

# Regional GATEWAY

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## Automatic for the people

Digitalisation opens the door to  
more efficient ground handling

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# Smart investment

The digitalisation and automation of ground handling equipment is transforming the sector and widening opportunities for greater efficiency. However, to reap the full benefits, airports must upgrade their infrastructure too, as Keith Mwanalushi reports.

**The ground handling** sector is turning to new technologies to improve operational efficiency while driving sustainability and process improvements.

A decade ago, telematics-enabled equipment was the privilege of only a handful of forward-thinking companies, but now most ground handlers and airlines are using telematics data in some way.

“Not only are we seeing the adoption level increase but also an expansion in the sophistication of use cases,” says Josh Parkin, Senior Sales Manager for New Technology Products at Oshkosh AeroTech.

Taking Oshkosh’s iOPS platform as an

example, airlines and ground handlers can tap into significant real-time data points coming straight from their equipment.

Some typical examples of telematics applications include fuel savings, operator behaviour and compliance monitoring, remote equipment diagnostics and troubleshooting.

Many, like Parkin, feel that automation is still in the early stages of adoption within the industry.

Oshkosh started delivering autonomous drive solutions to the market two decades ago, initially through its defence division but now actively applying that experience to its aviation customers.

“We have seen rising demand for green-electric GSEs and that full electric turnarounds are possible.”

Roland Ückert, Managing Director, HiSERV GmbH

One example is the Oshkosh JetDock autonomous loader to aircraft docking solution.

“Imagine being able to clone your best operators and replicate their aircraft approach skills every turn, day or night, which is what this equipment does,” says Parkin.

In terms of automation, Oshkosh has several other development projects coming to market in the coming months.

## DATA EXCHANGE

Connectivity between systems and telematics are now a standard feature for mobile equipment, says Rune Lind Pedersen, Strategic Marketing Manager at ITW GSE.

Telematics-enabled equipment has gone mainstream. Image: Sebastian Hoehn





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Josh Parkin, Senior Sales Manager for New Technology Products, Oshkosh AeroTech

For instance, he says, the ITW GSE Connect system is designed to communicate seamlessly with airport systems via an API, enabling enhanced data exchange and operational efficiency.

Additionally, the technology gives charging level information and the exact location of the ITW GSE 7400 eGPU equipment.

“It also lets you know when it is time to book a maintenance check,” says Pedersen. “This is invaluable information to ensure maximum uptime of your



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mobile equipment.”

ITW GSE has introduced automated aircraft type detection to their 3500 PCA, which automatically identifies the exact aircraft type and not just the category – so the handler just needs to confirm the incoming aircraft.

Also, as Pedersen explains, this system adjusts the Pre-Conditioned Air (PCA) cooling capacity based on the aircraft type, ensuring a comfortable cabin temperature for passengers.

He says: “We have recently tested a fully automated system in a Danish airport, where the handler doesn’t even need to confirm the aircraft type – the system selects it based on feedback from the Visual Docking Guidance System (VDGS).”

Additionally, he says, a temperature sensor determines whether the PCA should cool, heat, or just ventilate the cabin, making the operation as simple as turning the system on or off.

### INNOVATION GAPS

Ground support equipment (GSE) specialists at HiSERV are constantly monitoring and evaluating various developments and new trends in GSE automation and digitalisation, and currently offer GSE tracking and fleet management services.

Roland Ückert, Managing Director at HiSERV GmbH, says: “We have seen rising demand for green-electric GSEs and that full electric turnarounds are possible.”

However, he feels that several airports or ground handlers are still not offering the level of innovation required.

Ückert emphasises that tracking the equipment is essential for proper GSE fleet management.

“A wireless data connector on the GSE will provide all the requested data and advanced encryption ensures security of the data,” he says.

Additionally, any upcoming maintenance events will be flagged up.

HiSERV offers different GSE leasing methods too – short or long term, dry rental or a full-service option depending

on the operator’s requirements.

Meanwhile, experts at GSE manufacturer Vestergaard are seeing a big push to digitise and automate the documentation and logging process for de-icing.

The Vestergaard Company first introduced its telemetry system called Data Transmission System back in the early 1990s, and according to Lars Barsøe, Vice President, Sales and Marketing, the system has developed significantly since then.

Barsøe says de-icing jobs are funnelled to de-icing trucks and the operator starts and completes the job with a simple push of a button.

“Everything else is done by the system, including summing up the balances for the invoicing system,” he says.

**“We’ve already seen developers do real-time monitoring of stands, using cameras and visual docking guidance systems to help optimise aircraft turnaround operations.”**

Rune Lind Pedersen, Strategic Marketing Manager, ITW GSE





Vestergaard's Elephant e-BETA is an electrically operated version of the company's BETA de-icer.  
Image: Vestergaard



**"Our first step is semi-automatic, which will be launched to specific customers this year and then rolled out next year, and we plan to make this system fully automatic within the next few years."**

Lars Barsøe, Vice President,  
Sales and Marketing,  
Vestergaard Company

Barsøe observes that airport operators are increasingly seeking reports on environmental issues and that Vestergaard is assertively driving the development of de-icing automation.

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### SENSOR DETECTION

Some GSEs are more susceptible to ground damage incidents than others and perhaps, there is scope for automation and digitalisation to improve the situation.

Barsøe believes sensor technology can eliminate most of these incidents, and approach radars will limit GSEs touching the aircraft.

He anticipates that all of these

technologies will be developed further in the coming years and added to all GSEs.

From Oshkosh, the JetDock solution uses sensors to detect the aircraft and possible obstructions and aids the operator to ensure they follow proper docking procedures.

Data from Oshkosh suggests that, on average, an aircraft strike costs of \$250,000 to repair and aircraft damage costs the industry US\$5 billion annually.

"Many of these strikes occur during equipment docking," says Josh Parkin. "By applying the JetDock solution, airlines and ground handlers can eliminate this risk while increasing turn efficiency and reducing training requirements."

The approach at ITW GSE is ensuring the equipment is safe and to minimise damage and accidents. This includes robust bumpers and securing





equipment using cable interlock systems, such as lockable towbars.

To some extent, the industry will expect AI-driven robotics to reduce ramp damage incidents, as it will eliminate human error and also has the ability to learn and adapt to ever-changing situations.

### LEVERAGING AI

Artificial intelligence (AI)-driven applications could provide an opportunity for new ways of monitoring, operating and processing improvements for GSE equipment.

Pedersen at ITW GSE also sees great potential for process optimisations and improvements to ramp operations. However, it is still early days for AI and real-time monitoring in airports.

**“The scope for automation – driven by digital processes that are integrated into total management systems, and able to issue commands – is huge.”**

Wilson Kwong,  
Chief Executive, Hactl

“We’ve already seen developers do real-time monitoring of stands, using cameras and visual docking guidance systems to help optimise aircraft turnaround operations,” he says.

Currently, Pedersen thinks the best investment still lies with proper training and education of ground crews, and in quality equipment.

“These things eliminate a lot of the shortfalls that could be caught by real-time AI monitoring,” he says.

Parkin at Oshkosh finds the rise of AI prevalence and the plethora of commercially available options exciting.

“Our equipment collects a lot of data, but fully leveraging this data to improve operations has remained elusive,” he says.

However, he has confidence that AI



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# Ground handling

and machine learning technology will help aid in capturing and synthesising this data in an actionable way.

Parkin envisions this technology improving the way existing equipment works and integrates with other equipment on the ramp in pursuit of the perfect turn.

Additionally, he foresees a scenario where operators are no longer confined to a preventative maintenance programme tied to fixed engine hours

or calendar time.

“With the data already collected by the machines and our iOPS telematics solution, AI could help us mine that data to help equipment maintenance teams shift from preventative maintenance to predictive maintenance.”

## THE HANDLER’S PERSPECTIVE

Wilson Kwong, the Chief Executive at ground handler Hactl, continues to see the transition from diesel-powered

equipment to electrically powered alternatives.

He says: “This process has a long way to go, as it involves infrastructure updates at airport level, as well as significant capital investment.”

Kwong also notes that not all airports and owners are able to facilitate and afford these investments.

Electrification is a helpful preliminary to automation, and according to Kwong it is easier to automate electrically powered GSE than legacy-powered types.

“The scope for automation – driven by digital processes that are integrated into total management systems, and able to issue commands – is huge,” he says.

“It embraces all GSEs, from autonomous aircraft tugs, baggage and cargo tractors, mobile steps and catering vehicles to in cargo handling, hi-loaders and mobile conveyors.”

Hactl has devised and implemented its own e-loading solution, to expedite all freighter aircraft loading activities using data exchange and verification.

It is currently trialling Autonomous Electric Tractors (AETs) on relatively simple, repetitive ramp routes, collaborating with multiple vendors to enhance standard offerings with additional features such as the ability to adapt automatically to dollies with varying coupling heights.

The company is also liaising with the airport authority in Hong Kong to explore the feasibility of door-to-door towing between parking bays and its handling terminal.

The plan is to convert other processes like transferring ULDs from dolly trains via hi-loaders on to the aircraft decks.

A key challenge, as Kwong implies, will be adopting automated processes and equipment and operating these alongside, and in conjunction with, human activities.

“Safety and efficiency in a mixed robot and human working environment will be paramount,” he says. ■

## Putting the data into dnata to enhance safety

A pioneer in airside automation technology, Evitado has partnered with ground handling giant dnata to harness the power of automation and data insights that in turn will reduce collisions and improve the overall safety of ground handling operations.

Underlining that safety is dnata’s utmost priority for staff, clients and public, the company’s SVP of Safety and Training, Gino Matteoni, explains that Evitado’s innovative ELVIZ LiDAR-based collision avoidance system will be deployed to elevate safety standards while ensuring punctuality during turnaround procedures.

“Integrating Evitado’s technology bolsters our commitment and ability to deliver on this core value,” says Matteoni. “With Evitado’s advanced features, we’re equipped to mitigate risks through actionable data insights, in real time.”

Dnata’s network spans 136 airports in 38 countries with Evitado’s systems being deployed across its network.

Operational and safety teams will benefit from the collection of vital airside data, which will supply them with key performance indicators, enabling them to refine operational efficiency and strengthen ground handling safety protocols.

“Collaborating with dnata, a company with such an extensive international presence, showcases the scalability and robust safety and efficiency features of our technology,” says Alex Kasinec, co-founder and CEO of Evitado.

“The insights gained from our partnership with dnata will be instrumental in advancing our product line, propelling us towards our goal of complete airside automation.”



Evitado has partnered with dnata to help improve safety.