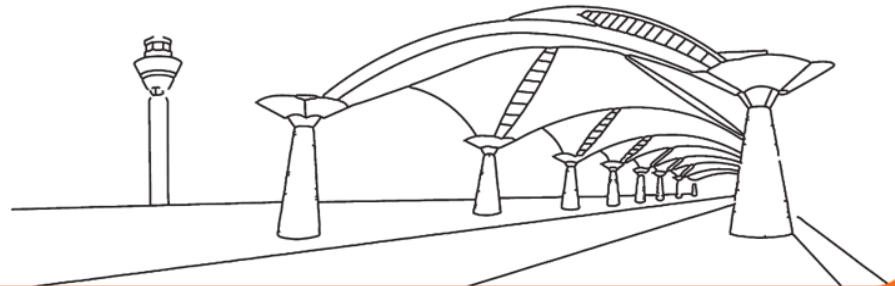


WP 22, ICAO AOP/SG/9

# GROUND HANDLING SAFETY: END-OF-LIFE MANAGEMENT FOR GROUND SUPPORT EQUIPMENT (GSE)

Malaysia/MAHB



## Objectives

This paper outlines the critical elements and challenges in managing ground handling safety focusing on Ground Support Equipment for motorized and non-motorized vehicles at Kuala Lumpur International Airport (KLIA)

As GSE ages and in the absence of a defined End-of-Life Vehicle (ELV) policy, its proper management becomes crucial and this paper reviews

- Current practices and regulations
- Risks of aging GSE
- Lifespan considerations to support safety, efficiency and sustainability
- The need for collaboration to improve safety of Ground Handling
- Strategic approach in managing Ground Support Equipment (GSE)



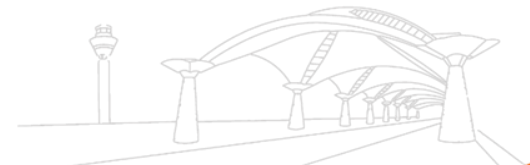
## Introduction to Ground Support Equipment (GSE)

- **Definition**

GSE encompasses both motorized and non-motorized vehicles that are critical for aircraft servicing and turnaround operations.

- **Importance**

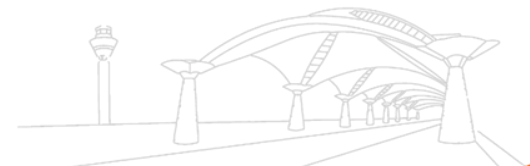
The Backbone of Airport Operations: GSE ensures seamless and efficient processes, directly impacting flight schedules, On-Time Performance(OTP) and passenger satisfaction.



## Introduction to Ground Support Equipment (GSE)

- **Regulatory Framework**

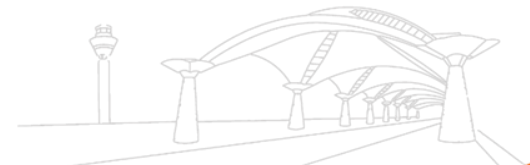
- ICAO Doc 10121 - Manual of Ground Handling
- Civil Aviation Directive 6010 - Ground Handling  
Both document identify one of the main causal factor of accident/incident issues arising from maintenance and operability (GSE) including aging equipment
- ICAO Annex 14 Amendment 18: Effective on 26 Nov 2026, state require to regularly assess the impact of ground handling operations on aviation safety and establish criteria for the safety oversight of ground handling as part of State Safety Programme (SSP)



## Introduction to Ground Support Equipment (GSE)

- **Roles of Regulators & Aerodrome Operator**

- In Malaysia, Ground Handling Licence is issued by Malaysian Aviation Commission (MAVCOM) after technical audit by Civil Aviation Authority Malaysia (CAAM).
- CAAM also conducts safety audits and ensures regulatory compliance.
- Aerodrome Operator overseeing the GSE operations safety and compliance including issuance of airside vehicle permit and driving permit



## Current GSE Overview at KLIA

- **Statistics:**
  - 3,000 units of non-motorized GSE
  - 1,200 units of motorized GSE
  - 40% of motorized units are over 11 years old
- **Shared Responsibility:**
  - **Collective Accountability:**  
All ground handlers must ensure that only serviceable and well-maintained equipment is utilized.



## Challenges of Aging Equipment

- **Issue:** Continued use of aging equipment beyond intended lifecycle at KLIA and other aerodromes.
- **Consequences:**
  - ***Environmental Hazards:*** Oil spillages and fluid spillages threaten safety and compliance.
  - ***Increased Accident Risk:*** Aging machinery leads to increase of mechanical failures and higher chances of incidents.
  - ***Operational Inefficiencies:*** Reduced efficiency hampers turnaround times and OTP, Unserviceable equipment left abandoned & Occupied equipment staging area
  - ***Escalating Maintenance Costs:*** Aging equipment incurs higher repair expenses.
  - ***Safety Risks:*** Unserviceable equipment obstructs critical airside operations.



## KLIA's Strategic Response

- **Strategy:**
  - ***Robust end-of-life strategy*** - A proactive approach for managing aging assets.
- **Focus Areas:**
  - ***Comprehensive Inspections*** - Regular checks to ensure safety and compliance.
  - ***Proactive Maintenance***- Preventative measures to extend equipment life.
  - ***Timely Decommissioning***- Removing unsafe equipment from service.
  - ***Environmentally Responsible Recycling*** - Sustainable disposal practices.
- **Compliance:**
  - ***Adherence to Regulatory Standards:*** Ensuring all operations meet national and international guidelines.





## Short-Term Measures for Immediate Action

### 24-Hour GSE Enforcement Team

Proactive Monitoring:  
Regular patrols, inspections and enforcement to ensure compliance.

### Penalty Framework

Deterrent for Non-Compliance: Fines up to RM300 for violations.

### Cleaning Charges

Accountability Measures: Mandatory fees starting from RM1,500 for cleanup of hazardous spills.

### Organized Parking Initiatives

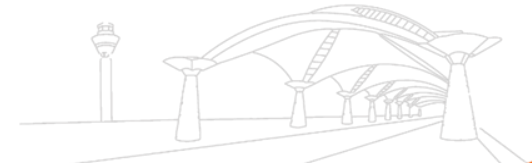
Organized Operations:  
Clearly defined areas for active and inactive GSE to enhance safety.

- Equipment Parking Area: Active GSE (under 1 hour use).
- Staging Area: All other GSE to avoid congestion.



## Long-Term Measures for Improvement

- **Workshops and Engagement:**
  - ***Fostering Collaboration:*** Building awareness and best practices among stakeholders
- **National Policy Development:**
  - ***Ministry of Transport Plan:*** Formalizing age limits for GSE across Malaysia to enhance safety.
  - Proposed ELVP is 15+5 years for motorised and 20+5 years for non-motorised



## Long-Term Measures for Enhancement of GSE

- **Phased Replacement Plan:**  
***Commitment to Modernization:*** Prioritizing the acquisition of newer, efficient, and eco-friendly equipment
- **Electric Vehicle (EV) Masterplan:**  
***Sustainable Transition:*** Planning for a shift to electric GSE and necessary infrastructure (Fleet transition, Charging station infrastructure and Operational policies)



Mototok GSE



E-GPU



EV Baggage Tractor



## Accountability and Compliance

- **Towing of Unserviceable Equipment/Abandoned Equipment:**
  - ***Promoting Accountability:*** Ensuring operators are responsible for their equipment.
- **Safety Monitoring and Reporting:**
  - Daily enforcement report
  - Sharing safety observations
  - Encourage compliance and continuous improvement.
- **Collaborating Workshops with stakeholders for EV Structured Transition Plan:**
  - EV adoption roadmaps required from all ground handlers.
  - EV charger installations coordinated with usage projections.
  - Operational policy alignment for smooth EV deployment..



## Regulatory Compliance and Safety Assessments

- **Joint Site Visits:**

***Collaborative Inspections:*** Routine inspections with regulatory bodies to monitor performance and safety.

- **Enhancing Accountability**

***Ground handler safety performance:*** To affect license renewal and Reinforces a culture of safety and compliance.

- **Safety Assessment for New EVs:**

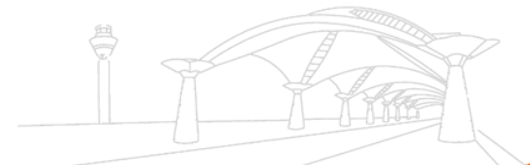
***Ensuring Standards:*** Compliance with operational and safety regulations before deployment.

- Fire Safety
- Operational compatibility



## Moving Forward

- **Progress Overview:**
  - Strategic Balance: A thoughtful mix of long-term planning and immediate actions.
- **Collaboration:**
  - Unified Efforts: Strong partnerships among ground handlers and clear policy direction from the State/Ministry of Transport
- **Future Vision:**
  - Setting a Benchmark: KLIA aims to be a model for GSE management across Malaysia, ensuring safety, efficiency and sustainability.



## Conclusion

The meeting is invited to:

- a) deliberate the information contained in this paper; and
- b) discuss any relevant matters as appropriate.



**THANK  
YOU**

