



GROUND  
SUPPORT  
EQUIPMENT

tips®

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OCUS

2024



*Most Enhanced GSE is electrically powered, making it cleaner and more energy efficient. While the main focus of aviation's decarbonisation efforts is on how we power aircraft, what happens on the ground cannot be ignored. The transition to Enhanced GSE will contribute to our industry's top priorities of safety and sustainability.*



**was stated by Nick Careen**, Senior Vice President of Operations, Safety and Security at the International Air Transport Association (IATA) (International Air Transport Association).

# Sustainability Meets Efficiency



Maximize your ramp efficiency with **TIPS electric GSE equipment**, covering the majority of operations!

**/01** Passenger Boarding Stair - PBS

- Freeway
- Runway
- Walkway

**/02** Conveyer Belt Loader - CBL

- Pulley

**/03** Potable Water SU - WSU

- Tank

**/04** Lavatory Service Unit - LSU

- Tank

**/05** Baggage Cart - BCT

- Cargo

**/06** Dollies - CDT and PDT

- Cargo

**/07** Baggage Tractor Unit - BTU

- Thruster

**/08** Aircraft Tractor - ATC/ATL

**/09** GPU - GPU

**/010** Catering Truck - CAT

**/011** Cargo highloader - LD CL

**/012** Aircraft Fuel Tank - AFT

**/013** Air Conditioner Unit - ACU

**/014** Aircraft de-icing vehicle

**/015** Aircraft air start unit (ASU)

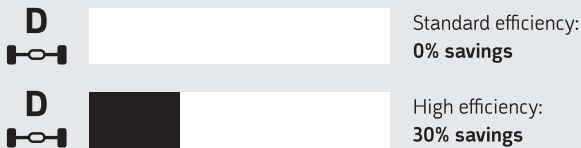
**/016** Airport bus

# TIPS'S ELECTRIC GSE INITIATIVE: LEADING THE WAY IN SUSTAINABLE GSE SOLUTIONS

TIPS is at the forefront of integrating electric ground support equipment (GSE), enhancing operational efficiency and sustainability. Our electric GSE reduces emissions and operational noise, and complies with strict environmental regulations, setting new standards in airport operations. Featuring advanced energy management and regenerative braking, TIPS's electric GSE is engineered for superior performance and reduced lifecycle costs, supporting the aviation industry's transition towards zero emissions.

## EFFICIENCY DIAGRAM

### Diesel Vehicles:



### Electric Vehicles (General Market):



(\* described as more expensive due to better performance or features)

### TIPS Electric Products:



## Environmental Impact



### REDUCED EMISSIONS

Electric GSE emit zero tailpipe emissions, significantly cutting greenhouse gases and enhancing airport air quality—key for compliance with environmental regulations and sustainability targets.

**Example:** Adopting electric GSE at major airports could slash annual CO<sub>2</sub> emissions by thousands of metric tons (European Alternative Fuels Observatory, International Air Transport Association).



### NOISE REDUCTION

Traditional GSE significantly contributes to noise pollution with engine idling. In contrast, electric GSE operates at near-silent levels, drastically reducing noise at airfields, hangars and gates. This enhances safety and health for ground crews and minimises disruption for nearby communities.



### HEALTH AND SAFETY

Carbon emissions and pollutants from traditional GSE pose serious health risks to ground crews exposed to carbon dioxide and nitrogen oxide. Switching to electric GSE, powered by lithium or lead-acid batteries, significantly improves workplace safety by reducing these risks.



#### OPERATIONAL EFFICIENCY OF ELECTRIC GSE

Electric GSE reduces fuel costs by eliminating the need for diesel, leveraging the more stable and often cheaper electricity. Studies, including one by the Airport Cooperative Research Program (ACRP), indicate that electric GSE can lower energy costs by up to 70% compared to diesel counterparts. Furthermore, electric motors outperform internal combustion engines in efficiency, converting a higher proportion of energy into useful work and ensuring significant cost savings and reduced energy consumption over time. Notably, TIPS's total sales comprise 80% electric vehicles compared to just 20% diesel, highlighting the growing preference for more efficient and sustainable solutions in the industry.



#### ADAPTABILITY TO DIVERSE CLIMATES

TIPS electric GSE is uniquely adapted to perform efficiently in both extreme cold and hot climates, ensuring durability and safety through specialised designs that address the unique challenges of each environment. Currently, 76% of our equipment operates in cold climates, while 23% is used in warmer regions, demonstrating our extensive capability to meet diverse environmental demands.



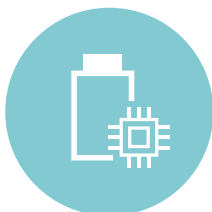
#### SELF-SUFFICIENCY AND MAINTENANCE SAVINGS

TIPS equipment is 98% self-sufficient, offering substantial maintenance savings. Electric GSE have fewer moving parts than diesel engines, resulting in less wear and tear and lower maintenance costs. According to the International Air Transport Association (IATA), maintenance costs for electric GSE can be up to 50% lower than for diesel-powered equipment.



#### LONG-TERM COST SAVINGS

Electric GSE features fewer moving parts, resulting in enhancing durability and longevity during daily operations. While the initial investment may be higher, the extended lifespan and reduced maintenance requirements make electric GSE a cost-effective choice in the long run.



#### ADVANCED BATTERY SYSTEM FOR AIRPORT OPERATIONS

Our battery system is tailor-made to meet the operational demands of airports. It is rigorously tested and already operational at various airports throughout Southern and Central Europe, as well as Scandinavia. Designed for reliability and efficiency, it delivers optimal performance in challenging airport environments, offering a sustainable and robust energy solution that supports uninterrupted airport operations.

# EXPERIENCE THE ADVANCED **RUNWAY2236Pe** PASSENGER STAIRS

The **RUNWAY2236Pe** is a highly adaptive self-propelled passenger stair vehicle, engineered to offer unmatched efficiency and precision in boarding a variety of aircraft. Compact yet robust, it excels in providing essential boarding services with exceptional manoeuvrability and user comfort.

## KEY FEATURES:

- **Dynamic Performance:** Equipped with an electric drive capable of speeds up to 15km/h and a mechanical steering system, this vehicle ensures smooth and responsive handling. The compact design features a minimal turning radius, making it ideal for tight spaces.
- **Versatile Adjustability:** Adjustable height from 2.2m to 3.6m allows these stairs to service a wide range of aircraft, including narrowbody jets. The stairs' inclination can also be adjusted for optimal boarding angles.
- **Enhanced Stability and Safety:** It features electro-operated mechanical stabilizers that provide stability during operation. The vehicle is designed with high wind resistance and safety features such as protective barriers and manual safety systems in case of power loss.
- **Operator-Focused Design:** The operator's platform is ergonomically designed with all controls within easy reach, enhancing safety and reducing operator fatigue. Large rear-view mirrors and ample lighting ensure safe and efficient operations.
- **Robust Construction and Durability:** Built with a strong steel frame and designed for low maintenance, ensuring longevity and reliability. The stair sections are made from slip-resistant materials for additional safety.
- **Customisable Options:** Available with a range of optional features such as onboard diagnostics, advanced lighting systems for different operational conditions, and aesthetic customisation to meet specific airport needs.
- **Regulatory Compliance:** Meets all relevant EN safety standards and is optionally compliant with IATA recommendations, ensuring adherence to international operational safety.

## SPECIFICATIONS:

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Maximum speed [km/h]:  
**15**

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Minimum height [m]:  
**2.2**

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Maximum height [m]:  
**3.6**

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Vehicle width [m]:  
**2.530**

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# Runway series



# INTRODUCING THE **PULLEY75Ce** ELECTRIC BELT LOADER

Elevate your ground handling operations with the **PULLEY75Ce**, where functionality meets innovation in airport equipment technology.

Experience unmatched efficiency with the PULLEY75Ce, an electric self-propelled universal conveyor belt loader designed for optimal handling of air freight, bulk cargo, and luggage. Engineered for environmental friendliness, its electric drive and a fixed 7.5m boom enable operation at sill heights ranging from 1.0 to 4.5m all while maintaining the lowest possible energy consumption.

## KEY FEATURES:

- **Quick-Change Battery System:** Easily replace the battery when power levels are low, ensuring continuous operation.
- **Enhanced Operator Visibility:** Positioned at the front left, the operator's post provides an excellent overview during driving and docking operations.
- **Robust Design:** Features an 850-mm-wide fixed boom equipped with a 600-mm-wide transport belt. It can handle a maximum single load of 450kg or a continuous load of 135kg/m with adjustable belt speed. The aluminium railings are manually adjustable on the front of the boom. To accommodate larger loads, the right-side railing is foldable.
- **Customisable Setup:** Modular vehicle design with an extensive array of options including roll tables, retraction sensors for railings, a Power Stow rollertrack conveyor, and a safe docking system.
- **Personalisation:** Configure everything from the machine's colour using the RAL chart to decide on the size and placement of logos.
- **Safety and Quality Compliance:** The belt loader not only sports a high-quality design and manufacturing process but also bears the CE mark, meeting all relevant EN standards and optionally adhering to IATA recommendations.

## SPECIFICATIONS:

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Min length [m]:  
**7.60**

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Max width [m]:  
**2.15**

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Min headroom with roof [m]:  
**2.00**

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Service range [m]:  
**1.0 - 4.5**

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Drive speed [km/h]:  
**25**

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Boom type:  
**Fixed length**

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Pulley  
series

# DISCOVER THE **TANK1215Pf** POTABLE WATER SERVICE VEHICLE

The **TANK1215Pf** is a versatile and powerful potable water service vehicle, designed to deliver outstanding efficiency and precision in servicing all types of aircraft. This vehicle excels in performance, providing essential ground services with superior maneuverability and comfort.

## KEY FEATURES:

- **Dynamic Performance:** Equipped with two 10kW electric motors, it can reach speeds of up to 25 km/h and ensures excellent vehicle responsiveness. With the torque vectoring function, full torque is available at each drive wheel. This acts like a differential lock, aiding in slippery conditions. The front wheels have disc brakes, and regenerative braking with the drive motors ensures adequate braking performance.
- **Efficient Operations:** All operational functions such as driving, water pumping, vacuuming waste, and disinfectant dispensing are directly driven by electric motors. This results in optimal energy efficiency and allows for extended operation based on battery capacity.
- **Versatile Servicing Capabilities:** The vehicle is capable of servicing most aircraft up to a height of 4.7 meters. Aircraft can be serviced from the basket or from the ground. For easier docking, driving from the basket is available.
- **Designed for Ease:** All commands are simplified. Two displays provide better oversight of operations and vehicle status. The lift basket is mounted at the front, facilitating easier and more precise docking with the aircraft fuselage.
- **Customization Options Customers** can customize the best combination of options based on their needs, personalise the appearance with choices of colour from the RAL chart, and decide on the size and positioning of logos.
- **Safety and Quality Compliance:** The vehicle is manufactured to the highest standards, featuring a CE mark and complying with all relevant EN standards, with optional adherence to IATA recommendations.
- **Capacity and Accessibility:** The vehicle has a total tank capacity of 2300 liters. It can include waste and water tanks, as well as a disinfectant tank.

## SPECIFICATIONS:

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Primary tank volume [L]:  
**1200 - 1500**

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Service range [m]:  
**0 - 4.7**

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Min length [m]:  
**6.42**

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Max width [m]:  
**2.5**

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Min headroom with roof [m]:  
**2.10**

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Drive speed [km/h]:  
**25**

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# Tank series



## VIENNA AIRPORT: A MODEL OF SUSTAINABILITY

Vienna Airport achieved CO<sub>2</sub> neutrality in 2023, leading the way in environmental sustainability. With Austria's largest solar farm, the airport now generates 40% of its power needs onsite. Committed to further reducing its emissions, Vienna Airport is transitioning to a 100% zero-emission fleet for passenger handling and ground operations, setting a standard for airports worldwide.



*In addition to advancing photovoltaics and implementing CO<sub>2</sub>-free district heating systems, Vienna Airport actively engages in a comprehensive range of other climate protection initiatives to boost its environmental sustainability. A prominent part of these efforts is the operation of an e-fleet, currently comprising approximately 380 electric vehicles. This fleet is primarily made up of specialised vehicles tailored for efficient aircraft handling, including passenger stairs and a variety of other GSE. By transitioning to these electric vehicles, Vienna Airport has managed to significantly reduce its diesel consumption by about one million litres annually, which underscores the substantial environmental impact of this initiative.*

*Furthermore, the airport's commitment to reducing its carbon footprint extends beyond just the adoption of electric vehicles. It includes ongoing assessments and upgrades to its energy systems, proactive engagement in sustainability practices, and collaborations with technology providers to ensure the most efficient operations. The strategic use of TIPS GSE vehicles plays a crucial role in achieving these ambitious environmental targets, as they are specifically designed to meet the demanding needs of airport operations while minimising ecological impact. This comprehensive approach to sustainability not only supports Vienna Airport's operational efficiency but also contributes to wider climate goals, setting a benchmark for airports globally.*

**Gerhard Ortner**, Central procurement





Vienna  
Airport

# OPTIMISE YOUR **TIPS** GSE PERFORMANCE



## **MAINTENANCE AND TECHNICAL SUPPORT**

TIPS provides comprehensive maintenance and support for ground support equipment (GSE), ensuring optimal operational efficiency throughout its lifecycle. Our services extend beyond the warranty period, encompassing preventive technical inspections designed to tailor maintenance activities based on the actual condition of the equipment rather than fixed intervals. This approach minimises downtime and extends the service life of your GSE.



## **ADVANCED TRAINING PROGRAMMES**

Our dynamic training programmes are developed to keep pace with technological advancements and changing industry standards. We equip your technical staff with the skills necessary to operate GSE with maximum efficiency and safety. Our training reduces the risk of operational errors and accidents, thereby lowering potential liability and enhancing workplace safety.



## **SPARE PARTS LOGISTICS**

With our sophisticated part tracking system, TIPS ensures that you can quickly and accurately identify and order the necessary spare parts for your GSE. Whether through a basic description or a photograph, our system streamlines the procurement process, complemented by expert advice from our technicians to assist with your selections.



## **ON-SITE SERVICE CAPABILITIES**

TIPS's field service teams are equipped to perform a range of on-site services from routine maintenance to urgent repairs, ensuring that your GSE maintains peak performance levels. Our strategy focuses on proactive maintenance to prevent small issues from becoming costly problems.



## **CUSTOM UPGRADES AND MODIFICATIONS**

Our engineering team specialises in the design and implementation of modifications and upgrades for aging or obsolete GSE, enhancing its functionality and compliance with current safety and environmental standards. Before you consider replacing old GSE, consult with our experts who can provide tailored solutions that meet specific operational needs, including compliance with IATA security requirements and emissions reductions.

## FUTURE DEVELOPMENTS

At TIPS, we are relentlessly advancing our research and development efforts to redefine the efficiency and sustainability of electric ground support equipment (GSE). Our focus is on integrating advanced automation technologies that minimise the need for manual labour, thereby reducing operational costs and enhancing logistical efficiency at airports globally.

Central to our R&D strategy is the pursuit of autonomous driving capabilities within our GSE fleet. This initiative is geared towards the development of fully autonomous electric vehicles capable of self-navigating airport environments with precision and reliability. By leveraging state-of-the-art sensors, machine learning algorithms, and real-time data processing, our vehicles are being engineered to operate independently, which significantly reduces the dependency on human operators.

These technological advancements are aimed at not only improving the operational throughput but also ensuring greater safety and reduced carbon footprints. As we progress, TIPS is committed to pioneering innovations that meet the stringent demands of modern airports and set new benchmarks for the aviation industry's transition to zero-emission operations.

## READY TO TRANSFORM YOUR AIRPORT OPERATIONS?

Experience the future of ground support with TIPS electric GSE. Contact us today for a demo or more information and see how our solutions can enhance your operational efficiency and sustainability.



GROUND  
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