IATA Enhanced GSE Recognition Program

International Air Transport Association

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IATA Enhanced GSE Recognition Program

1. Background

Aircraft ground damage is one of the main sources of ground operations costs. In 2016, IATA published standards and recommended practices for aircraft damage prevention systems to be installed in the ground support equipment (GSE) that interface with the aircraft. In 2022, the IATA Ground Damage Report further detailed the savings and benefits of deploying enhanced GSE as well as ranking each GSE that is most likely to cause ground damage.

While the benefits of utilizing enhanced GSE are clear, rapid implementation has proven to be quite challenging because GSE is both durable and expensive. Analysis of the current situation, together with the forecasted traffic growth and change in aircraft type mix shows that, unless measures are actively taken to reduce the ground damage incident rate, the current annual total ground damage costs will double to $9.7 billion over the next 15 years.

2. Solution

To encourage implementation of enhanced GSE, it is necessary to incentivize the implementation process by recognizing and promoting those ground handlers that have integrated enhanced GSE into their fleets. Given the need to reduce ground damage as well as the cost of new GSE or retrofitting older GSE, a phased approach is needed so that the focus is on the GSE that will make the most difference in the shortest possible time, but without placing an undue burden on ground handling service providers (GHSPs).

To accomplish this, IATA is establishing the Enhanced GSE Recognition Program in which the GHSPs that are investing in enhancing their GSE fleet, have the opportunity to have their fleet assessed and validated. Recognition in the form of a certificate and a recognition stamp valid for 2 years is presented if the ratio of enhanced GSE to non-enhanced GSE exceeds a preset threshold.

The program is planned to be an add-on to ISAGO and will be deployed in several phases. Furthermore, as the initial enhanced GSE becomes more commonplace, the focus of the implementation will need to shift, in later phases, from the GSE that produces the most of ground damage, to other GSE that causes less damage, less frequently. Likewise, the initial thresholds for qualifying for recognition will be raised as the ratio of enhanced to non-enhanced GSE change over time.

Note: For the purpose of this document, the term “enhanced GSE” is applied to all GSE that is fitted, either from new or retrofitted at a later date, with anti-collision systems that are designed to control the GSE in such a way that the GSE does not damage aircraft in the course of normal GSE operations. Future developments in the field of auto-docking and autonomous GSE which are, almost by definition, fitted with very sophisticated positioning systems, could mean that GSE equipped with these functions are also considered to be “enhanced GSE”.

3. Program Concept

3.1 Outline

The program is based on GHSPs providing IATA with certain data about their GSE fleet on a per airport basis.

The data submitted will include certain information, such as GSE type (e.g. belt loader); manufacturer; date of manufacture; quantity in fleet, fitment of an anti-collision system.

Tools and guidance on how to input and submit the data are provided later in this document.

IATA will interact with the appropriate GHSP staff to validate the information submitted. This could be done either on site or remotely by means of video calls, sharing of pictures / videos of GSE in operation and other supporting documentation as applicable.

Once the validation is completed, if the fleet meets the requirements, the recognition (valid for 2 years) will be issued.

3.2 Program details

The Enhanced GSE Recognition Program will be available to all GHSPs:

- Participation in the Enhanced GSE Recognition Program will be on a voluntary basis.
- There will be no fee to participate in the program.
- Enhanced GSE recognition criteria will NOT affect the station accreditation (for ISAGO GHSPs).

Figure 1: Process at launch

3.3 Scope of GSE fleet assessment

For the initial phase of the program, the focus will be on the three GSE types listed below. IATA constantly monitors and analyzes ground damage data collected throughout the IATA IDX program. Industry trends, root cause analysis and assessment of new emerging risks related to GSE operations are constantly being performed. As a result, other GSE types can be added to the program and qualification thresholds adjusted.

GSE Type	Phase	Year
Belt Loader	Initial	2024
ULD Loader	Initial	2024
Pax stairs	Initial	2024

Table 1: Scope of GSE fleet assessment

4. Recognition Criteria

The recognition criteria are based on the concept of ground damage risk reduction. For each GSE type an overall risk score has been determined on a points scale from 1 (lowest risk) to 10 (highest risk).

Each GSE's risk points have been assigned taking into consideration the following criteria:

- The damage rate of the specific GSE type.
- The severity of the damage inflicted.
- The total number of the flights served with a specific GSE type.

(As an example, the instances of use of a belt loader (which is used on wide and narrow bodied and even some regional aircraft) is higher than a ULD Loader which is used only on aircraft that utilize ULDs.)

Note: source data IATA ground damage report

More details about risk rating can be found in Appendix 1.

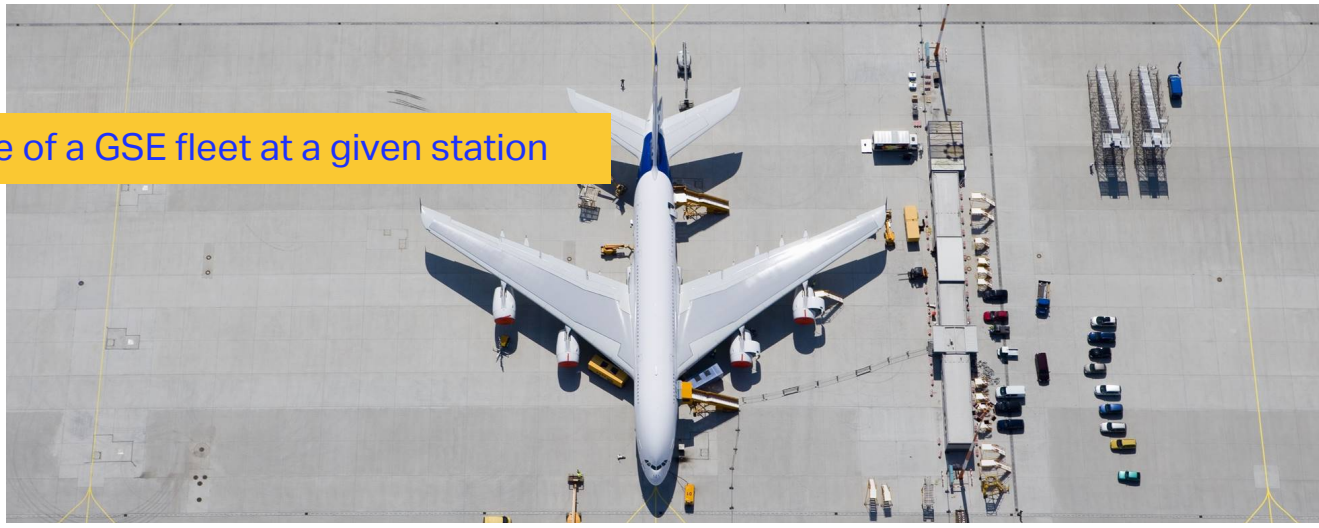
The risk rating for non-enhanced GSE and enhanced GSE are listed below:

GSE Type	Risk rating Non-enhanced GSE	Risk reduction Enhanced GSE
Belt Loader	9	7.2
ULD Loader	7	6.02
Pax stairs	9	7.4

Table 2: Risk rating

As a start the recognition is granted if the GHSP scores a total percentage of ground damage risk reduction of **20% or higher**. Depending on the data received during the soft launch phase, this threshold could be reassessed and might change before the launch of the next phase. Also, as the quantities of enhanced GSE increase over time, and taking into consideration the natural phasing out of old generation of GSE, the threshold will be adjusted over time to keep the program in line with the industry trends.

5. Example of a GSE fleet at a given station



GSE Type	Risk rating: Non-enhanced GSE	% reduction in damage due to using enhanced GSE (estimate)	Risk reduction: Enhanced GSE	Total Fleet	Total Risk Score	Quantity of Enhanced GSE	Risk Reduction Score	Total % of risk reduction
Belt loader	9	80%	7.20 (80% of 9 = 7.20)	8	72 (9 x 8 = 72)	2/8 (2 out of 8 belt loaders are enhanced)	14.40 (2 x 7.2 = 14.40)	
ULD loader	7	86%	6.02	7	49	3/7	18.06	
Pax stairs	9	82%	7.38	9	81	4/9	29.52	
Total					**202**		**62.06**	**30.72%** (62.06/202 x 100)

Table 3: Example of GSE fleet scoring

The GHSP station above has scored 30.7% of risk reduction and therefore qualifies for recognition.

6. Data collection and display

Data collected from participants will be confidential and will not be disclosed publicly. At a later date, GHSPs which complete and successfully meet the program criteria will have the choice to display their GSE fleet on IATA's public site (as applicable).

7. To participate

To participate, please write to us here with following information:

- Name of the organization
- Airport(s) where GSE fleet is to be assessed

Appendix 1

1 Risk rating calculation

GSE Type	Damage: Minor	Damage: Low	Damage: Moderate	Damage: High	Damage value	Damage Frequency (per 10,000 departures)	Risk rating
Belt loader	42%	24%	26%	8%	208	0.4	9
ULD loader	46%	34%	17%	3%	180	0.3	7
Pax Stairs	54%	24%	17%	5%	178	0.5	9

Note: Damage % figures from Ground Damage Report

Table 4: Risk ratings for 3 main GSE types

The risk severity would ideally be based on the AHM 610 risk matrix. However, that will lead to the conclusion that all the above equipment would have 4B risk rating, whereas, looking at data from the IATA Ground Damage Report, that is clearly not the case. Hence, the risk matrix for this exercise is slightly modified, although still based on the same principals as AHM 610.

Severity

Weighting of damage category for this exercise is assigned as:

Minor 1
Low 2
Moderate 3
High 5

Therefore, the damage value for a Belt loader would be (42x1) + (24x2) + (26x3) + (8x5) = 208.
Thus, for the 3 GSE types:

Belt loader = 208
ULD loader = 180
Pax stairs = 178

Damage value range	Severity value
0-50	1
51-100	2
101-150	3
151-200	4
200+	5

Table 5: Damage severity value range

Considering the severity in descending order of the damage values indicated in Table 4: Risk ratings for 3 main GSE types, the severity value can be assigned as:

Belt loader (damage value = 208) 5
ULD loader (damage value = 180) 4
Pax stairs (damage value = 178) 4

Frequency

There are two criteria that can be considered for the frequency.

Damage frequency (per 10,000 departures) or
Damage per GSE usage (per 10,000 uses)

Looking at both, this is how the GSE performs:

GSE Type	Damage frequency: (per 10,000 departures)	Damage frequency: (per 10,000 uses)
Belt loader	0.4	6
ULD loader	0.3	17
Pax Stairs	0.5	17

Table 6: Damage frequency

Under both criteria, pax stairs have the highest frequency. However, belt loader and ULD loader can swap position depending on which criterion is utilized. For this program, damage frequency per 10,000 departures is a more suitable criterion. This is because damage frequency per 10,000 departures encompasses a fleet mix based on GSE usage in real life. For example, belt loaders are much more frequently utilized than ULD loaders. So, even if the ULD loader has a higher probability to cause damage per use, it is not used as frequently. This makes the "per 10,000 departures" matric more suitable for this risk assessment.

Based on the damage frequency per 10 000 departures rate (Table 6: Damage frequency), the following scores are assigned:

Belt loader 4
ULD loader 3
Pax stairs 5

Risk rating

This results in a risk rating for each equipment as:

Belt loader 9 (Severity points + Frequency points = 5 + 4)
ULD loader 7
Pax stairs 9

Reduced risk rating

Based on the pilot testing, the use cases of implementation of enhanced passenger stairs, belt loaders and ULD loaders has proven to result in a ground damage reduction rate of 80% for belt loaders, 86% for ULD loaders and 82% for passenger stairs. This will be used to calculate risk reduction points as percentages of the non-enhanced GSE risk rating.

GSE Type	Risk rating: Non-enhanced GSE	Risk reduction: Enhanced GSE
Belt Loader	9	7.20 (80% of 9)
ULD Loader	7	6.02
Pax stairs	9	7.40

Table 7: Reduced risk rating

2 Program criteria changes

As the program moves forward, it is expected that there will be natural attrition of older GSE and replacement with new, enhanced GSE. Therefore, IATA will reassess the program over time and adjust recognition criteria threshold accordingly.