跑道末端灯(Runway end lights) ■ 1.8 航空食品车(Aircraft Catering vehicles) ■ 1.9 航空垃圾接收车(Aircraft Garbage Collection Truck) ■ 2.9 接地带灯(Touchdown zone lights) ■ 1.10 飞机除冰设备(Aircraft deicing equipment) ■ 2.10 跑道中线灯(Runway centre line lights) ■ 1.11 飞机充氧设备(Aircraft Oxygen Replenishment Equipment) 2.11 跑道边灯(Runway edge lights) ■ 1.12 管线加油设备(Pipeline fuelling equipment) ■ 2.12 滑行道中线灯(Taxiway centre line lights) ■ 1.13 罐式加油设备(Tank fuelling equipment) ■ 2.13 滑行道边灯(Taxiway edge lights) ☐ 1.14 旅客登机梯(Passenger stairs) □ 2.14 快速出口滑行道指示灯(Rapid exit taxiway indicator lights) ■ 1.15 行动不便旅客登机设备(Incapacitated passenger boarding equipment) ■ 2.15 中间等待位置灯(Intermediate holding position lights) ■ 1.16 旅客登机桥(Passenger boarding bridges) 2.16 停止排灯(Stop bars) ■ 1.17 散装货物装载机(Bulk Cargo Loading Transporter) ■ 2.17 跑道警戒灯(Runway guard lights) ■ 1.18 集装货物装载机(Container Loader Transporter) ■ 2.18 航空障碍灯(Obstacle lights) ■ 1.19 行李/货物牵引车 (Luggage / cargo tractor) 2.19 风向标(Wind direction indicator) ■ 2.20 滑行道边反光标志物(Taxiway edge retro-reflective marker) ■ 2.21 跑道和滑行道标记牌(Runway and taxiway signs)

■ 2.22 跑道状态灯 (Runway Status Lights)

■ 2.23 目视停靠引导系统(VDGS)(Visual Docking Guidance Systems (VDGS))



- 3 目视助航相关设备(Related visual aids for navigation)
- 3.1 调光器(Constant current regulators)
- → 3.2 隔离变压器(Isolation transformer)
- 3.3 机场助航灯光回路用埋地电缆(Underground electrical cable for airport lighting)
- 3.4 电缆连接器(Plug and receptacle connectors for airport lighting cables)
- 3.5 隔离变压器箱(Isolation transformer housing)
- 3.6 助航灯光监控系统(Airport Lighting Control and Monitoring System (ALCMS))

- 4 直升机场目视助航设备(Heliport visual aids for navigation)
- 4.1 直升机场灯标(Heliport beacons)
- 4.2 进近恒光灯(Approach steady lights)
- 🗋 4.3 进近闪光灯(Approach flashing lights)
- 4.4 瞄准点灯(Aiming point lights)
- 4.5 接地和离地区灯(Touchdown and lift-off area lights)
- → 4.6 滑行道边灯(Taxiway edge lights)
- ▲ 4.7 滑行道中线灯(Taxiway centre line lights)
- 4.8 目视进近坡度指示系统(Visual approach slope indicator system)
- 4.9 目视对准定线引导系统(Visual alignment guidance system)
- 4.10 最终进近和起飞地区灯(Final approach and take-off area lights)

- 5 其他地面服务设备(Other Ground Support Equipment (GSE))
- 🗋 5.1 旅客行李处理系统(Passenger Baggage Handling System)
- 5.2 摩擦系数测试设备(Friction Coefficient Testing Equipment)
- 5.3 机坪地井盖(Apron Drainage Cover)
- 5.4 机坪排水沟箅子(Apron Drainage Filter)
- ☐ 5.5 道路等待位置灯(Road-holding position light)
- 📄 5.6 机场道面外来物探测设备(Foreign Object Debris Detection Systems At



#### **Airport GSE:**

- > Safety Risks: scratch or collide with aircraft
- ➤ Risk Control: ICAO Ground Handling Manual (Doc 10121),

IATA and ISO technical standards









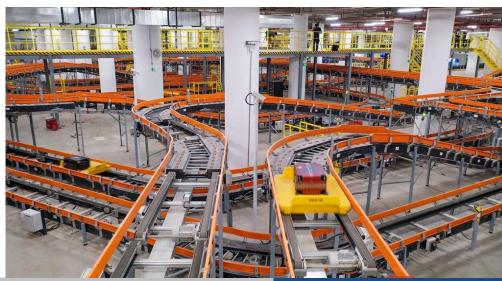
#### Visual aids for navigation:

- Safety risk: abnormal colors of PAPI, too strong or dim runway lights and approach lighting, LED lights, etc.
- Risk Control: follow the technical parameters specified in ICAO Annex 14.



#### Other airport equipment or system:

- > Safety Risk: complexity of system, system malfunction
- Risk Control: safety standards of ICAO, ISO and relevant countries.









- CAAC Regulations and safety technical standards was promulgated.
- ➤ 64 categories
- Standardization institutions



- ----International Laboratory Accreditation Cooperation (ILAC)
- CNAS--ILAC: a single test, recognized globally







## **Discussion** Civilian Airport Equipment Information Mangement System



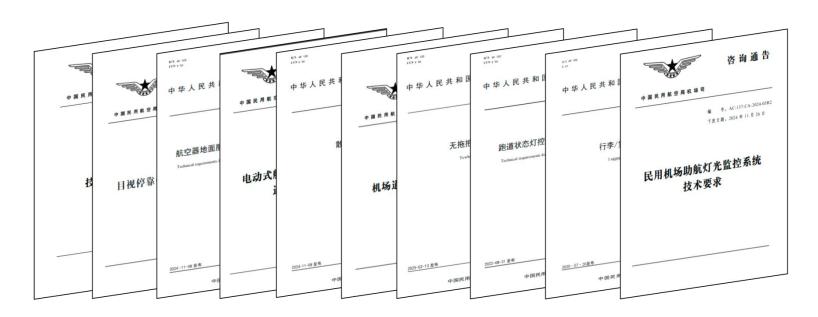
违法违规记录 MARKET 网络篮型规论 4 第写注册(6.8 · 设备使用单位 机场管理机构 系统常用下载



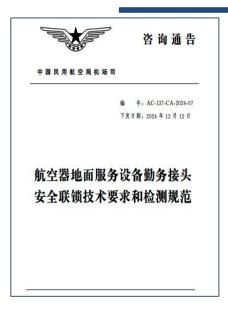
- Double safety certification
- > The Airport Equipment Information Management System website of CAAC:
- Query model number, manufacturer information. equipment physical photos, key technical parameters, certification qualification reports, etc.
- ➤ Languges: Chinese & English.



- > currently issued 99 standards
- revised standards approximately 10 per year.







- luggage tractors must have traction locking
- connectors on the equipment must have alarm for unplugging or quick disconnection capabilities



- For aircraft docking equipment
- safety docking functions: installing safety distance detection devices on the equipment, and enforcing crawler-speed docking.



- firmly implements global carbon reduction goals
- vigorously promotes the electrification policy for GSE
- various types of GSE basically have electric models.

产品名称 Product Name	产品名称 Product Name
旅客登机梯 (电动式)	飞机清水车 (电动式)
散装货物装载机 (电动	飞机污水车 (电动式)
无拖把 飞机牵引车 (电	飞机清水车 (电动式)
散装货物装载机(电动	飞机污水车 (电动式)
散装货物装载机 (电动	飞机地面电源机组 (印
散装货物装载机(电动	"多小中国电影小石(电
行李奉引年(电动式)	2.641.145四曲38417百(8
航空食品车 (电动式)	飞机污水车 (电动式)
集装货物装载机(电动	飞机清水车 (电动式)
集装货物装载机(电动	航空垃圾接收车(电动
航空食品车 (电动式)	飞机污水车 (电动式)
改装货物装载机 (电动	行动不使旅客登机车
航空食品年 (电动式)	飞机除冰车 (电动式)
旅客登机梯 (电动式)	飞机清水车 (电动式

散装货物装载机《电动

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产品名称 Product Name	产品名称 Product Name
飞机清水车 (电动式)	飞机清水车 (电动式)
飞机污水车(电动式)	飞机污水车 (电动式)
飞机清水车 (电动式)	飞机清水车 (电动式)
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飞机污水车 (电动式)	无拖把飞机牵引车 (电
飞机清水车 (电动式)	飞机地面气动机组 (电
航空垃圾接收车(电动	飞机牵引车 (电动式)
飞机污水车(电动式)	集装货物装载机(电动
行动不使旅客登机车(	集装货物装载机(电动
飞机除冰车 (电动式)	集装货物装载机 (电动
飞机清水车 (电动式)	飞机牵引车 (电动式)
行李牵引车 (电动式)	天施把飞机牵引车 (电

产品名称 Product Name	
无拖把飞机牵引车 (电	
无拖把飞机牵引车 (电	
无拖把飞机牵引车 (电	
學装货物装载机 (电动	
散装货物装载机 (电动	
飞机污水车 (电动式)	
6机污水车 (电动式)	
航空垃圾接收车(电动	
旅客登机梯 (电动式)	
旅客登机梯 (电动式)	
集装货物装载机(电动	
學装货物装载机 (电动	
集装货物装载机 (电动	
航空食品车 (电动式)	
旅客登机梯 (电动式)	

产品名称 Product Name	产品名称 Product Name
行动不使旅客登机车(	飞机牵引车 (电动式)
航空食品车 (电动式)	航空食品车 (电动式)
飞机牵引车 (电动式)	飞机牵引车 (电动式)
旅客登机梯 (电动式)	飞机牵引车 (电动式)
旅客登机梯 (电动式)	飞机牵引车(电动式)
散装货物装载机(电动	行动不便旅客登机车(
航空垃圾接收车 (电动	集装货物装载机 (电动
飞机牵引车 (电动式)	集装货物装载机 (电动
飞机清水车 (电动式)	航空食品车(电动式)
飞机污水车 (电动式)	飞机牵引车 (电动式)
航空垃圾接收车(电动	航空垃圾接收车 (电动
散装货物装载机 (电动	无拖把飞机牵引车 (电
散装货物装载机 (电动	旅客登机梯 (电动式)
旅客登机梯 (电动式)	飞机牵引车 (电动式)
旅客登机梯 (电动式)	散装货物装款机(电动

产品名称 Product Name	产品名称 Product Name
旅客登机梯(电动式)	散装货物装载机(电动
飞机牵引车 (电动式)	航空食品车 (电动式)
航空食品车 (电动式)	行动不使旅客登机车 (
飞机除冰车 (电动式)	集装货物装载机(电动
飞机除冰车 (电动式)	飞机牵引车 (电动式)
旅客登机梯(电动式)	飞机牵引车 (电动式)
旅客登机梯 (电动式)	飞机滴水车 (电动式)
航空垃圾接收车(电动	飞机清水车 (电动式)
航空食品车 (电动式)	飞机清水车 (电动式)
无拖把飞机牵引车 (电	飞机清水车 (电动式)
飞机牵引车 (电动式)	飞机污水车 (电动式)
飞机地面气源机组(电	飞机污水车 (电动式)
散装货物装载机(电动	飞机污水车 (电动式)
散装货物装载机(电动	飞机污水车 (电动式)
散装货物装载机(电动	旅客登机梯 (电动式)

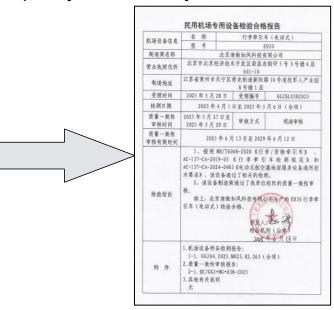
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旅客	存登机梯 (电动式)
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樂等	要货物装载机 {电动
無	表货物装载机 (电动
集等	接货物装载机 (电动
N.S	2垃圾接收车 (电动
Mis.	2垃圾接收车 (电动
无持	短把飞机牵引车 (电
无持	題把"老机牽引车(电
集等	<b>表的物装载机(电动</b>
无持	短把で机牵引车 (电



- The airport equipment safety certification: Double Safety Certification
- equipment samples to comply with technical standards
- manufacturing factories to meet the requirements of quality consistency.







## **Discussion-**Global development







- Global development of green, intelligent, electrified
- evolving towards unmanned operation, full electrification, new material. new tech.
- called for attention and joint research
- establishing regulations and technical standards: the safety performance indicators of new airport equipment



- > call on all member states:
- pay attention to the impact of the stability of airport equipment on flight safety.
- formulate regulations and establish the airport equipment safety management system under ICAO.
- jointly research on safety technical indicators of airport equipment standards to improve equipment safety.
- actively recognize the new trends in the development of electrified, intelligent and green equipment, and pay great attention to the potential safety risks, so as to apply new technologies reasonably, safely and applicably.



# 感谢聆听

## Thanks for your attention!