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SEPTEMBER 2021

Ground Support

WORLDWIDE

EQUIPMENT – SERVICES – HANDLING

THE GLOBAL ISSUE



- Restarting International Travel with Technology
- Virtual Training for Real Applications
- How Handlers Navigate Scandinavia's Winters
- Russia's Ground Handling Sector Readies for Growth
- BLR Upgrades Cargo and Ground Handling Facilities

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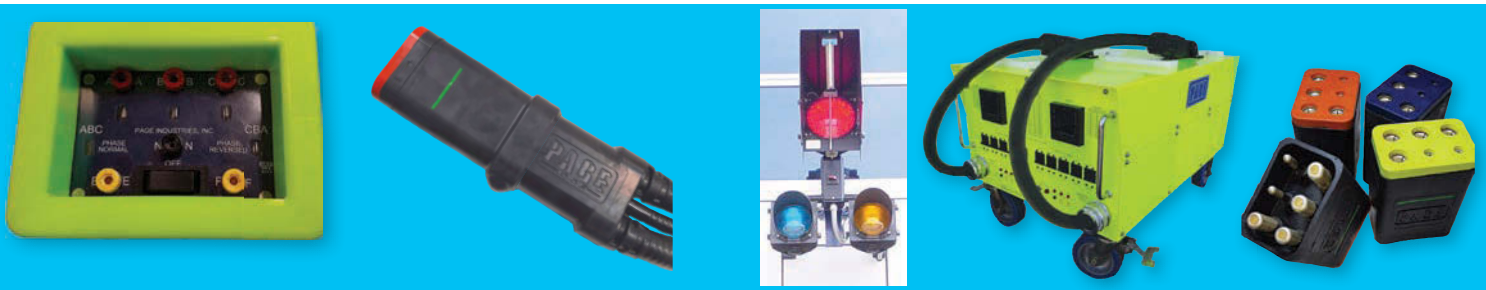
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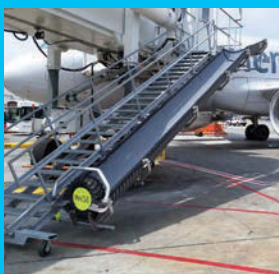
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ONLINE EXCLUSIVES

A New Kind of Airport Security with Antimicrobial Protection

By Darrell Taylor and Frode Storkaas

Airports will be under even more scrutiny when it comes to ensuring the cleanliness of the concourse and the safety of its users, not only as we emerge from the current situation, but also for the prevention of future pandemics.

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VIDEOS



Changi Airport Rolls Out Autonomous Baggage Tractor as Part of Driverless Vehicle Trial

Singapore's Changi Airport will soon roll out autonomous baggage tractors as part of a trial for driverless vehicles.

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ARTICLES



Being a Professional AMT Means Knowing Your Tools

By Scott Steward

An aircraft maintenance technician (AMT) needs to be proficient in many areas, including knowledge of the tools they use.

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Avoiding Hazards: Is it Possible to Ensure Work Safety at Airports?

Many procedures and measures can be put in place to ensure the safety of ramp employees. Some simple measures include bright high-visibility clothing, ensuring that all staff can be seen by anybody that needs to see them.

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Rapid Collaborations of Industry Leaders Aim to Make Aircraft Gearbox More Sustainable Than Ever

By Swamini Kulkarni

With the rapid launch of prototypes of new aircraft, successful tests and fully functioning flight models, the future of aircraft is certainly bright.

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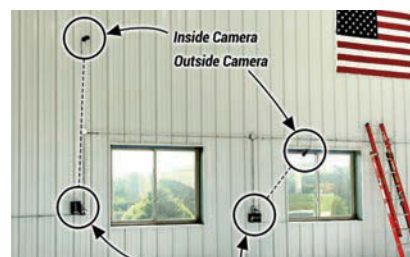
The Impact of the Federal Infrastructure Bill

Sam Sleiman, executive vice president of national transportation for Suffolk Construction, talks about what impact the \$1.2 trillion federal infrastructure bill will have on airports across the U.S.

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► Upcoming Events

Oct. 3-5

IATA Annual General Meeting (AGM) and World Transportation Summit
Boston, MA

Oct. 5-7

International GSE Expo
Las Vegas, NV

Oct. 12-14

World Cargo Symposium
Istanbul, Turkey

Oct. 12-14

NBAA Business Aviation Convention and Exhibition (BACE)
Las Vegas, NV

Nov. 1-5

Petro 2021
Washington, DC

Nov. 9-12

inter airport Europe 2021
Munich, Germany

Nov. 15-18

IATA Ground Handling Conference
Prague, Czech Republic

**INTERNATIONAL
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OCTOBER 5-7, 2021

**CAESARS FORUM
LAS VEGAS, NEVADA**

BUSINESS BUZZ

► TOP NEWS

FAA Awards Grants to Purchase Zero-Emission Vehicles

The FAA awarded \$20.4 million in grants to reduce emissions and improve air quality at airports across the United States. The awards will fund zero-emission airport vehicles, including their electric charging infrastructure, and will electrify the ramp equipment used to service planes at the gate.

"Transportation might be the biggest emitter of CO₂, but that means we have the opportunity to be a big part of the solution," said FAA Administrator Steve Dickson. "These grants put us on the right path to build a more sustainable aviation system."

The announcement specifically includes \$5.9 million to purchase zero-emission vehicles. These grants are 100-percent funded by the FAA with \$4.5 million from the agency's Zero-Emissions Vehicle program and \$1.4 million from President Biden's American Rescue Plan Act.



NAS Renews ISAGO Registration

National Aviation Services (NAS) has successfully renewed its IATA's Safety Audit for Ground Operations (ISAGO) for the fifth time. In 2008, NAS was one of the first ground handling companies to be ISAGO registered and since then has been consistently conforming to IATA's highest standards of safety in operations processes and procedures.

The ISAGO certification is an industry global standard for assessing operational management and control systems for ground handling service providers. Following a successful renewal audit at its headquarters, NAS was ISAGO registered for organization and management (ORM), load control (LOD), passenger and baggage handling (PAB), aircraft handling and loading (HDL), aircraft ground movement (AGM) as well as cargo and mail handling (CGM).

"It's always great to see NAS recognized for safety in the area of ground operations. This is the fifth time we have received the ISAGO recognition, and it is even more significant because we managed the audit in between a global pandemic and airport closures. This posed several challenges, but we managed to sail through with adaptability and resilience," said Hassan El-Houry, Group CEO, NAS. "Despite the difficulties, we continued to persevere and serve the industry to drive its full potential and kept essential supply chains across our network flowing uninterrupted."



AGI Opens New Off-Airport Facility at Newark, Moves to New Warehouse

Cargo handling services provider Alliance Ground International (AGI) has opened a new 76,000-square-foot off-airport air cargo facility five minutes from Newark Liberty International Airport to process import



freight. The handler is also relocating from existing facilities at Newark (EWR) to a facility on airport at EWR to handle outbound/export cargo and offer a dual-facility solution.

The off-airport facility will feature 19 cargo bay doors, active unit load device (ULD) charging stations, ULD storage and cold storage, pharma handling areas, increased security and easy access to major highways.

"Our dual-facility solution increases our air cargo handling capabilities while reducing wait times and truck congestion on the airport service roads," said Jared Azcuy, chief executive officer, AGI. "It is a solution we have tried and tested at our other locations, and it will speed up processing, making for a more efficient and cost-effective operation."

"Our new facilities and digital solutions mean that AGI is more than ready to support customers in New Jersey."

IATA Validates Quality of Ground Handling Services at Sheremetyevo

Moscow Cargo LLC, the cargo operator for Sheremetyevo International Airport, has renewed its certificate of compliance with the world standards and recommended practices of IATA for ground handling safety. The certificate was awarded upon completion of the IATA's ISAGO audit, which is conducted every two years.

The audit contains requirements not normally found in the Russian regulatory environment, such as risk management system, quality program and training of personnel for emergency situations. ISAGO certification guides the cargo handler in improving the quality of ground handling services and helps eliminate the need for individual carriers to conduct inspections, which reduces the operating expenses of partner airlines.

Moscow Cargo was last certified in 2019. Biannual recertification allows IATA to consider any changes in production processes, including those dictated by the need to respond effectively to market demands.

► PEOPLE

Swissport Names Diez Global Commercial Director



Andres Diez recently joined Swissport as global commercial director. He will drive the commercial function to deliver customer-focused solutions that will support the company's vision to be the best global aviation services business and the partner of choice for airlines. With the appointment of Diez, Swissport completes its global management team and new organizational setup.

"We are delighted to welcome Andres Diez as director global commercial," said Warwick Brady, president and CEO of Swissport International. "He brings many years of experience in key leadership roles for major logistics businesses where his efforts centered around business development and commercial strategies. With customer centricity at the core of our agenda, Andres and his team around the Swissport network will be instrumental in delivering value to our customers, supported by commercial coordination and engagement across regions."

Diez has more than 20 years of management experience in business development and in financial planning for major logistics businesses such as DHL, and most recently, GXO Logistics. He holds both a Bachelor of Science in Industrial Engineering degree and an MBA from Florida International University, and recently completed a Master of Real Estate Finance degree from Georgetown University.

Meridian Names Director of Ground Operations



Meridian recently welcomed Nehemias Camacho as director of ground operations.

Camacho, who most recently served as a manager of ramp services at United Airlines, spent 21 years with Meridian, primarily as line services manager. Camacho joined United in early 2020 in what he called a rare opportunity to experience the commercial side of the aviation industry.

"We are delighted to welcome Camacho back to Meridian," said Steve Chandoha, Meridian president. "The experience he gained at United, coupled with his knowledge, skills and previous tenure at Meridian, complements the expertise he brings to this new position. This is especially relevant as we strive to deliver the best possible FBO experience."

As director of ground operations at Meridian Teterboro, Camacho has over-all responsibility for the departments of line service, security, ground service

equipment and detailing. As the company continues to experience an uptick in business and growth, his role will be expanding.

"It's really great being back at Meridian," said Camacho. "Returning to the company was seamless in some ways, but in other ways, it's very different with the added responsibilities of my new position. One thing that has remained the same is the feeling of being with family that working at Meridian gives you."

"I made the decision to join United because it was an opportunity to learn something new," Camacho continued. "I definitely learned some things that I had not been exposed to in business aviation, and at the same time, there were skills I learned at Meridian that I was able to implement at United. I feel that I made an impact with United's leadership team while also improving the relationship between frontline employees and leaders. Motivating others to provide the best service to every customer made me realize how much I appreciated Meridian and what it stands for."

CCA Board Welcomes Rodríguez Moreno from Qatar Airways Cargo

Miguel Rodríguez Moreno, senior manager climate control products, Qatar Airways Cargo has joined the Cool Chain Association's (CCA)'s board of directors.



Rodríguez Moreno brings more than six years of experience in cargo, including four years as global pharma development manager for Etihad Cargo.

"It is an honor to join CCA's board of directors and I look forward to sharing our expertise while at the same time hearing from other stakeholders so we can collaboratively improve and enhance the cool chain," said Rodríguez Moreno.

"Digitalization is one of the key pillars of our strategy; tech and automation is being implemented across all areas of our services including cool chain solutions and I am looking forward to being part of the CCA Perishables Conference where the focus is on innovation and tech."

Pollard Appointed CEO, dnata Travel Group

Ailsa Pollard has been appointed as chief executive officer, dnata Travel Group (UK and Europe). She will start in her new role on Nov. 1 and report to the previous holder of the role, John Bevan, who now oversees all aspects of dnata's global travel business as divisional senior vice president for Travel.



As a key member of the leadership team for dnata Travel Group, part of the Emirates Group, during the last 12 years, Pollard has held a variety of senior roles. These include, vice president – business development and strategy, heading the team that oversaw the acquisition and holding board positions on many of the businesses that now form the group's UK portfolio; and four years as senior vice president – Emirates Holidays, where she oversaw the brand's global operations across 36 markets. Most recently, as senior vice president – transformation (global) and consumer businesses (ME&I), she had responsibility for the dnata Travel consumer travel brand in the UAE, and overseeing a complete strategic review and

transformation of dnata Travel Group's global portfolio of brands through the pandemic.

"We're delighted that another part of the dnata Travel family will now be able to benefit from Ailsa's expertise and leadership. I've had the pleasure of working with her for a number of years and know our team in the UK – as well as our valued industry partners – will enjoy working with her and will go on, together, to achieve great things," Bevan said. "These are challenging times for all UK travel businesses, and need clear headedness, agility, honesty and commitment to navigate. Ailsa has all of those qualities, as well as decisive strategic vision, a passion for the customer and operational know-how. Our UK organization couldn't be in safer hands."

"I'm looking forward to working with the UK team to emerge stronger from the pandemic. I know how tough the last 18 months have been on our people, our brands, our customers and our partners, but we have very strong foundations and the support of a global business on which we can collectively build an exciting future," added Pollard.

► NEW DEALS

Skyport to Handle Finnair Cargo at Prague Airport

Central European cargo handler Skyport has been selected by Finnair Cargo to deliver its cargo handling requirements at Prague Airport in the Czech Republic. Finnair Cargo will be handled at Skyport's semi-automated airside facility in Prague, which has recently been upgraded as part of ongoing technology investments by its new owner Ventus.

"Skyport's new full barcode and QR scanner system will give Finnair Cargo end-to-end real-time visibility of its cargo as it moves through our facility," said David Adámek, CEO Skyport a.s. "We have also invested in upgrading and expanding the handling capability of our automatic loading systems (ALS) to ensure we have

the most cost-effective and timely solution for our customers.

"We are proud to have won the contract to work with Finnair and are looking forward to a productive partnership."

"We are very pleased to continue our long-term partnership with Skyport in Prague," added head of Finnair cargo operations, Tommi Voss. "Finnair Cargo is focusing on transporting special cargo items, and we are proud to operate from one of the most modern air cargo terminals in Helsinki.

"Protecting our customer's product integrity is key across the supply chain and we are delighted to offer a more secure route to and from Prague with Skyport."



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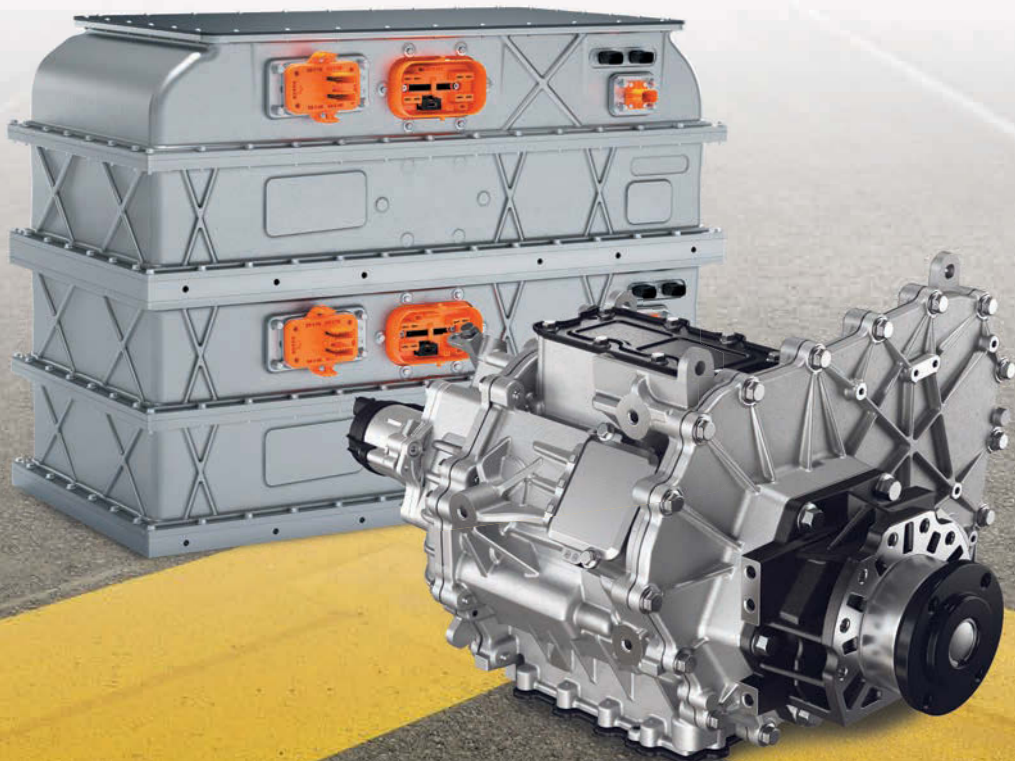
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ABC Agrees to 10-Year Cargo Handling Contract with WFS in Liege

AirBridgeCargo Airlines (ABC) has awarded a 10-year cargo handling contract to Worldwide Flight Services (WFS) in Liege. Under the terms of the new contract, as well as handling import and export cargo on AirBridgeCargo's 15 Boeing 747 freighter flights a week, WFS has subleased half of ABC's new cargo terminal at the Belgian airport to support its other handling clients.

WFS will also provide handling for other Volga-Dnepr Group airlines when required to do so.

"We are extremely proud that AirBridgeCargo Airlines and Volga-Dnepr Group are making this long-term commitment to working with WFS. This 10-year contract in Liege follows our announcement in June of a three-year handling agreement with ABC at our new cargo terminal in Atlanta," said Barry Nassberg, WFS' group chief commercial officer. "These types of contracts provide stability for both partners, are great news for our employees, and enable us to support AirBridgeCargo's long-term growth strategy, which requires us to deliver high quality, reliable and innovative cargo handling services for its global customers."

As well as Liege and Atlanta, WFS also holds contracts to provide handling services for AirBridgeCargo Airlines in Frankfurt, Madrid and Paris as well as in Dallas/Fort Worth, Houston, Los Angeles and Hong Kong.



Carolina GSE and David Clark Announce Partnership

Carolina GSE, a global provider of aviation ground support equipment, avionics test equipment and consumables,

announced a new manufacturing partnership with David Clark Company.

With this new partnership, Carolina GSE is equipped to distribute a wide array of David Clark aviation headsets, including its full line of aircraft tug pushback headsets in both wired and wireless options for communicating while performing a variety of ramp and maintenance operations including pushback. Also available are David Clark's noise-reducing hearing protector headsets, aircraft deicing headsets engineered specifically for use during deicing applications, and headsets designed for aircraft and helicopter pilots in both passive and Electronic Noise Cancelling (ENC) options.

"David Clark headsets are known for their unparalleled reliability and clear communication capabilities," said John Werner, Carolina GSE president. "With this new partnership, Carolina GSE will support its customers with access to the highest quality headsets designed specifically for the aviation industry."

"We are very excited about our new business relationship with Carolina GSE," said Fernando Serra, David Clark Company regional sales manager. "We look forward to working with our new ground support/aviation dealer in the Carolinas."



Aviator Signs Partnership Agreement with Norwegian for Deicing Services

Aviator Airport Alliance has signed a new partnership agreement with Norwegian for deicing services. The new deicing contract was signed for a three-year period and went into effect on Sept. 22, in Bergen, Bodø, Bardufoss, Tromsø and Trondheim Airports in Norway.

"We are delighted that starting this winter, Aviator's professional deicing team will take care of Norwegian air-

lines aircraft. We feel proud that such an established company has recognized our experience and professionalism and chose us to ensure the safety of their winter operations," said Jo Alex Tanem, CEO of Aviator Airport Alliance.

"We are very pleased to have entered into a deicing contract with Aviator for these domestic Norwegian destinations where Aviator already handles our traffic. Deicing is a vital safety requirement during the Nordic winter months, and Aviator will contribute to ensuring that our aircraft are ready for on-time departures," added Adrian Dunne, EVP operations for Norwegian.



Menzies Expands MASIL Joint Venture with Launch of Passenger Services in Baghdad

Menzies Aviation announced that it has expanded its joint venture with Iraqi Airways (MASIL) to offer passenger services at Baghdad International Airport. MASIL has assumed operational control of passenger service activities in the Nineveh terminal at Iraq's largest airport as part of its commitment.

As part of the team already on the ground, 155 MASIL employees will provide passenger services to Iraqi Airways.

"We're delighted that MASIL is going from strength to strength in Baghdad, from the launch of our Cargo Go Live initiative a few months ago to the commencement of passenger service activities. One of the key aims for MASIL is to support the development of Iraqi nationals to assume key positions within the business going forward and we're pleased to see our advanced training programs are already underway," said Charles Wyley, executive vice president, Middle East, Africa and Asia, Menzies Aviation.

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Optimizing Aviation Efficiency and Safety When Severe Weather Strikes

With the correct technology, airport personnel can measure and detect severe weather and take proactive steps to minimize disruptions and ensure safety.

By Timo Lindfors

When you're responsible for ensuring safe and efficient takeoffs and landings, inclement weather is not your friend. From thunderstorms and snowstorms to heavy winds, rain, fog and ice, severe weather events can create potentially hazardous conditions that cause cost-prohibitive, inconvenient delays and put lives at risk.

Whether developing suddenly or slowly, inclement conditions are, according to the Federal Aviation Administration, by far, the largest cause of flight delays. In fact, inclement weather causes nearly 70 percent of all flight delays of greater than 15 minutes in an average year. Worse yet, while human error is the most common cause of accidents, weather is a primary contributing factor in nearly 25 percent of all aviation accidents, with a National Transportation Safety Board study revealing more than two-thirds of all weather-related general aviation crashes have been fatal.

No matter where in the world an airport is located, severe weather conditions can complicate how air traffic controllers, pilots and airport personnel decide to maintain the safety and efficiency of airport operations.

How Severe Weather Impacts Daily Operations and Personal Safety

Given the busy nature of airports, efficient daily operations are essential while ensuring travelers fly safely to their destinations. Understandably, at airports of all sizes across the globe, severe weather can have a dra-

matic impact on both these factors. Let's take a look at some of the most common severe weather phenomena affecting aviation.

LIGHTNING

Lightning strikes can cause serious injuries and even death to fliers and airport/airline personnel, damage aircraft, interfere with avionics, shut down engines and even incapacitate pilots.

Complicating the issue, many airports don't effectively monitor lightning or mitigate its impact. Some smaller airports use audible thunder to indicate the presence of lightning in the area, while most others employ basic single-point sensors that are challenged to communicate a storm's precise location or classify in-cloud versus cloud-to-ground strikes. Beyond uncertain lightning information, disparate safety procedures and warning criteria hamstringing airport operations because notifications alerting personnel when to halt operations and move to shelter, as well as when it is safe to resume, can be inconsistent.

WIND SHEAR

Wind shear – or the sudden change in the direction or velocity of wind – most commonly impacts aviation in the form of delays, cancellations and diversion of flights to alternative airports, but it can also quickly create dangerous situations during takeoff and landing.

Whether landing or taking off, large commercial aircraft must be able to avoid drastic disruptions to their flight paths caused by one of the most dangerous – and difficult to assess – weather phenomena in aviation. Even though winds alone are rarely the cause of accidents, wind shear remains a persistent risk because it takes place at a height, and under flying conditions, when planes are most vulnerable.

Since wind shear puts lives at risk and can lead to crippling financial damages, airports need to reliably perceive wind shear dangers, alert the appropriate personnel and take action before accidents happen.



LOW VISIBILITY

Every year, low visibility cancels, delays or disrupts flights around the world. Whether the product of water, rain, fog, snow, sleet, graupel, or rock-based obscurant, sand, dust or other particulate matter, visibility is an important factor in all phases of flight. Good visibility means airports can maximize inbound/outbound aircraft so that they are running at full capacity. However, as visibility decreases, airport operations have to become less efficient to ensure safe departures and arrivals.

FREEZING CONDITIONS

When temperatures plummet and precipitation falls from the sky, freezing conditions complicate daily operations and require extra time and manpower to ensure safe travel. In addition to causing costly delays and cancellations, extreme cold forces decision-makers to deice and anti-ice aircraft, as well as ameliorate the impact of freezing conditions on runways and taxiways. Unfortunately, the deicing and anti-icing processes create significant time and cost impacts. Not only are the fluids used costly, but queuing planes for deicing only further delays operations.

While aviation decision-makers cannot control Mother Nature, there is a broad range of tools available to help mitigate the impact of lightning, wind, fog, icing and other dangerous weather conditions to make aviation safer and more efficient.

Mitigating Risk and Improving Safety with Measurement Technologies

When it comes to severe weather, balancing minimal operational downtime with optimal safety can be difficult without the right tools. To ensure safe and efficient airport operations in all weather, decision-makers need accurate assessments of wind, visibility, cloud height, pressure, lightning, wind shear, precipitation, runway surface conditions and more. That's where aviation weather management systems that incorporate a wide range of sensors to produce real-time reports and alerts come in.

Measuring lightning involves standalone sensors that detect nearby lightning, a precision lightning network that includes more advanced sensors deployed around the airport and a global lightning network able to detect all lightning events around the globe. Com-

bined, these components can be integrated into systems to trigger lightning warnings that keep staff and passengers safe while ensuring operations run at optimal efficiency.

For wind shear, the best aviation weather management systems incorporate three measurement technologies: a low-level wind shear alert system (LLWAS), weather radar and scanning wind lidar. LLWAS measures average wind speed and direction using a network of remote ultrasonic sensors fixed around runways and along approach or departure corridors. Weather radar, used during precipitation, can measure the wind field from the entire aerodrome and beyond. Scanning wind lidar, used in clear sky conditions, provides wind shear detection, 3D wind information and wind inversion detection that can measure the entire field, from the runway and its approach and take-off areas.

Concerning visibility, categorized airports must have instrumented meteorological optical range (MOR) measurements and a system calculating runway visual range (RVR), the most essential factor for enabling air traffic control and pilots to make the correct operational decisions. Visibility, or MOR, can be measured with two approved technologies: transmissometer and forward scatter, with transmissometer technology like Vaisala's LT31 transmissometer. Forward scatter technology, such as Vaisala's FD70, is, in addition to the meteorological visibility (MOR), able to measure the drop size distribution and velocity of falling hydrometeors as well as offer present weather detection.

Weather radars can deliver precise meteorological information for a specific area, tracking the location of severe storms. By providing advanced warning of a broad range of approaching weather phenomena, including wind shear, precipitation type and amount, thunderstorms, microbursts and more, weather radar can enable good situational awareness and help improve safety and airport efficiency.



Photo courtesy of Chris Procter

Additionally, novel lidar ceilometers can detect freezing conditions in the atmosphere at altitude. With these measurements, decision-makers are able to notify any planes flying through how they could be impacted and enable airport operators to monitor potential nearby snowfall, which will lower RVR, force runway maintenance teams to clear runways and taxiways, cause flight delays and lower the frequency of takeoffs and landings.

When airports are selecting the technologies comprising their aviation weather management system, it is important to consider vendors that offer comprehensive solutions that integrate individual sensors, sensor suites and complex systems to provide situational awareness. Vendors should also be experienced in aviation so that they have insight into what airports face when it comes to the impact of severe weather on operations and safety.

To maintain scheduled operations and keep staff and travelers safe, decision-makers require precise and timely weather information to plan ahead, rapidly react to changing conditions and reduce disruptive delays.

With the right technologies, airport decision-makers can measure and detect severe weather and take the proactive steps necessary to minimize delays and cancellations, while keeping operations running as safely and smoothly as possible. **GSW**



▶ ABOUT THE AUTHOR:

Timo Lindfors is a 20-year employee of Vaisala with a background in the company's research and development projects on dropsondes, sounding systems, services development and aviation systems. As part of Vaisala's aviation team, Lindfors has been involved with numerous wind shear projects with customers worldwide to review and plan how to implement the best fit-for-use wind shear systems.

Restarting International Travel with Technology

Emerging technology is getting international travel out of the holding pattern it's been in as COVID-19 continues to strike different areas at different rates, causing ever-evolving regulations to enter and exit countries.

By Walker Jaroch



Clinic - Top Health
MediCenter, 84 The Avenue, London

After a promising spring and summer filled with vaccinations and loosening quarantine restrictions, the delta variant of the SARS-CoV-2 virus (COVID-19) is now reminding the world it's still in the midst of a pandemic.

For those vaccinated, the world and skies are more open than they were a year ago, with the new obstacle being how to verify the vaccination status of would-be world travelers.

It's a problem vaccine passports and biometric technology are solving.

Rise of the Travel Pass

The IATA Travel Pass was originally conceived and worked on as a contactless travel app before the pandemic struck. When COVID-19 emerged and shuttered the aviation industry, the IATA development team retuned the app to serve as a tool to help aviation rebound.

Now, 51 airlines from all corners of the globe have enrolled with and are trialing the IATA Travel Pass.

"Historically, we were working on a contactless application and the objective of that application was to use facial recognition in order to process the passengers throughout the airport in a more fluid way," explains Frédéric Leger, director, airport, passenger, cargo and security products, IATA.

The Travel Pass would have travelers scan their passports, take a picture of themselves along with a motion capture to prove they're alive, then put that digital identification on their phone. Then a passenger could transmit that data via the Travel Pass to the airline and airport and go seamlessly through the airport using only facial recognition.

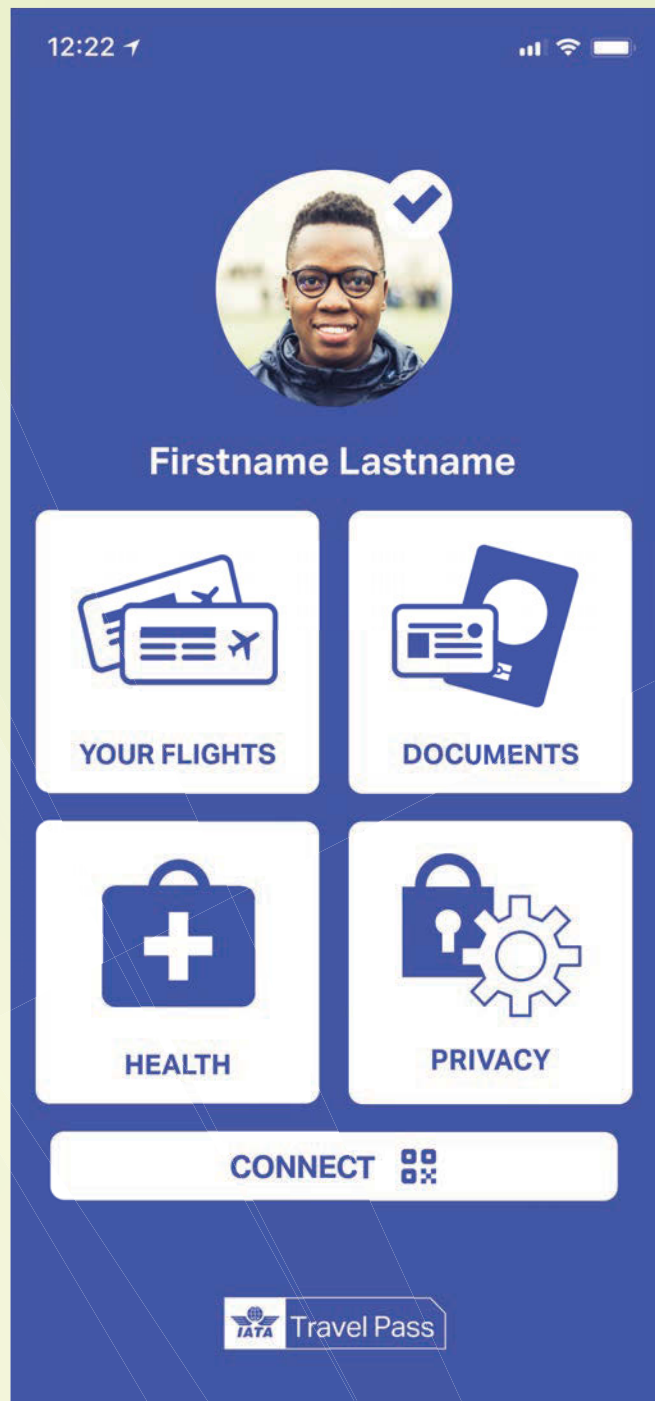
Leger says that they had a handful of airlines and governments working with them on the app when COVID-19 surfaced.

"We immediately identified the fact that, of course, not handing over the paper passport and the paper boarding pass would already be a benefit in the crisis. But then, we also realized that we could, at the same time, include the test certificate, and, at a later stage, the passport certificate into the app and link it to our 60-years-old thematic platform where we are, in fact, checking the regulatory requirements for one individual to travel from one region to a destination through a transit point," explains Leger.

He adds that at the same time, IATA was being asked to enter the vaccine passport space as there were other digital health providers positioning themselves as an intermediary between the airlines and the passengers at a potentially high cost for the industry.

"So, clearly having in mind those different aspects, we have entered that space," Leger continues.

Like all of their products, IATA designed the Travel Pass in conjunction with the industry, taking in feedback from air-



lines and governmental bodies. Leger says all their solutions are based on industry standards and the Travel Pass is building off existing IATA framework – One ID – which is a prior initiative launched for the digital identification of passengers.

“We have set up an industry, a user group, whereby we have 20 airlines from around the world, of different sizes, helping us to define what is it we want to develop within the app. So, it was very driven by the airlines themselves,” Leger says.

On the governmental side, the challenge has been keeping up with the shifting regulatory landscape COVID-19 creates.

Leger notes they are constantly monitoring the regulatory requirements and what governments want to introduce, “because IATA has, historically, a very good relationship with governments and with international organizations.”

“We’re managing the travel requirement regulations. They were doing it for passports, visas, and now they are focusing also on the health aspect,” he continues. “As you can imagine, the rules are changing, because some countries are moving from green or orange to red countries. So, the team is very, very busy.”

The Travel Pass is updated daily, with Leger saying that the app used to be updated roughly 50 times a week and now it is updated more than 200 times.

The app has peaked above 200 updates in a single day due to COVID regulation changes.

“For example, when the European Commission is introducing the Vaccine Certificate and the QR code that is made available on your paper certificate or on the digital certificate, obviously Travel Pass is able to scan that QR code and to generate your digital Vaccination Certificate or Test Certificate into Travel Pass. It’s for you to use it, to check against the regulations, to see if it’s good for your destination and transit point, but also to use on your phone to show to the different stakeholders that you have been vaccinated and that it’s not a fake certificate,” Leger says.

The Travel Pass is also able to interface with different vaccine passport programs and differing government’s regulatory apps and frameworks.



“The app is able to scan the different QR codes that are made available from the different governments. So, in Singapore or in Qatar or in China, they were the first countries to issue the certificate with a QR code that can be flashed by an application for you to ingest the information of your certificate on your phone and create that digital certificate. So, today I think we have written more than 30 types of QR codes from different parts of the world. And we are adding new countries’ QR codes, as soon as they make it available. So, that’s one way we connect the different landscapes developed by the governments,” Leger says.

The other way the Travel Pass connects to verify a passenger’s status is via a government’s national database of tests and certificates. The app can pull from a connected government’s database of tests or vaccination certifications for a passenger to then show at the airport.

“We are also giving the possibility for you, if you decide so, to share your digital certificate with the airlines or with the governments, so that you can be processed a little bit faster than if you have to show your phone,” points out Leger. “But again, this remains the decision made by the passenger. So, you are prompted before your flight or you’re prompted with a suggestion

for you to share your information, if you wish to, and then you can have access to fast track.”

Securing and maintaining passenger privacy is a core tenant of the app. Leger says the Travel Pass would be ineffective, losing passenger’s trust, if it didn’t put privacy first and ensure the sensitive information it relays stays secure.

“I think, it is very important for the passengers that we preserve the privacy of the passenger, because we don’t store the data. The data is always on your phone. And if you delete the app, the information is deleted on the phone. So, you have also the guarantee that the information, your personal information, is not going to be shared, unless you decide to do so with the government,” he says. “I don’t think an app like that would ever work if we didn’t respect the privacy of the passengers. And that’s a fundamental aspect of the solution.”

Trialing the Travel Pass

For an airline to utilize the IATA Travel Pass, they first need to trial it, which IATA invites them to do.

“There’s the soft aspect of the project and the more hard aspect of the project. The soft aspect of the project is, obviously, for the airlines to select a route where they

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are going to try out the application. And then they have to inform their staff first and then the passengers who are going to be part of the trial, for them to download the app and explain to them what's the benefit and how it will work. And then, of course, their staff is aware, so that when the passenger is coming with the app, they know what to do with it and to ask the right questions. And for that, usually, it's a three to four weeks trial," explains Leger.

All Nippon Airways (ANA) was the first airline in Japan to trial the Travel Pass,

requirements for implementation. The airline is also in close communications with the Japanese authorities as government acceptance of IATA Travel Pass is a critical factor for implementation, says Kaminogo.

Japan Airlines (JAL) started their trial in June and finished at the end of August.

"Since earlier on in 2021, through learning the functions and the potential possibility this app could deliver to international travel, we decided to launch a trial period to understand the features and any operational adjustments necessary," says Saori

ANA officials say that with being the first airline to trial the Travel Pass in Japan, there was a good amount of interest around the app.

On May 11, ANA invited customers to participate in the trial. The trial was conducted on ANA's Haneda-Honolulu and Haneda-New York/JFK routes from May 24 to June 6, with about 50 passengers registered for it.

"We believe the benefits of IATA Travel Pass include: allowing travelers to check the latest travel and health requirements of their destination and verify whether they meet them, providing a touchless and seamless experience, managing passenger data in a secure way, and reducing the risk of fraudulent COVID-19 test and vaccination certificates," says Kaminogo.

Leger says that as part of the trial, IATA surveys the passengers to understand their views on the application. And IATA also surveys the staff of the airlines to get their feedback.

Then on the hard side of the process is giving the airlines the option to integrate the Travel Pass into their own app.

"So, the objective of what we have developed is not for IATA to make available the app. It's more for the airlines to integrate the functionality of Travel Pass into their own app. Because if you travel with an airline, you want to use the app of the airline's to do all of the functionalities that I've just described, be it the digital ID, or be it understanding the regulatory requirements, or even defining where you can be tested in a lab and collecting your information on the airline app to then do your check-in and to do your booking and to issue and to print your boarding pass," Leger says.

Airlines also have the option of using the IATA Travel Pass app outside of their own app, if they choose not to integrate it.

ANA officials say the app addresses key pain points for passengers, helping them keep on top of the regularly changing COVID regulations around the world, and also takes some of the burden off of airlines who are responsible for ensuring passengers are compliant with these regulations.

"From the airline perspective, we are often responsible for ensuring that passengers comply with entry requirements. Yet,



beginning their journey with the app in March and conducting their trial at the end of May.

"We worked closely with IATA to determine the details of the trial. At the end of May, ANA successfully conducted a two-week trial on our Tokyo/Haneda-Honolulu and Tokyo/Haneda-New York/JFK routes," says Miku Kaminogo, manager of Alliances & International Affairs at ANA. "The trial was in line with ANA's goal to seek innovative digital solutions and help customers seamlessly and securely manage their international travel in order to meet the latest global COVID-19 health requirements."

ANA is now currently in the process of evaluating the commercial and technical

Utsunomiya, assistant manager digital CX strategy and innovation, JAL.

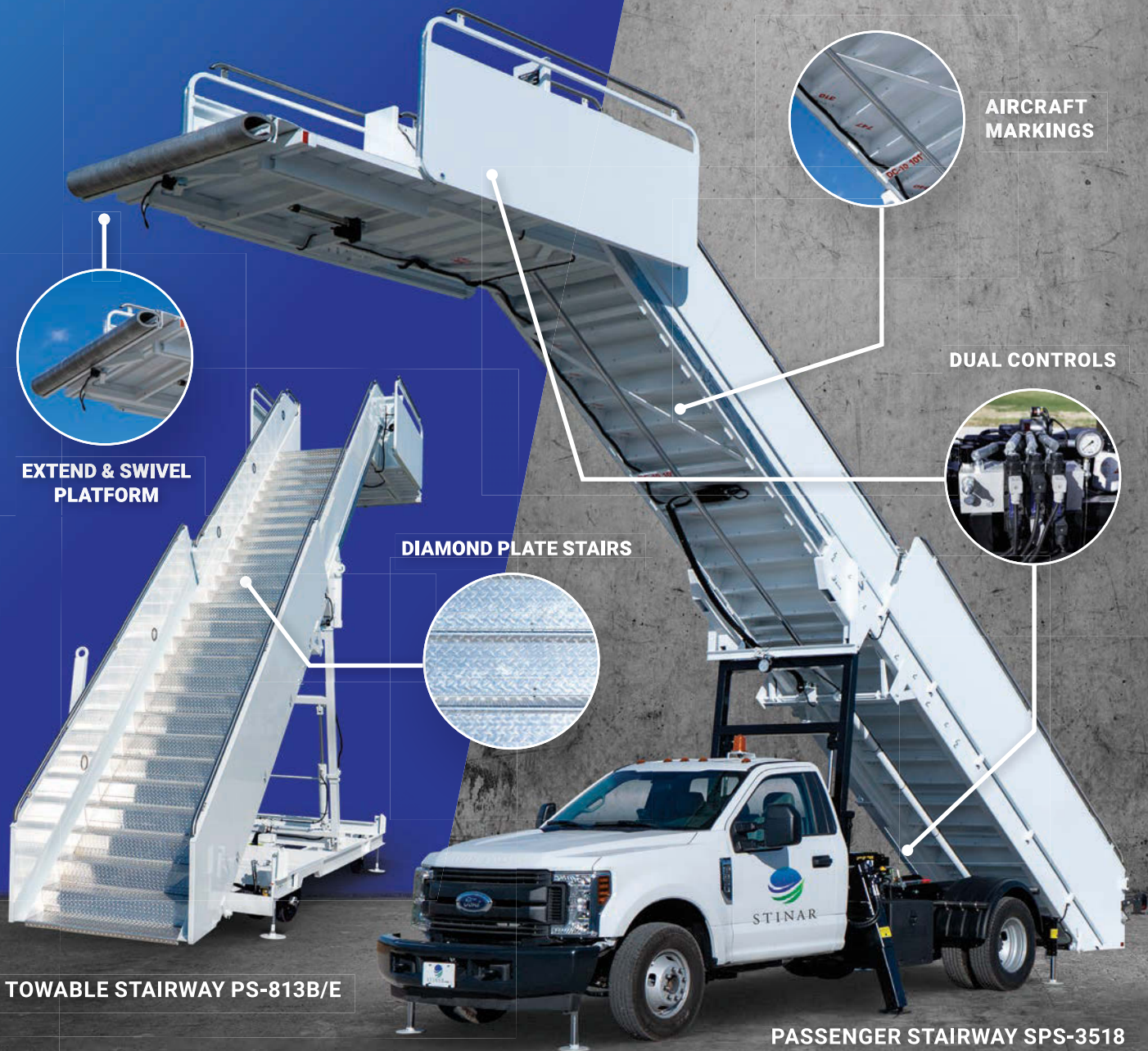
Utsunomiya adds that the small market of international air travel affected the number of participating customers.

"However, JAL gained 200 participants despite the circumstances," Utsunomiya continues.

"Although there is room for improvement, we believe the trial has been successful overall with no critical issues. We have learned the amount of time consumed at the check-in counter to confirm the customer's travel health requirements via IATA Travel Pass has drastically decreased compared to checking paper test certificates – from taking 3 minutes per customer to as fast as 10 seconds in average"



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we have no way of verifying the authenticity of test and vaccine information presented by travelers. Furthermore, because it takes significant time to check each document, it will be extremely time consuming and resource intensive for check-in agents to verify every single passenger once travel demand picks up,” says Kaminogo.

“We think that a securely managed app such as IATA Travel Pass will help address the challenges mentioned above and contribute to the restart of travel.”

Utsunomiya says that JAL received similarly positive feedback from their passengers who chose to utilize the app.

“We have received positive responses such as: Since it is digitalized and stored in your own device it is impossible to lose compared to paper certificates, there is no need to revisit the clinic to receive paper certificate, check-in procedure became faster and smoother, being able to see the verification prior to departure provided peace of mind, the app functions without any internet once the personal data is registered,” Utsunomiya says.

Though, Utsunomiya also notes that there were some challenges with the app that the airline had to overcome. The limitation of healthcare institutions that were able to issue COVID-19 test results via IATA Travel Pass decreased the opportunities of customers who did not live nearby or if they had a preferred clinic not listed. In the future, the increase of healthcare institutions is expected which will make the app more reachable and practical for travelers.

“Also, since the IATA Travel Pass app is only delivered in English as of today, we had to take extra steps in creating Japanese instructions to make clear of how to use the app. We will hope for the IATA Travel Pass itself to cover multilanguage, or either consider a way to translate the app through system integration,” Utsunomiya adds.

The Biometric Boon

When the pandemic comes to an end, Leger says the Travel Pass will continue to live on as a contactless travel and biometric app.

“We always had in mind that if and when COVID would disappear, the application that you have downloaded, and



that you are using to manage your digital identity, or to understand the regulatory requirements, will still be of use after the crisis. So, we have tried to build a product that is sustainable beyond the crisis. Of course, today the primary focus is making sure that the industry restarts and that people can understand the requirements, get their tests and certificate, and then use that to travel,” Leger says.

“But when these will disappear, hopefully in the next 18 to 24 months, the app might still be used for the contactless purpose or for additional services that we are thinking about right now.”

However, biometric technology and contactless travel has been an area where the United States has lagged compared to other areas. Hans Miller, co-founder of Airside, says, though, the pandemic has accelerated the acceptance and deployment of biometric technology and speculates that it will be adopted sooner than it would have without it.

“We think that what the industry calls ‘seamless travel’ is being greatly accelerated by the pandemic. Seamless travel is the idea of using facial recognition technology in place of presenting physical documentation at every touch point along your journey,” Miller says.

“We think along with that, you’re going to see some interesting twists,” he continues. “It wouldn’t surprise me to see reservation systems pop up for going through security or visiting a certain destination, like Venice, Italy. This would enable a metered flow through choke points. We think that things like fast lanes where you’re pre-approved or pre-cleared, like TSA Pre-Check, will become even more important and popular to increase the flow of people and reduce crowding in lines.”

For example, Airside is currently partnered with American Airlines to provide a mobile ID verification service for bag check and lounge access.

“The trial was very successful. We’re thankful for our partners at American Airlines and Thales, who really are doing a phenomenal job. There are many, many other tests and pilots and prototypes being rolled out around the world using facial recognition to make travel faster and easier with less crowding and fewer lines,” Miller points out.

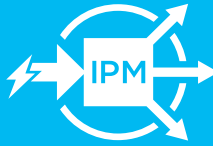
Miller says biometric identity technology is enabling seamless travel in airports like Dubai and Shanghai, but that the U.S. is not yet at the biometric tipping point.

“When everyone becomes more educated about biometrics and comfortable with how



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they can be used safely and securely, you'll see them used interoperably everywhere, or at least at a critical mass number of locations, and that will be the tipping point. It's similar to the way we got used to using mobile boarding passes. It will snowball very, very quickly," Miller says.

He adds that one hurdle to creating seamless travel in the U.S. is solving for domestic security checkpoints and having the TSA evolve from checking physical IDs.

"We think TSA is on the cusp of being able to accept digital IDs. I'll let them speak to that, but they've certainly been quite vocal that that's their goal. We think that within the next 12 months, we'll see a dramatic increase in the number of test and prototype sites. We expect to see a continued rollout of facial recognition for seamless travel at all access points, like bag check, check-in, TSA security and boarding, at pretty much every major airport in the U.S.," Miller says.

In Japan, Utsunomiya says that JAL has already implemented their own biometric and seamless travel technology.

"The digital credential platforms, travel passes and vaccine certificates, are expected to play a role to realize a seamless and contactless travel. Japan Airlines has already introduced 'Face Express' – a seamless check-in process by using facial recognition system. In future, there is a possibility that digital credential platforms such as IATA Travel Pass, which has a feature to register each user's facial data and passport data in everyone's device, to be integrated to the seamless travel process," Utsunomiya explains.

Utsunomiya adds that they see the future of travel becoming more and more digital in the wake of COVID-19.

"Digitalization of all travel requirements including COVID-19 test results, vaccine certificates will boost the efficiency of international travel. On the other hand, consideration for non-digital customers is mandatory to provide air travel in the post COVID-19 pandemic. Thus, the digital/paper formats should become globally standardized so that all travel industry stakeholders as well as each country's government authorities are able to validate the requirements instantly for all customers," Utsunomiya continues.

Miller says misconceptions about the technology remain in the U.S. Privacy remains the largest concern among passengers. But the way some of the technology is designed can help eliminate the concerns.

"When you're talking about this type of program, an access program, a travel program, not criminal investigations, the biggest thing for people to know is that the actual image of their fingerprint or the actual image of their face doesn't need to be stored centrally. What the technology is using for the most part are templates. The software will look at your biometric and pick certain reference points that are particularly useful, and then match it up with your face or your fingerprint when you present yourself the next time. It's not something that somebody can go back and say, 'this is definitely full prints for this person.' At least, that's not how we've built our technology at Airside," Miller says.

Miller reiterates, however, that the pandemic has shown what the benefits of biometric technology are and says the pandemic has been a double-edged sword in that regard. On the one hand, it has shown the benefits of adopting the technology, while on the other it has caused operational hurdles that prevent the technology from being able to gain a foothold as the pandemic rages on.

"I think that the pandemic has really increased the level of interest in this because it's touchless, it's faster, there's a lot of health benefits to go into a seamless travel digital ID future," Miller says. "And you've seen that play out in things like other verticals, like telehealth.

"The pandemic has brought an operational hammer blow to airlines and airports and TSA, as they struggled to deal with the complete collapse of volume followed by the surge that's come this summer," Miller continues. "The pandemic has made it really clear what the benefits of seamless travel will be, and what we see is a lot of preparatory work going on across the industry right now with multiple airlines working to get their programs lined up. As day-to-day operations stabilize, we expect to see these new innovations and new initiatives start to become more prevalent in the public eye."

Ultimately, to get international travel to return to its pre-pandemic levels, Leger says that biometric and seamless travel technology are a "must-have."

"Clearly, it helps the passengers. It helps the airlines, the airport, as well as the governments. And we are doing that in a very safe environment, of course, to make sure that we comply with the regulatory requirements and respect the rules and make sure that there are no additional infections by only transporting people who have been tested or who have been vaccinated. And that's the primary objective of what we're trying to do here and to help the restart," Leger says.

"The easing of travel restrictions by countries around the world will be the key to stimulating demand. The reopening of borders needs to be based on the epidemiological situation of each country," Kam-nogo adds.

"We believe IATA Travel Pass will play an important role not only in restarting international travel, but also in driving the future of contactless travel. In the future, we hope that travelers will be able to utilize IATA Travel Pass and biometric technology to proceed through airport checkpoints using their face as their passport and boarding pass." **GSW**





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NEW TECHNOLOGY TAKES CONTROL OF BAGGAGE SYSTEMS

Airports turn to next-generation baggage handling systems to meet the demands of a new future in air travel.

By Joe Petrie

The Individual Carrier System (ICS) baggage handling system is designed for shared airline use. It enables 100 percent track and trace as each bag remains in the same tote throughout the baggage handling and integrated security screening process. All bags are tracked with RFID tags on the CrisBag System, so it's quicker to identify if a bag becomes missing along the process.

"Instead of trying to handle bags which are soft and squishy and roll and can be quite problematic from a material handling standpoint, we put it into a container or tray and then we convey that throughout the system and it's just a lot easier to handle from a material handling standpoint," says David Delaney, vice president and general manager for the airport division, North America, Beumer Group. "It's more efficient to use, it's less material to have it run and it uses less energy. It uses less spare parts and the overall system is just a higher performance system because you can move a lot of bags a lot faster than you can on just a conveyor belt."

Greg McCarthy, project manager for SFO, says the airport had previous success with common-use bag

systems at Terminal 2 and the International Terminal so they wanted to pursue that again in the new terminal. Previously Terminal 1 had six independent airline systems with 15 screening machines. In addition, SFO wished to improve baggage tracking, increase ramp operations safety, reduce energy usage and environmental impacts.

"Beumer has been doing this for 20 years so it's a proven system," he says. "We're not paying for R&D."

The integration of an Explosives Detection System (EDS) makes CrisBag the first system to be certified by the Transportation Security Administration (TSA) for in-tote baggage security screening.

ICS systems are commonplace across the world, but this was the first in the U.S.

Delaney says they had to coordinate with TSA to ensure it met their needs.

"All of their specifications and all of their standards have been written for the way that TSA has been doing things for 15 to 20 years and then we come with the new technology in a new product," he says. "There was a lot of educating the market and us being educated by TSA and TSA understanding our product."



Photos courtesy of Beumer Group

A shared use baggage system allows redundant routes to balance the load between the Computer Tomography X-Rays (CTX). This reduced the number of CTX devices from 15 to seven, which are needed for baggage screening. Newer technology and a more efficient system also means a 70 percent reduction in energy usage by switching to an ICS baggage system.

The layout of the CrisBag ICS enabled the airport to reduce tug traffic. The inbound, transfer and outbound processes are handled in the CrisBag system and located in the baggage operational areas which are distributed throughout the terminal boarding area adjacent to the aircraft gates. Arrival baggage is taken via tugs from a flight and delivered to the inbound system infeed and the tug returns with the outbound baggage for a different flight. The totes from the make-up area are returned to the main terminal building carrying the arrival bags. This optimizes system operation and increases capacity by avoiding circulating empty totes.

The CrisBag System was chosen as part of the Harvey Milk Terminal at SFO, which replaced the old Terminal 1. The airport built the baggage handling system and leased it back to the airlines so it's just one system.

"The nicest thing about this project was it was a design-build project where we were brought on at the same time as the building designers," Delaney says. "It wasn't like a situation where we were given a set of prints that we had to comply with. We were work-

▲ **All bags are tracked with RFID tags on the CrisBag System, so it's quicker to identify if a bag becomes missing along the process.**



▲ **The integration of an Explosives Detection System (EDS) makes CrisBag the first system to be certified by the Transportation Security Administration (TSA) for in-tote baggage security screening.**

ing hand-in-hand with Hensel Phelps in the design-build teams from day one."

SFO is completely certified to have bags travel in totes throughout the entire screening process, including when additional screening is needed.

"What's quite unique about our system in San Francisco is the operators can open the bag while it's still in the tote," Delaney says. "In conventional systems they have to drag the bag off of a conveyor belt onto a table. You have to inspect it on the table. Then they have to manually push it back onto a conveyor belt. The TSA has had a number of workplace

injuries from lifting these 60-70 pound bags."

The system went online in April 2020, with the TSA able to test the system just before shelter in place orders took effect in the San Francisco Bay Area. The system is operational. It is tested, signed off by TSA and airlines are using it while the second phase of the building is completed.

"Though the system came online in April 2020 with reduced bag volumes, the total benefit has yet to be realized but efficiencies are still occurring," McCarthy says. "Traceability of each bag is a huge benefit to airline and airport operations. Reduced tug traffic

for outbound/inbound bags with a head of stand road has been realized and will only grow as volume returns. Since the touch points of the system are the same, the challenges are minimal and mostly ensure the ramp operators know where the outbound and inbound bags are going.”

Delaney says they can also do virtual testing of the system. The tester gets the system to believe there’s a bag on it, so it’ll go through screening. It’ll get a screening result and will sort the virtual bag.

“Other projects that we’ve done, we’ve had to put 2,000,000 bags through the system to prove that it works,” he says. “You have to have humans loading and unloading 2,000,000 bags from that system tagging them and moving them.”

He says there’s a misconception even in the industry that these systems are far more expensive, but Beumer has been building these systems for 20 years throughout the world.

Delaney says airports looking at installing an ICS system need to work with their consultants and let them know they’re considering this when doing master planning so it allows architects and general contractors to consider new technology in the future. Considering designers who are familiar with how ICS systems work is also key.

“We can generally fit into similar spaces as existing traditional systems, but you want to, you know, you want to think about this up front in your plans,” he says. “It’s not a lighting system or HVAC system where it’s just standard off the shelf commodity, it’s a new technology and you just sort of have to consider it fairly early on in the process.

► **The Individual Carrier System (ICS) enables 100 percent track and trace as each bag remains in the same tote throughout the baggage handling and integrated security screening process.**



Photo courtesy of Beumer Group



Photo courtesy of Beumer Group

▲ **The consolidation to a shared use baggage system at SFO reduced the number of CTX devices from 15 to seven.**

When you start your programming phase or initial planning.”

McCarthy says airports looking at an ICS system should begin with the design-build core subs as early in the process as possible. Terminal 1 benefited from having Beumer in the room when the building footprint was being determined. This enabled the structure of the building to adjust to the bag system as needed and with minimal impacts. This early collaboration allowed for the use of column imbeds to support the bag system. So all attachments were integrated and visual site lines improved over suspending the system with countless treaded rods.

“Technology is great but only if it has been proven in industry to work,” he says. “R&D in live operations is not fun and should not be pursued. So when evaluating a technology to improve airport operations, you need to ensure implementing it will only be a value add and not detract daily operations.”

The Pandemic’s Impact on Baggage Handling

There are several competing demands right now, coming out of the pandemic. Larry Studdiford, president, Studdiford Technical Solutions LLC, says a number of major airport infrastructure projects were put on hold last year that are now coming back with a sense of urgency due to the quicker-than-expected return to pre-pandemic levels. Some airports are already back to 2019 levels in terms of peak bag demands, and in some cases, already exceeding those numbers.

Those airports that did not take advantage of the downtime for necessary maintenance upgrades are finding themselves caught between the need to fix those portions of the baggage handling system that require it and the need to expand for added capacity.

Add to that the resulting change in such factors as Bags Per Passenger due not only to the leisure/business mix but also to the checked bag fee waivers by some airlines and you have an unanticipated rise in capacity demand.

“Another interesting result of the pandemic that we’re seeing is a rapid expansion of smaller markets as airlines increase their flight frequencies to more remote areas,” Studdiford says. “We are seeing several airports advancing master plans for expansion due to the need to support their growing populations due to teleworking. If you follow the housing market at all, you will see vacation homes in places like beach communities and adjacent to national parks go through the roof. The adjacent airports are finding themselves in a



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position of rapid expansion to support this, and in many cases the resulting BHS is going to be more sophisticated than they are used to due to evolving technology.”

The pandemic is having less impact on baggage handling system investment than many expected. The idea of sanitizing bags for COVID-19 contamination began to get traction last summer, but Studdiford says as the data continued to mature, the perceived benefit began to diminish. He says he’s not aware of a single airport in the U.S. that is investing in automated sanitization tunnels for inbound or outbound baggage, other than the ones integrated at the checkpoints for cleaning of the carry-on item bins.

He suggests what airports should think about is the process for claiming bags in the arrivals hall and the proximity of people standing around the claim carousel waiting for their bags.

“I think there is an opportunity here for expanding the level of service and improving customer satisfaction by providing more square feet per passenger, automated notifi-

cations of when one’s bag is arriving at the carousel or investigating on-demand bag retrieval,” Studdiford says. “However, these all take terminal space, which is always at a premium.”

A Big Move on Technology

Software providers are building new innovations to enhance baggage handling systems without massive construction costs.

Khaled Nabli, who heads Digital Aviation at Siemens Logistics, says the pandemic created volatility challenges in airports. The need to scale up and scale down passenger volumes and baggage handling is a major challenge as the industry continues to recover from the pandemic.

Airports are faced with limited investment possibilities given the severe financial impact of the pandemic. Demand for an elevated passenger experience and safer facilities creates challenges that require unique solutions.

“This means large cutbacks in infrastructure projects, which drives our customers to look into alternative business models or

investments and digitalization has many promising opportunities,” he says. “Many customers are looking at how they can improve and build a roadmap for the future of post-pandemic operations leveraging digitalization and automation.”

Siemens’ baggage and airport operations software Baggage 360 supports all aspects of baggage logistics and operations in airports. It assists in optimizing the baggage flow by enabling airport stakeholders to plan and allocate their fixed, mobile and human resources optimally. Thus, the software supports airports to restart operations and efficiently adapt them to the changed market conditions.

Nabli says Baggage 360 provides transparency in the baggage handling process. It provides technical interfaces to allow all stakeholders in the baggage handling process to access information between each level. It also provides real-time operational suggestions for the stakeholders to improve the processes.

One of the challenges airports have is they own and operate large scale baggage handling systems and many stakeholders,

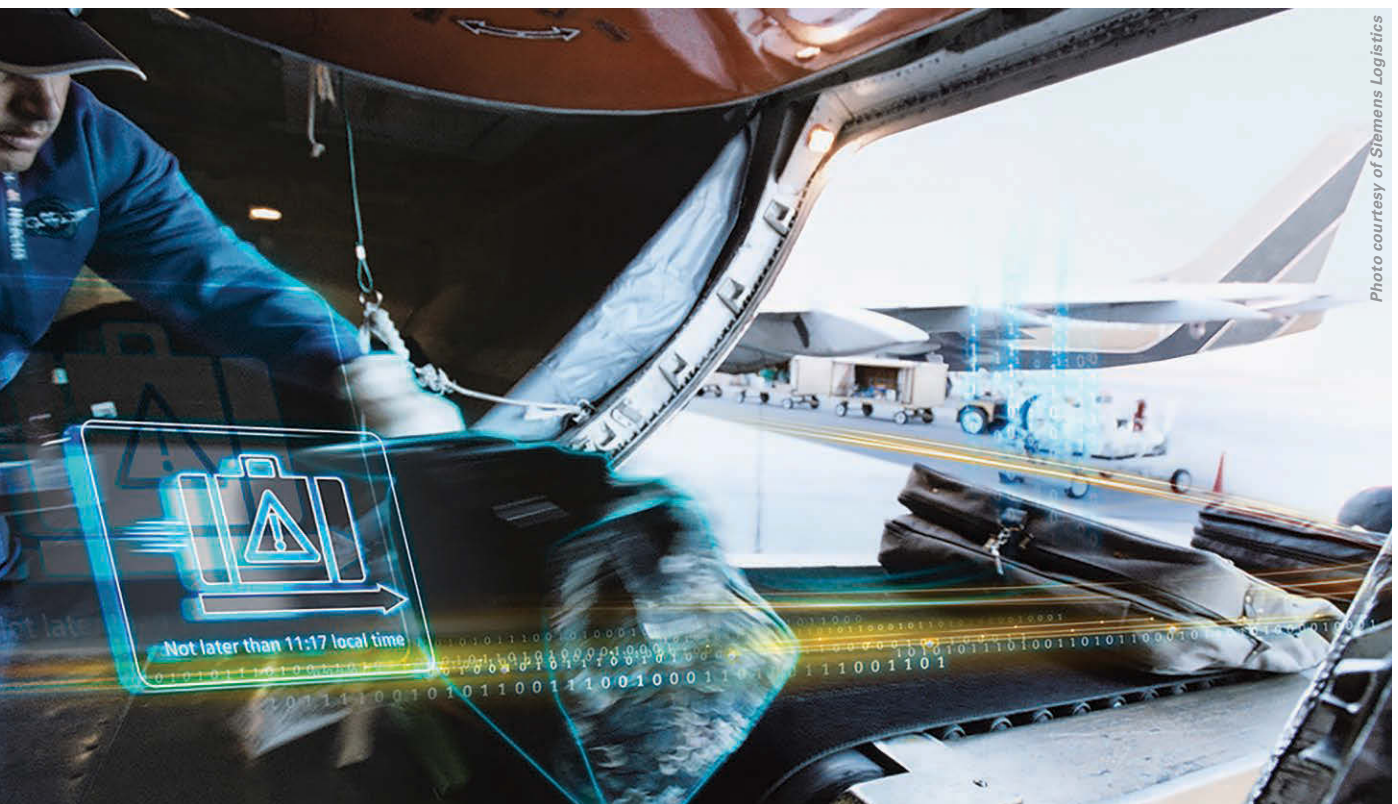


Photo courtesy of Siemens Logistics

▲ **Baggage 360 utilizes advanced AI and machine learning algorithms to detect patterns and build models to forecast the operations up to 24 hours in advance.**

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like the airlines, the ground handlers and the passengers depend on a great performance of the baggage handling system, Nabli explains. There has been a traditional conflict between stakeholders due to a lack of transparency of the data related to the baggage process. On top of that, every stakeholder sets its own priority to manage baggage operations.

“There has been an ongoing debate about whose fault is it when bags arrive late to the arrival carousel; whose fault is it if the queuing time on a check-in is too long; whether the airport has sufficient capacity to meet the demand and it’s not easy to pinpoint because there are multiple stakeholders involved in each process step,” he says.

“The benefit of deploying this type of technology is you provide a single point of truth for all stakeholders. You have the same view about your baggage process, baggage resources, delays and any opportunity for optimization along the process.”

This benefits all stakeholders as it allows them to incorporate all available information and profit from proactive collaboration, reliable predictions, recommendations to handle their part of the process in this highly dynamic environment.

Traditional processes have a shortcoming when things don’t go as planned. Any operational disruption or even weather-related delays can’t be incorporated into planning. The new process involves a real-time feedback loop, which provides the airport with the capability to react to changes in a more agile and coordinated manner. Baggage 360 analyzes the impact of any changes in flight schedules, parking positions or resource availability and provides a proactive view to stakeholders so they can adjust operations to meet the new demands.

“Each stakeholder is informed about the anticipated changes, the predicted impact and recommended actions so they can adjust their airport operations and provide a great passenger experience,” Nabli says.

Baggage 360 requires Siemens-provided training and little infrastructure investment. It’s provided via Siemens cloud services and is system independent, so it integrates with all types of baggage handling systems.

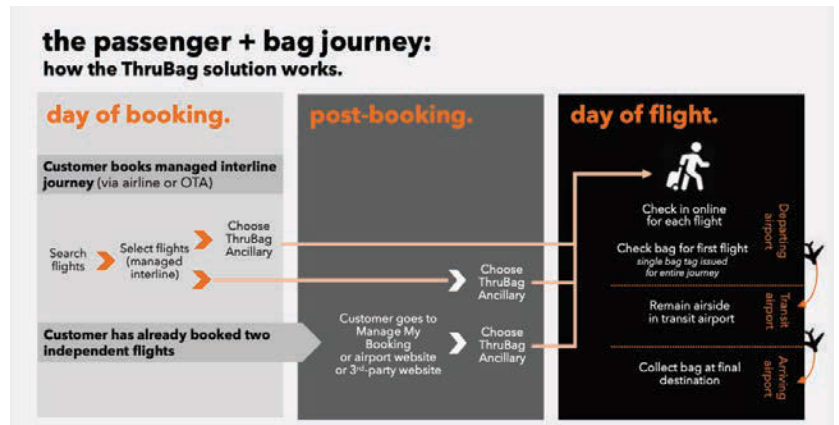


Photo courtesy of Air Black Box

▲ **ThruBag will allow travelers to utilize multiple airlines easier while transporting luggage without the need for complicated interline agreements.**

Before investing in a software solution like Baggage 360, Nabli says airport managers should consider their airport’s baggage handling success rate and how on-time performance is related to the baggage handling system.

Larger hubs should examine connection times and what payoffs could be gained to lessen the time.

“If there’s a clear need or they want to improve baggage handling KPIs, digital solutions could bring a large benefit,” he says.

Air Black Box recently introduced its new ThruBag system, which provides a software solution to allow efficient transfer of baggage between airlines.

Patrick Edmond, chief commercial officer of Air Black Box, says the rise in low cost carriers has created new market where passengers are opting to self-interline their flights in order to get lower costs or better schedules on flying.

However, it has created an environment where these passengers have to leave the terminal, collect their baggage and recheck it before entering the gate area again.

ThruBag allows them to check their bag once at the origin airport and collect it when they get to their destination.

“Even if you’re on two separate tickets, you check your bag in at the first airport, the ThruBag system takes care of it being transferred through your through airport,” he says. “You don’t even need to do anything and you pick it up at your destination airport like you would on a legacy airline.”

Edmond says the solution is very attractive to network airlines because they’re looking at ways to grow their partnerships post-COVID while still offering their basic passenger experience. It’s also attractive to low-cost carriers that are always looking for ancillary revenue.

Airports can also use the system to build connecting traffic and grow revenues as well.

“If you’re an airport and you’re not a prime hub, but you have a mix of legacy carriers and low-cost carriers coming into your airport and you’d like to find a way to increase traffic, being able to offer this kind of ThruBag product makes your airport a more attractive connecting point,” Edmond says.

ThruBag is designed to not change or impede current baggage handling processes. Once the bag is checked, the system runs it through like a traditional interline flight.

Edmond says the airport doesn’t have to change its baggage handling system, nor its processes in any material way and airlines don’t need to sign up for any heavy-duty interline agreements.

“Anyone looking for a solution like this needs to make sure it has very minimal upfront costs,” Edmond says. “It should be as flexible as possible and it shouldn’t require any of the participating airlines to change their processes either. Ultimately, this is about creating a more efficient air transport network and making it easier to fill as many flights as possible.” **GSW**

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Virtual Training for Real Applications

VR can help ground service providers streamline operations, improve capabilities and improve personnel training.

By Mario Pierobon

Virtual reality (VR) technology is changing the way many safety critical industries are delivering training, including aviation and aircraft ground handling.

VR, as an immersive technology, is helping those organizations that are embracing it to streamline their operations, improve capabilities and improve personnel training.

For the aviation industry, virtual reality and simulation is nothing new when it comes to pilot training, but for training on aircraft ground handling, it is slowly making its entry, according to Shantanu Gupta, founder and director of Tecknotrove Systems.

“Given the expensive nature of the aviation industry and the high cost of making mistakes, VR makes business sense for training on aircraft ground handling. There are many documents made by several bodies, including IATA and ICAO, on the best practices and training procedures for maintaining safety on ground while handling aircraft,” he says. “But all of this data is analog, i.e., it is stored in books and presentations at best. We use VR to convert the training manual from analog to digital to make it more usable. VR is becoming a great asset for aviation companies to

provide better service and train their staff in a more accurate way.”

How Common is VR?

KLM Royal Dutch Airlines has two VR courses available for aircraft ground handling at the moment: one is for attaching a jetway bridge to the aircraft, the other is for aircraft pushback.

“When new personnel arrive who are responsible for these two specific tasks, they are trained by using VR. We supply the VR courses to colleges as well, where this training is delivered every day,” KLM officials say.

VR training is being slowly but surely recognized as a new cost-efficient method for training personnel.

“It is not very common yet, but the adaptation process has already started in many big companies, leading ground handlers, in general, as it was expected. Of course, for any big handling company with hundreds of stations spread across the globe, the investments are most likely to be returned very soon because of the easy scalability of such training solutions and it’s digital/virtual nature,” says Grigory Rodionov, founder and chief executive officer of AVIAR.



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“VR training has been evolving rapidly in different sectors around the world. According to IATA, VR can reduce training duration by 25 percent while simultaneously improving the knowledge retention of your trainees by four times,” says Cisse Abdoulaye, chief operations officer of ground handling and cargo at National Aviation Services (NAS). “While it has been established as a great tool for training, it has been slow on the uptake in the aviation sector, and ground handling in particular. This has been mainly due to two reasons – firstly the costs involved and secondly the scarce availability of such courses.”

According to Rodionov, however, the future of VR training seems to look bright even though the growth was slowed down by the pandemic and its effect on the whole air transport industry.

“Cutting the costs is still in the main priorities of top managers and it is understandably not easy for them to think of any innovations under that pressure. We expect that 2022 will be better than last year, and 2023–2024 hopefully will bring us a huge demand for VR training pushed by the full aviation sector recovery,” he says.

Advantages and Disadvantages of VR Training

According to Abdoulaye, VR training has several advantages over traditional training that include comfort, safety, adaptability, convenience, interest and retention.

“The ramp environment can be very noisy, making it difficult to concentrate. VR provides a more suitable environment to focus on the training and get the hands-on experi-

ence required,” he says. “Working in a secure environment with no exposure to the ramp side threats makes the process safer and more secure while avoiding any security issues. Using VR means one does not need to utilize real company assets, so there is no chance of damage or inappropriate use of expensive equipment.”

Systems can be used multiple times, so there are little technical issues to worry about.

“For instance, if a real aircraft is involved, one cannot start and stop it multiple times. With VR, one can also replicate or have different scenarios in a variety of conditions thereby making VR a more convenient training tool,” says Abdoulaye. “In addition, VR allows repetition in a controlled environment, which generates more interest in the trainee and allows more information retention.”

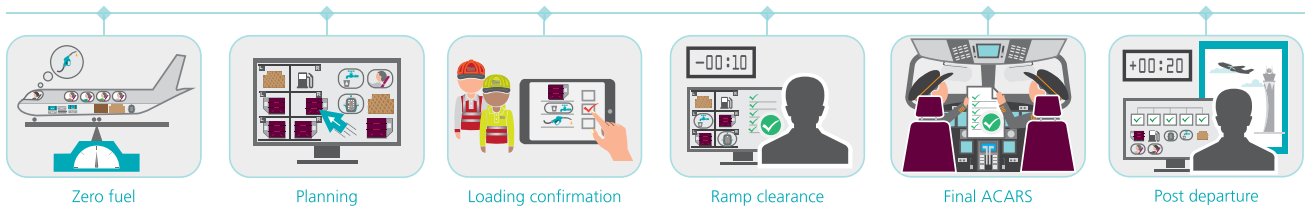


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Gupta observes that theoretical training without interactivity does not keep the trainees engaged and thus leads to low retention of knowledge.

"In addition, there are several constraints with classroom training like inability to train on weather conditions, emergency situations, low visibility operations. Whereas live training is risky, expensive and less practical because of its dependency on availability of an aircraft and access to airside, VR training complements theoretical training with practical experience," he says. "It helps trainees to be better engaged in the process as they are immersed in a realistic training environment. This, in turn, improves retention and learning. One can create multiple scenarios in a virtually realistic environment that allows trainees to familiarize themselves with the airside environment, different aircraft types, as well as learn to operate in varying levels of visibility during day and night and even practice in emergency situations that are not possible to create in real life conditions."

VR training is not to replace classwork.

"The main purpose of VR is to add a new dimension to conventional training processes by bringing the realistic virtual airport into the classroom and let the students start developing their practical skills much earlier, getting an in-depth understanding of their future workplace and all the processes and the equipment nuances," says Rodionov.

Among the pros of VR training versus on-the-job training is the fact that VR training is much less expensive, according to Rodionov.

"Just because it is all virtual. So, one can get rid of any associated costs like using real aircraft and equipment, parking stands, fuel, transportation, accommodation, insurances, supervisors, repairs and so on," he says. "VR training does not require any special buildings, prepared and equipped areas, mock-up zones. Any classroom with 3m-by-3m empty space is fine. Unlike during conventional practice at the real ramp or mock-up area, one is not limited by the exact type of equipment available."

VR training, however, also bears some limitations compared to traditional training. Aside from the upfront cost of implementing VR tools, one disadvantage is the chance of cyber sickness or comfort issues



with extended wear of the goggles, observes Abdoulaye.

"A minor human nature aspect could also be that trainees know that they are in simulations and errors will not cause any real damage. This may make them slightly less attentive or focused, but it is a very small probability," he says. "VR training also isolates trainees from wider social interaction with peers, which has its own cons."

Rodionov observes that since training is all virtual, all objects in VR are weightless.

"So, for instance, one can move a 200 kg tow-bar almost effortlessly. In most cases, we simulate the weight of the virtual objects via inertia and also, if the object is heavier than 30 kg, we block the free movement of it. For example, it just cannot be carried by hand, only by pushing or pulling along the surface. But many people do not see it as a huge problem, which affects the training goals," he says.

"In some cases, it takes time, from 3 to 15 minutes for some people to get used to controls and user movement in VR," Rodionov continues. "It mostly happens to mature audiences. We see that younger people are completely fine with it. The comfort of VR headsets is in constant improvement, so every new generation is lighter, thinner and has a better image quality. But the best existing devices in terms of graphics quality and the realism still require a connection to a PC. So, this wire attachment is sometimes annoying. But we believe that it will be gone in two to three years."

Types of Training

Abdoulaye believes that in ground handling, multiple courses can be delivered effectively through VR, especially those involving safety and equipment, customer service, etc.

"This is mainly because trainees can get significant hands-on experience without the hesitation or nervousness of working on real equipment," he says. "They can practice more in different conditions and scenarios, giving them more experience during training and finally protecting equipment since its expensive to buy and maintain."

"We cannot think of any ground handling training that could not be done in VR. But the most suitable involve expensive, hazardous and unsustainable environments," KLM officials say.

From AVIAR's experience, VR is suited for all underwing operations, but especially for those where operators are in close contact with the aircraft.

"Actually, the aircraft is the most expensive part of the turnaround process, and every minute an aircraft spends on the ground is strictly scheduled, so usually it is not possible to have the real aircraft just for training purposes. And here is where VR can really help," says Rodionov. "In VR, one can practice with almost identical virtual aircraft as long as it is needed. Examples of such scenarios include aircraft marshalling, post arrival checks, chocks and cones placement, GSE connection/disconnection, passenger bridge operations, aircraft cargo doors operations, aircraft water servicing, aircraft toilet servicing, aircraft refueling, pre-departure checks, pushback."

Raising Safety Awareness

Indeed, VR training can be used to raise safety awareness in aircraft ground handling. VR can be utilized to develop a culture and awareness of safety by creating scenarios which allows for significant practice and experience, according to Abdoulaye.

"By 'living' an emergency situation in VR and seeing and understanding the impact of one's decisions, one becomes even more aware of safety procedures," KLM officials say.

Most aircraft ground handling incidents occur when the aircraft is parked and when there is a close contact between the aircraft and ground support equipment, says Gupta.

"An aircraft that breaks down just before take-off is an expensive problem that can cost millions. VR training solutions can help in improving safety awareness during aircraft ground handling for new recruits as well as the experienced staff," he says.

During ground operations, several pieces of equipment like passenger boarding bridges, baggage trucks and carts, pushback tractors and tow-bars, cargo loaders, refueling trucks and cleaning trucks come in close contact with the aircraft posing great risk to the airplane and the property, observes Gupta.

"Safe operations during ground handling is a shared responsibility between operators

and airports," he says. "Thus, group training in VR of drivers, pushback operators, wing walkers, ATC, security staff, rescue and fire-fighting, airport authorities can really help in improving safety awareness. VR training allows group training of multiple players operating in the same environment."

VR is the only type of media which lets the users find themselves inside the scene.

"It is completely different from pictures or videos. For instance, one can literally walk around the aircraft and along the ramp with all the equipment and staff and find the problems. One can visualize any hazardous situation, as close to reality as possible, and

can let students see it from the first person's perspective," he says. "Also, in some scenarios we recreate the aftermath of some major mistakes so the students can see how bad it could turn in case of error. And the efficiency of such training is undoubtedly high."

VR training will not likely completely replace on-the-job training in the near future.

"However, VR will definitely help companies to improve the training process by filling the knowledge and skill gaps between the classroom and the real work. Better trained staff means safer and better operations and as a result, operational cost reduction," he concludes. **GSW**

▶ ABOUT THE AUTHOR:



Dr. Mario Pierobon provides solutions in the areas of documentation, training and consulting to organizations operating in safety sensitive industries. He has conducted a doctoral research project investigating aircraft ground handling safety. He may be reached at mariopierobon@az-all-in-one.com.

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Photos courtesy of Honeywell

▲ *ThermoRebellion collects skin temperature from around the eyes near the tear duct.*

Safe and Secure Travel in the Age of COVID

Airport security focuses on public health while protecting travelers from threats.

By Joe Petrie

Dnata deployed Honeywell's ThermoRebellion temperature monitoring solution last November in Terminal One at John F. Kennedy International Airport (JFK) to support passengers traveling on major airlines including Air France, Lufthansa, Korean Air and Japan Airlines.

"dnata USA is continuously seeking innovation and technology that provides leading-edge solutions to our customers' most critical needs," says David Barker, CEO of dnata USA.

"The COVID-19 pandemic is redefining aviation processes and ... we wanted to deploy the best possible temperature-screening solution for passengers and airport personnel.

"The Honeywell ThermoRebellion solution is accurate, stable and allows individual travelers to

move through the screening process rapidly," he adds. "Installing the solution at JFK International Airport underscores our commitment to delivering the highest levels of safety and efficiency for our airport and airline partners, as well as their passengers."

ThermoRebellion incorporates infrared imaging technology and artificial intelligence algorithms to deliver highly accurate temperature measurements. As individuals pass in front of the high-resolution, thermal imaging camera, skin temperature is detected within seconds, alerting airport personnel if travelers require additional screening.

Robert Kester, president and general manager for Honeywell ThermoRebellion, says the thermal cameras and hardware were used for gas leak detection in the oil and gas industry, but the onset

◀ **ThermoRebellion incorporates infrared imaging technology and artificial intelligence algorithms to deliver highly accurate temperature measurements.**

of the COVID-19 pandemic provided an opportunity to use the technology in a new way.

The system collects skin temperature from around the eyes near the tear ducts. Combined with the software, the ThermoRebellion has an accuracy within 0.5 degrees Fahrenheit.

Kester says studies have shown correlation of elevated skin temperature with a higher body temperature, which is an indicator of potential illness.

“Standard thermal cameras only achieve accuracy within a couple of degrees Fahrenheit, but when you’re thinking about skin temperature monitoring, the difference between 98.6 F and 100.4 F requires much better accuracy,” Kester says. “We’ve designed this system with a dual black body, which provides the most accurate elevated skin temperature monitoring system on the market.”

The ThermoRebellion also monitors



travelers to make sure they’re wearing masks. It doesn’t use facial recognition technology, but Kester says algorithms can extrapolate out temperature regions of the face and determine if someone is wearing proper protective equipment.

“Terminal One Group Association strongly believes in the health and safety of its passen-

gers,” says Steve Rowland, executive director Terminal One Group Association.

“We have partnered with dnata and Honeywell to deploy the Thermo Rebellion solution that offers an additional layer of safety to the traveling public and Terminal One workforce.”

dnata is using a cart-based system for monitoring. Two carts are located within U.S.

◀ **The ThermoRebellion system collects skin surface temperature quickly to not impede travel.**

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Customs hallways, two at TSA checkpoints and one at an employee entrance.

"You walk up to it and it takes a second," Kester says. "They have a sticker on the ground and it takes longer for you to step on the sticker and look up than the system takes to do a measurement."

"Deploying solutions like this in U.S. airports provides a piece of mind beyond a mask," Kester adds. "If you're an airport and you're trying to get people back to flying, I'd definitely encourage them to go to JFK and take a look at how the passengers are responding to the system."



Photo courtesy of Smiths Detection

▲ **CT Scanners can automatically detect explosives, including liquids, by shooting hundreds of images with an X-ray camera spinning around the conveyor belt.**

Less Touch Means More Safety

Security queues have many challenges when it comes to protecting the public during the pandemic. Not only are people standing closer, but they're handling communal plastic bins before placing them into X-ray machines. Transportation Security Administration (TSA) workers are then not only exposed to the swath of travelers but they also need to handle traveler baggage when additional screening is required.

This challenge highlights the additional need for more deployment of Computed Tomography (CT) scanning equipment at TSA checkpoints to protect workers and the public.

Sally Nordeen, senior director of government and aviation solutions for Smiths Detection, says CT scanners allow TSA workers to see contents in 3D so they better understand what's in the bags.

It also means travelers can leave items like liquids and laptop inside their bags, reducing

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the number of bins they need. The lower false alarm rate means less rechecks by staff.

Prior to the pandemic, airports and airlines who knew CT equipment existed were pushing it to improve throughput due to the record numbers of travelers working their ways through limited terminal space. Nordeen says it now reinforces the idea of less bags being touched.

"It means less bags being opened, the TSA workers don't need to touch as much of your stuff and secondary screening doesn't have to happen because the false alarm rates are lower," she says. "It's almost a parallel argument to deploy the technology quicker."

Smiths was contacted by TSA to deploy 300 CT systems at 100 airports. They were placed in a stand-alone fashion, but the addition of Automated Screening Lanes (ASL) will further help throughput.

"We designed the 6040 CTiX to be very much a plug and play system to our current multi-view 6040 ATiX that's already been

at airports," she says. "We wanted to keep the footprint very similar. We also designed the electrical requirements to be the same so there wouldn't need to be site work done to increase the power requirements needed to operate the systems."

Lisa Farbstein, spokesperson for TSA, says the new CT technology provides critical explosives detection capabilities at the checkpoint and improves the capability for TSA officers to determine whether an item inside a carry-on bag is a possible threat.

The system applies sophisticated algorithms for the detection of explosives by creating a 3D image that can be viewed and rotated on three axes for thorough visual image analysis by a TSA officer. If a bag requires further screening, TSA officers will inspect it to ensure that a threat item is not contained inside. It's expected that it will result in fewer bag checks. Plus, passengers can be allowed to leave laptops and other electronic devices in their carry-on bags.

"The 3D imagery of this new unit is so good that our TSA officers can manipulate the image on screen to get a better view of a bag's contents and often clear items without having to open a carry-on bag," she says. "Not only does this state-of-the-art technology represent an improved security threat detection capability at the checkpoint, but it also reduces the need for pulling aside a bag to be opened, thus reducing a touchpoint during the pandemic."

Nordeen says Smiths Detection also developed a modular UVC light sanitation module that goes into the ASL. This allows each tray to be sanitized between each use. They're currently being used across the UK and Canada.

"Nobody likes to handle those bins, but after COVID, that was a rapid engineering moment that we saw an opportunity to solve a problem very quickly knowing the impact COVID was going to have within the first few weeks on aviation and travel," she says. **GSW**

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How Handlers Navigate Scandinavia's Winters

Preparedness is key to manage the challenges associated with ground handling during the region's harsh seasons.

By Mario Pierobon

Scandinavia is a region of northern Europe consisting of the countries of Denmark, Sweden and Norway.

The region is known for its very harsh winters, and aircraft ground handling in the region has its own peculiarities due to the often-extreme weather conditions that must be dealt with.

There are approximately 65 airports with regular scheduled traffic in Scandinavia. Not accounting for Longyearbyen in the Svalbard archipelago – which is considered international, the northernmost airport is Hammerfest in Norway and the southernmost is Rønne in the island of Bornholm in Denmark, explains Ivar Busk, owner of Aviation Care Consulting.

“There are about 21 million people living in the three countries and in 2019, before the COVID-19 pandemic, nearly 100 million passengers were air transported,” he says. “The distance between the northernmost Hammerfest and southernmost Rønne is 2,316 km. This makes it necessary to have an effective infrastructure of air transport and therefore the region is a natural breeding ground for ground handling companies.”

Winter Challenges

In Scandinavia, it can be a challenge to operate effectively throughout the year due to the shifting weather. This holds true for both flight and ground operations.

“In the winter, temperatures can go down to –30 degrees C, whereas in some years in the summer they can go up to 35 degrees C. Also, heavy snow, rain and very windy weather demand operational preparedness for both personnel and material,” Busk points out. “Therefore ‘winter’ maintenance of ground support equipment is essential for safe and effective handling. Especially in Norway and Sweden, snow in the winter creates a special situation, whereby normally snow clearance is the airport’s responsibility but the aircraft parking area is often the GSP’s responsibility.”

Indeed, preparedness is the main strategy employed by aircraft ground handlers to manage the challenges associated with ground handling during Scandinavia’s harsh winters, according to Jo Alex Tanem, CEO of Aviator Airport Alliance.

“As opposed to warmer countries, we have harsh winters every winter, and the further up north one



Photo courtesy of Aviator



goes, the longer the season lasts. All infrastructure is built to deal with heavy snowfall and low temperatures,” he says.

Deicing is also a specialty in Scandinavia in the cold season, which normally lasts from November to April.

“Therefore, effective and efficient procedures have been developed in cooperation with manufacturers of deicing equipment with the most sophisticated technics,” says Busk.

Personnel Retention

The turnover rate for ground handling personnel working in Scandinavia is relatively low, as there often are some extra benefits connected to a ground handling job depending on a GSP’s organization, observes Busk.

“As the aviation industry has changed during the last 30 years, going from airline-controlled ground handling to independent companies, the latter provide different benefits compared to airlines. Today, only two airlines in Scandinavia have their own

ground handling services, one is Scandinavian Airlines System (SAS) – but only at their main hubs in Copenhagen, Oslo and Stockholm, and the other is Widerøe, which operates only in Norway,” he says. “During the years, we have seen a number of GSPs trying to open services in Scandinavia, but due to rather high costs, it has been difficult to make the ventures profitable and these GSPs have ceased their operation after a short time. Today the largest independent GSPs in Scandinavia are Menzies, Aviator, CFS and Swedavia – which

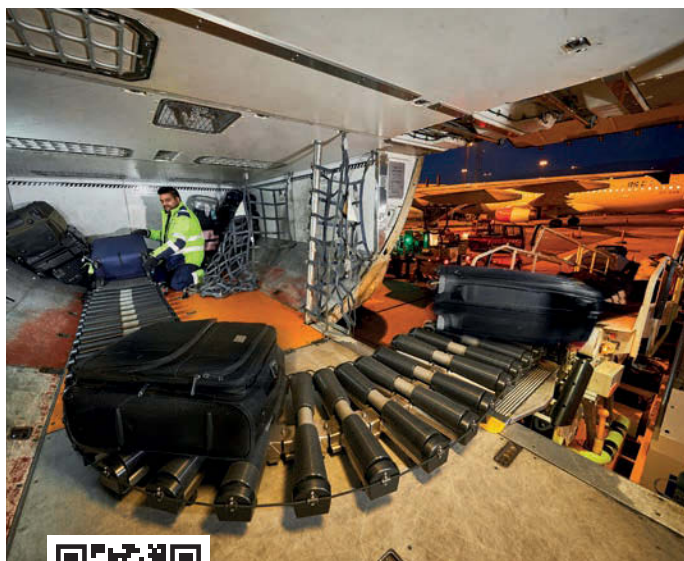
is airport-owned and operates only in Sweden. There is also a number of minor companies.”

Normally, the airport type of work is regulated by a high number of organized personnel in different unions, which during the years have been able to improve the working conditions, observes Busk.

“Also, working procedures have changed from nearly manual-only to increasingly more automatic operations. All of this has an influence on the turnover rates as the work does not result so much in physical effort,” he says.



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"In general, there is a positive atmosphere, which is also in the interest of management, and there are also good chances for promotion within a company."

Indeed, open and honest communication with staff and unions, as well as empowerment and emphasizing a non-hierarchical organization are the best strategies and tactics for the retainment of personnel, according to Aviator's Tanem.

"This is the Scandinavian way of thinking that everyone is equally important for the success of the company," he says.

Safety Awareness

Safety is a very important point in all training programs for all GSPs, and aircraft ground handlers in the region are concentrating efforts to raise safety awareness in aircraft ground handling through training.

"We put constant emphasis on safety procedures and processes, just culture and the assessment of the root causes for every dis-

crepancy. Specific to the Nordic region is the emphasis on winter operations," says Tanem.

Busk observes that today's training is often conducted as e-learning, but this should never replace on-the-job training.

"In the old days, it was a must that one had to have 'strong muscles' to operate in the ramp as the equipment used was very little automated, but today many parts of the process are computer-controlled and even some of it is robot-managed," he says.

"Today, many of those who start as ground handlers have a general transport education directed to aviation and ramp handling. This takes six to nine months and also includes some practical training. Brush-up training is also performed in regular schedule and when new aircraft types are handled. IATA's procedures found in the airport handling manual (AHM) and in the IATA Ground Operations Manual (IGOM) are often the 'back bone' of training procedures, and they include a focus on safe operations," Busk adds.

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Impact of COVID-19

It is well known that the aviation industry has suffered in the last year as the COVID-19 pandemic wore on.

“Almost overnight, traffic went from 100 percent to 1 percent, and most of the ground personnel was laid off or made redundant very soon after, when it was obvious that there was

We put constant emphasis on **safety procedures and processes**, just culture and the assessment of the **root causes for every discrepancy**.

— Jo Alex Tanem

a global pandemic. Due to this situation, the number of aircraft ground handling incidents was nearly null. But as the industry is now slowly recovering from the pandemic, there is a need for a renewed focus on safety awareness in the perspective of the traffic coming up in gear again,” says Busk.

“The reason is that, in many cases, there will be on the ground the same personnel which was dismissed, perhaps as much as 60–70 percent of all personnel, and after a brush-up period, there will be a tendency to continue working as before.”

The recovery of the of flight operations in Scandinavia has varied depending on the country.

“In Norway, domestic traffic was not hit as hard as Sweden and, especially, Denmark. International traffic is still reduced in all three countries, but more and more flights are being inserted to accommodate the numbers of passengers, especially the holiday period has given a boost,” says Busk.

The revenue loss in Scandinavia has been in line with the ground handling industry in the rest of Europe, according to Tanem.

“The recovery has begun in June and has continued throughout the summer,” he says. “We have been seeing big differences between the airlines and destinations, but the overall recovery in Scandinavia is in line with the industry in general.” **GSW**



▶ ABOUT THE AUTHOR:

Dr. Mario Pierobon provides solutions in the areas of documentation, training and consulting to organizations operating in safety sensitive industries. He has conducted a doctoral research project investigating aircraft ground handling safety. He may be reached at mariopierobon@az-all-in-one.com.

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RUSSIA'S GROUND HANDLING SECTOR Readies for Growth

Like other regions, ground service providers in Russia endured challenges throughout the pandemic. However, there is a possibility that the industry recovers sooner than expected.

By Eugene Gerden

The Russian industry of ground handling services is steadily recovering from the crisis, which was caused by the COVID-19 pandemic and its negative impact on the country's aviation sector, according to recent statements made by some of Russia's ground handling operators and analysts.

The pandemic led to a serious drop-off in traffic in the majority of Russia's largest airports and a reduction in volume of the ground handling services provided.

Perhaps, the biggest decline was observed in the case of airports within the Moscow aviation hub, including Vnukovo, Sheremetyevo and Domodedovo. The airports traditionally account for the majority of air traffic in the country.

Alexander Vlasov, corporate affairs director of Moscow Domodedovo Airport, says the reduction of flights at the airport and the closure of a number of countries led to a sharp drop in passenger traffic at Domodedovo Airport in 2020 and ground handling operations.

According to him, in 2020 the overall traffic of the airport amounted to 16.4 million passengers, which was significantly lower than in 2019 (28.3 million passengers). That, according to Vlasov, inevitably led to the decline in volume of ground handling services, provided within Domodedovo. Still, as Vlasov has also added, the situation is steadily improving this year.

"For the six months of the current year from Jan. 1 to June 30, 2021, the passenger traffic of the airport amounted to 11 million passengers. While this is by 14 percent lower than in 2019, it is by 68.8 percent higher than for the same period in 2020," Vlasov says.

In the meantime, representatives of leading Russian ground handling operators have confirmed the pandemic has had a negative effect on the domestic ground handling sector. However, there is a possibility that the industry may almost completely recover by the end of the current year.

"Currently we see the ever growing demand for ground handling services in Russia, which is, however,



Photo courtesy of Artem Kashiirin | Domodedovo Airport

primarily observed in the case of domestic operators. Of course, further dynamics will directly depend on the restrictions – or lack of them – of air traffic between the countries, and other measures aimed at combating COVID-19, that could be implemented by the Russian government,” says Pavel Kudryavtsev, an official spokesman of independent ground service provider UTG Group.

Meanwhile, in addition to pandemic issues, the concerns of operators and other market players are related with the current regulation of the domestic ground handling sector by the state. Despite the earlier announced state plans to design a new regulatory framework to ensure more efficient functioning of the industry, the final adoption of some important legislative acts is seriously delayed.

Currently the lack of regulations of ground handling sector in Russia remains still one of the major problems of the industry. That creates conditions for monopolization of the industry by selected companies, which are usually affiliated with the management of airports.

Domodedovo's Vlasov says there is an acute need to take actions for more active de-monopolization of the Russian ground handling industry.

“To fully implement this model, the market needs unified rules that would determine the procedure for admitting third-party operators to activities at the airport, fixed unified requirements for the quality of services and

clear definition of the operator's responsibility,” Vlasov says. “At the moment, Russian legislation does not contain these rules.”

In regard to Domodedovo, Vlasov says the airport has always advocated equal conditions for consumers' access to infrastructure facilities and services, being one of the first in the country to begin to de-monopolize the ground handling market.

Local regulators, however, are aware of the current criticism from operators and airports, considering ways for the tightening of a control for any monopolistic activities in the industry.

One such regulator, the Federal Anti-Monopoly Service (FAS), has recently announced its plans to start more active monitoring of tariffs, including those, which are set for ground handling services by airports and ground handling operators.

As part of this, operators will have to notify the FAS about any change of tariffs no later than 10 days in advance. The anti-monopoly agency will analyze the information justifying the change in tariffs and charges for ground handling services.

Part of the plans of authorities is also taking measures for the protection of the industry's personnel from massive layoffs, similar to those that were observed at the end of last year when massive staff reductions were conducted by some leading local operators.

On November 2020 the Russian *Ren-TV* channel reported about layoffs in Sheremet-

yevo-Handling, an official ground handling operator of the Sheremetyevo airport.

Layoffs in the ground handling sector of Russia occurred despite the provision of almost RUB 12 billion (\$163 million USD) subsidy to the domestic aviation industry by the state – a move to mitigate the consequences of the pandemic and to ensure social guarantees for industry's workers.

The government also fears repetition of a major row in the industry, similar to those that took place at Sheremetyevo in June 2019 when, due to the lack of baggage handlers, more than 9,000 pieces of luggage were accumulated, which led to flight disruptions for passengers.

At that time, the investigation initiated by the Russian General Prosecutors' Office led to the opening of more than 20 administrative cases and the dismissal of several managers of the airport, particularly those that were responsible for organizing ground handling operations at Sheremetyevo.

The government plans to tighten control for the technical side of ground handling services at Russian airports and their compliance with the existing Technological Schedules of Aircraft Maintenance (TGO AC) – the existing standards for the provision of such services in Russia.

In Russia, the TGO of aircraft depended on their type, with service time being established centrally. In addition, the list of operations was mandatory. In accordance with the cur-

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rent practice, each airport itself determines the list of operations and the time interval for servicing the initial, return and final flights by itself, based on the available capabilities and understanding of the service process. That sometimes leads to serious violations, while, as part of state plans is implementing a more strict control of operators for the observance of existing rules.

In the meantime, the rapid recovery of ground handling sector in Russia attracts an interest of some global handling operators, considering accelerating their foreign expansion.

One of such companies is Havaş, which is a ground handling subsidiary of TAV Airports Holding, a Turkish airport operation and services firm that is part of Groupe ADP.

According to S. Mete Erna, general manager of Havaş, the Russian ground handling sector is within the sphere of interests of the company.

"As the ground handling subsidiary of TAV Airports, we define our business strategy taking advantage of the potential synergies within the group. Therefore, we are currently focusing on extending our operations across the European markets where TAV is present. Consequently, we're targeting Kazakhstan's Almaty Airport that will be an important step for us to take a place in the Russian market. We strongly believe that Russian market is highly open for expansion opportunities, as various recently developing airports in Russia can encourage global handling players through license tenders," he says.

In the meantime, despite the pandemic, implementation of the majority of investment projects in the industry is ongoing. For example, Sheremetyevo Airport and Rossiya Airlines recently launched the modern hangar



complex for ground handling and technical servicing of aircraft of the Aeroflot Group.

The commissioning of the complex became part of the long-term airport development program, while the volume of investments in the project amounted to \$57 million (USD).

According to the partners, the launch of the new complex will ensure high-quality aircraft servicing including quick return flight, that will be conducted for only 25 minutes.

As part of the plans of operators is the beginning of more active introduction of some new domestic technologies in their processes, with the aim to rise the quality and efficiency of providing ground handling services.

One of such technologies has been recently developed and patented by scientists from the Institute of Applied Astronomy of the Russian Academy of Sciences and involves calculating the danger of icing of aircraft during takeoff and landing and, according to scientists, has no analogues in the world.

The new technology is based on operation of two devices – a water vapor radiometer and a temperature profiler.

According to Gennady Ilyin, head of research, in addition to achieving the main goal of increasing flight safety, the use of the new technology will ensure the rational use of formulations, which are used for the treatment of aircraft to combat icing.

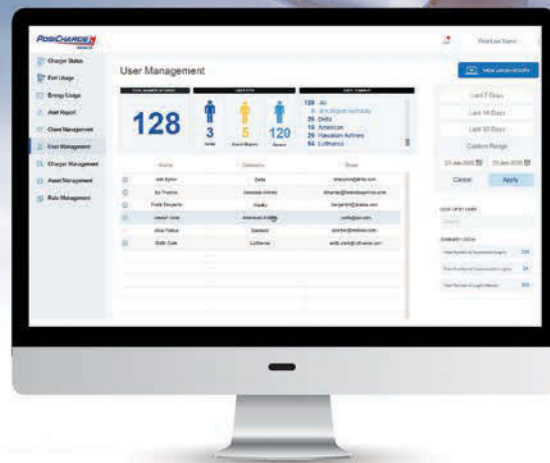
As scientists have also added, chemical agents are usually used for the treatment of an aircraft in case of a threat of icing, however, according to them, there is currently no exact way to determine the need of their use. According to them, the use of such technology provides such an opportunity. **GSW**



▶ ABOUT THE AUTHOR:

Eugene Gerden is an international freelance writer, who specializes in covering the global aviation and ground handling industries. He has worked for several industry titles and can be reached at gerden.eug@gmail.com.

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BLR Upgrades Cargo and Ground Handling Facilities

Kempegowda International Airport has updated its cargo capabilities and has become a regional hub in India.

By Manik Mehta

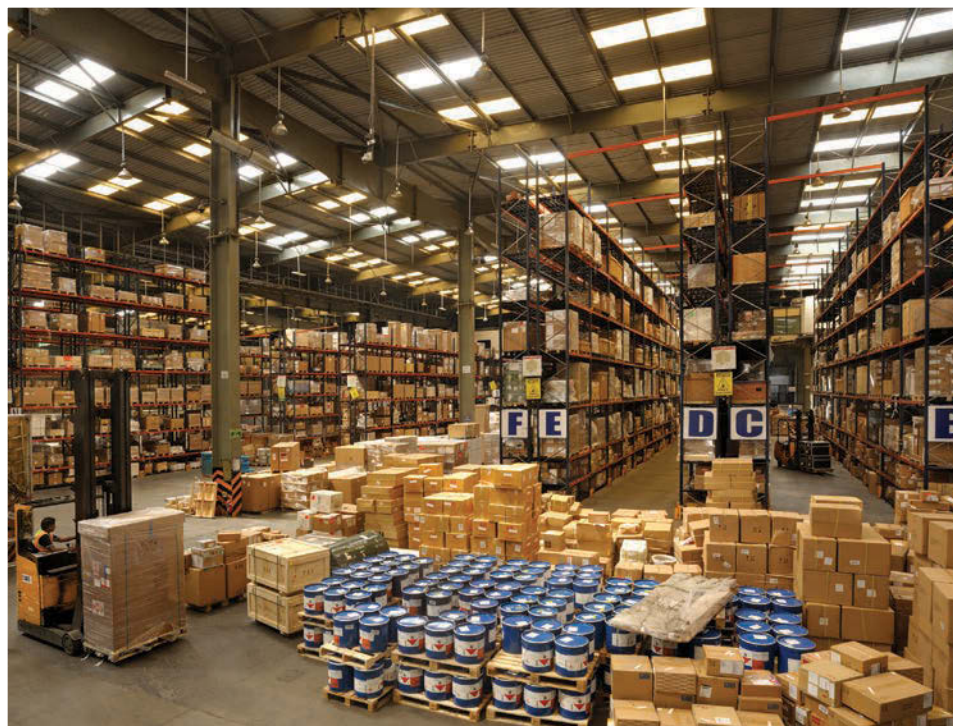
Bengaluru has become synonymous with India's pioneering role in the development of information technology and its advanced IT infrastructure. The Indian diaspora in the U.S. often uses the hyperbole "India's Silicon Valley" when it refers to Bengaluru.

Additionally, the city, also known as Bangalore, is fast becoming a regional air cargo hub with plans to expand and upgrade its infrastructure and deploy ground handling equipment. Kempegowda International Airport (KIAB / BLR Airport), has received a facelift, making it more appealing to the needs of modern-day life as air transport of people and goods becomes increasingly popular in the subcon-

continent. According to Bangalore International Airport Ltd. (BIAL), the airport operating company, the airport has developed into a regional hub with the promise of strong growth in air cargo traffic and air travel.

Spread across 4,000 acres, the airport is bolstering its infrastructure, which includes two independent parallel runways, extensive passenger options and stands, a passenger terminal (T1) and multiple cargo terminals. A second terminal (T2) is also being constructed and should be ready for commercial use in 2022, according to airport sources.

Its geographical location, supported by easy access to the major manufacturing hubs of South



India, has strengthened the airport's status as the "preferred gateway" for air cargo in South India. The presence of two big cargo terminal operators – Air India SATS (AISATS) and Menzies Aviation Bobba Bangalore – has added to the allure of BLR Airport.

"The BLR airports' current annual cargo capacity is 720,000 metric tonnes (MT), and is expandable to 850,000 MT. Our

aim is to expand the cargo infrastructure to provide a capacity of 1 million MT in the next few years," Satyaki Raghunath, BIAL's chief strategy and development officer, explains, pointing out that BLR airport is currently ranked as India's third cargo-handling airport based on annual cargo handled.

In the past, many Indian airports faced the disadvantage of having inadequate or

outdated infrastructure facilities; however, amid the fierce competition and sharp rise in global air trade – and also air travel, they are upgrading or expanding their existing infrastructure to meet the heavy demand generated in traffic.

The airport's infrastructure includes two dedicated freighter stands, two modern cargo terminals, round-the-clock operations running on automated systems, a

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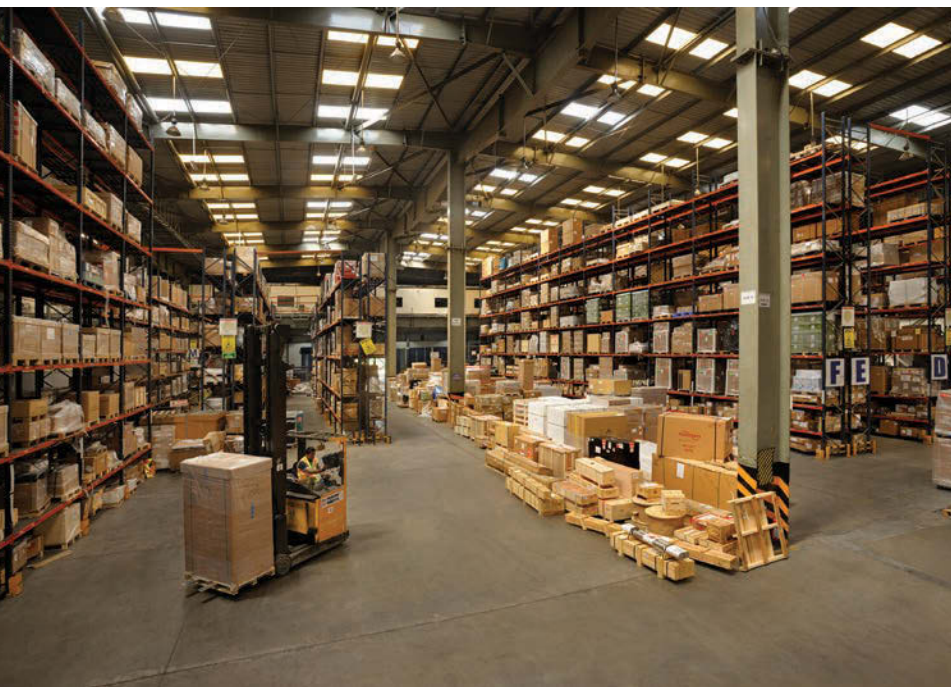


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"The airport has some of the most mechanized cargo terminals in the country, with facilities such as automated storage and retrieval systems (ASRS), elevated transfer vehicles (ETVs), very narrow aisle trucks (VNAs), high-rise racking systems, lift and run systems for ULD movement, reach stackers with barcode readers and handheld devices. This enables BLR Airport to process all types of cargo, including pharma and temperature-controlled products, perishable cargo, electronics, hardware, vegetables, as well as animals," Raghunath says, adding that Bengaluru Airport is India's first airport to be compliant with IATA's e-freight initiative.

"We are the first airport in India to be IATA e-freight compliant, the first and only airport in India to have partners with IATA Safety Audit for Ground Operations (ISAGO) compliance. Our partners are ISO: 9001 2008 and GDP certified as per WHO standards. They are also ACC3 compliant as per European Union guidelines and TAPA certified," he says.

Infrastructure expansion required some urgency as the airport's air cargo volume rose from 132,125 MT in 2008 to 386,780 MT in fiscal year 2018, a three-fold increase in its first decade of operations.

Other features include an airport public-bonded 10,000-square-foot warehouse, and four cargo terminals: Blue Dart Express Cargo Terminal, AISATS Coolport, AISATS and Menzies Aviation Bobba Bangalore.

BLR is also India's first airport to have its terminals compliant with ISAGO, besides maintaining a fully operational drug control lab and an animal quarantine for safe movement of animals.

According to Raghunath, the airport offers connectivity for air cargo shipments to 70 domestic and 20 international destinations.

Export traffic includes agricultural perishable items, pharmaceuticals and textiles, among others, while imports generally include electronics, heavy machinery, auto components and more.

Major export cargo destinations are the Middle East, Europe and North America



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while imports arrive, mostly, from the Far East, Europe and the Middle East.

"There are currently 14 dedicated freighters operating to BLR Airport, and there is also additional belly capacity in passenger aircraft. On an average, we have about 30-33 daily freighter movements at BLR Airport," Raghunath notes.

He maintains that BIAL has made "continuous efforts to improve operational efficiency by providing state-of-the-art infrastructure, market-leading technology and customer service."

These efforts include operationalization of a public-bonded warehouse and an express cargo terminal.

While the public-bonded warehouse will facilitate re-exports, long-term storage of bonded cargo and value-added services, labeling, packing/re-packing, etc., the express cargo terminal will ease doing business and reduce transaction time and costs for the shipper by providing a dedicated facility for express courier shipments, according to Raghunath.

A number of features have been added to strengthen the airport's technological prowess and boost the cargo operations.

The features include the Airport Cargo Community System (ACS), a digital platform for quicker processing and reducing duplication of information and streamlining processes.

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What's more, the Envirotainer is an electronic container facilitating pharmaceutical companies and their logistics partners to move temperature-sensitive cargo worldwide while maintaining the integrity and quality of products throughout the transportation.

"We believe technology is crucial for enabling seamless operations and will continue to explore and evaluate and bring innovations in technology to enhance cargo operations," Raghunath emphasizes.

Other cargo-boosting initiatives include a 5-acre dedicated truck-parking facility and a road feeder service catchment area connectivity, with its bonded and non-

bonded trucking service called LogiConnect from various parts of South India.

Technology is the key for the airport to assert its position in a fiercely competitive environment. Collaborating with foreign high-tech corporations could become a game-changing factor for the airport's future.

Indeed, U.S.-based IBM and BIAL recently announced a 10-year partnership for IBM and Kyndryl to provide IT solutions to create a so-called "Airport in Box" platform aimed at helping the end-to-end travel experience for passengers at the airport.



► ABOUT THE AUTHOR:

Manik Mehta is a New York-based journalist, who specializes in all the aspects of aviation and logistics, including airlines, aircraft leasing, airports, infrastructure, cargo and ground handling, as well as global markets, trade and business.



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inter airport Europe 2021 Preview

Following a virtual event this spring, the rescheduled trade show will take place in Munich in early November.

By Josh Smith

inter airport Europe 2021 is scheduled to take place Nov. 9–12 at the Munich Trade Fair Center in Germany.

Scheduling complications as a result of the COVID-19 pandemic saw the event postponed from its traditional October timeframe to mid-November and then moved up to its current dates.

“Following the consideration of feedback we have received from all stakeholders after the postponement in April, we have been able to secure the earliest slot to hold inter airport Europe in November 2021 and are pleased to announce this new date,” Nicola Hamann, managing director of Mack Brooks Exhibitions, said in a release earlier this year. “The November slot is not an ideal solution for us; however, one week ahead of the previous announcement fits a lot better into the overall event schedule. All outdoor exhibitors who have concerns over the weather in November will be able to present their equipment indoors in 2021.”

“The coming show certainly reflects the current market situation, including budget and travel restrictions for some of our regular exhibitors and visitors,” Olaf Freier, portfolio director of inter airport Europe, said in a press release this summer. “However, the industry is facing a major turning point and the future requires different, new solutions. With inter airport Europe this year, our aim is to drive tomorrow’s needs and required solutions by providing relevant content and business opportunities through our long-term experience and relationship with the airport community.”

Event organizers also staged a digital component to the show in April, dubbed inter airport Connect, which allowed exhibitors and attendees to connect virtually. Now as the in-person portion of the 23rd edition of inter airport Europe approaches, take a look at a sampling of the products that will be on display.



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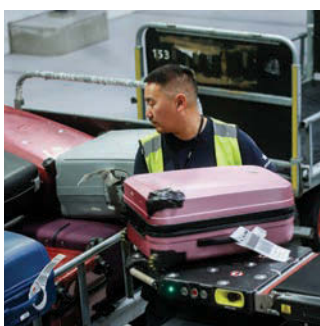
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which allows operators to decide the most efficient time to retrieve bags for make-up. The BHS control alerts the operator when there are enough bags in storage to produce an efficient make-up process for a flight, after which the operator releases the bags for efficient speed loading of trolleys or ULDs.

MOTOTOK (BOOTH 500)

SPACER 8600 NG

Mototok is exhibiting its next generation of electrical, remote-controlled push-back tug. The company specializes in flat, small, powerful and electric tugs for special requirements in the hangar and at the gate.

Additionally, the company presents a flat and maneuverable helicopter tug, the Mototok Alligator. The Mototok Alligator offers a height of 149 mm in the area of the nose wheel platform. Even tools such as FLIRs, cameras and radar systems can be easily passed underneath with the Mototok Alligator.



BULMOR (BOOTH 2824)

AMBULIFT SIDEBULL - E-POWERED

Bulmor Airground presents the first E-powered SideBull, which offers safe travel and zero emissions. The new, fully electric-powered ambulift helps to achieve 400,000 kg of CO2 reduction during the vehicle's lifetime. The new battery technology, available with lead acid or fast-charge lithium-ion technology, is recharged up to 50 percent in only 40 minutes. Through the maintenance-free electric motor, the maintenance costs are reduced up to 50 percent.



AERO SPECIALTIES (BOOTH 511)

AERO JETGO 45-400 GPU

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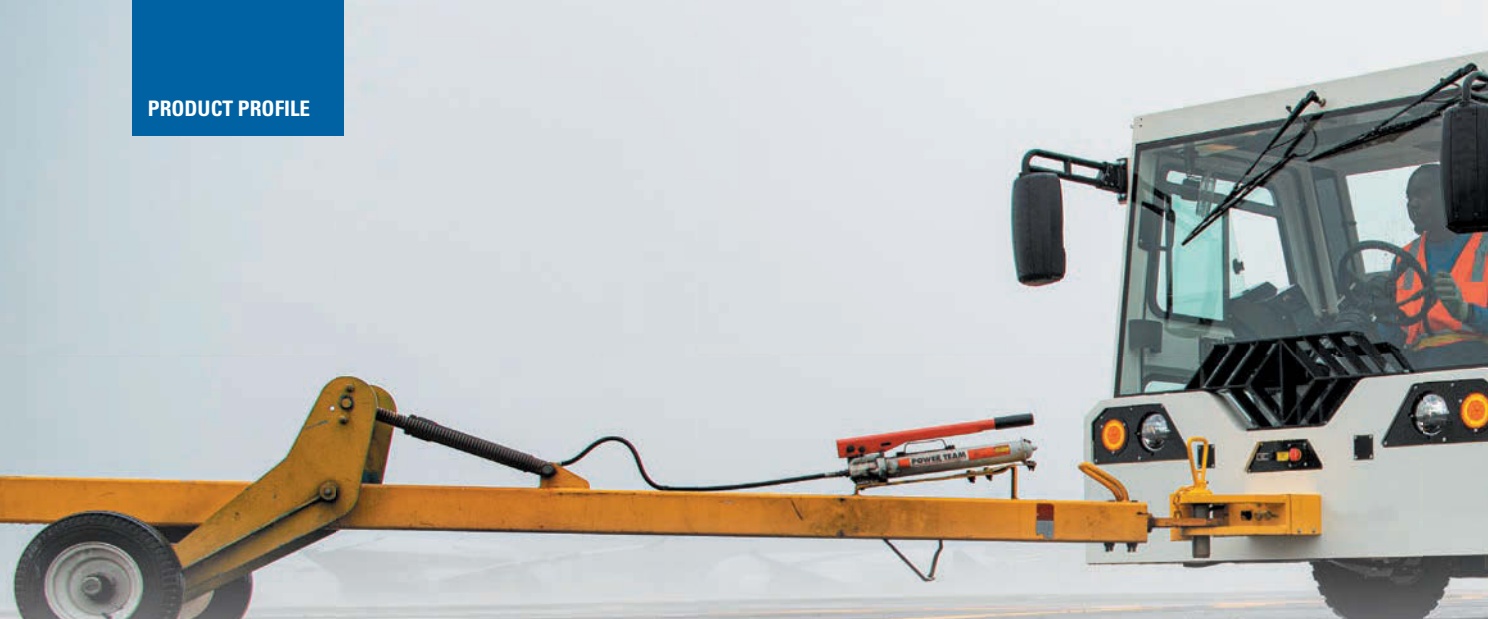


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Pick the Best Powe

The TUG ALPHA 1 was designed to offer narrow-body pushback operations with a choice of a diesel, gasoline or lithium battery powered vehicle.

By Josh Smith

To address the needs of ground service providers handling the movements of aircraft, officials at Textron GSE sought to provide flexibility.

Engineers expanded the company's TUG ALPHA family with a tractor designed for narrow-body pushback with a max drawbar rating of 24,000 lbs., a max gross vehicle weight of 35,000 lbs. and the ability to support aircraft up to the A321 or B737.

But beyond the flexibility offered with the line of TUG ALPHA pushbacks, Textron GSE developed multiple powertrains for its TUG ALPHA 1 model.

"As part of the design process for the TUG ALPHA 1, the team was cognizant of delivering a product that would drive efficiencies for customers. Engineers considered the future of airport operations and the objective to have more sustainable equipment that would benefit the environment and offset carbon emissions," explains Matt Chaffin, VP and GM at Textron GSE.

The TUG ALPHA 1, which was introduced by Textron GSE in October 2020, is available in three models – lithium, diesel and a gasoline model specifically built to handle commercial aircraft.

"Offering three models means the TUG ALPHA 1 can be used around the globe based on the needs of our customers," Chaffin says. "All models feature drive-by-wire technology, are CE-certified and available in Tier 3, Tier 4 Final and Stage V configurations for global use."

Powertrain Options

According to Textron GSE officials, the company's diverse customer base often has differing needs and infrastructure, so the TUG ALPHA 1 was designed to have multiple powertrains, including diesel.

"Many international customers operate diesel products and rely on the power offered by diesel engines. The TUG ALPHA 1 was designed to meet or exceed all EU emission requirements and has been purpose-built with the future in mind," Chaffin says.

The gasoline-powered version of the TUG ALPHA 1 does not require the extensive after-treatment that diesel engines do, which can save customers time and money.

"The TUG ALPHA 1 is the only gas narrow-body pushback specifically built to handle commercial aircraft that delivers comparable torque, power and run-time to diesel solutions," Chaffin points out. "The gas model also offers low operating costs compared to diesel vehicles due to lower fuel prices and reduced maintenance expense."

Additionally, the gas and diesel models can be upgradeable to a lithium powertrain once a customer's and an airport's eGSE infrastructure is in place.

"This means customers do not have to invest in new equipment and can utilize existing products and transform them with a lithium powertrain," Chaffin says.

The lithium TUG ALPHA 1 offers a number of advantages over lead acid technology, according to Chaffin, noting the battery-powered unit



Photos courtesy of Textron GSE

rtrain for Pushback

delivers eco-friendly performance that can handle the requirements of daily pushback operations.

“With no battery maintenance, such as battery watering, the TUG ALPHA 1 increases the productivity of the crew and reduces operating expense. The battery also charges twice as fast as lead acid, which means you consume less electricity to charge the vehicle, resulting in lower power bills,” Chaffin says, adding the TUG ALPHA 1 can accommodate most EV charging stations like a PosiCharge or Minit Charger, and an optional J1772 on-board charger is also available to allow users to charge the pushback by plugging into a standard 110V or 220V outlet.

The TUG ALPHA 1 was designed to perform 12 pushbacks at maximum capacity per charge. Chaffin says this is equivalent to pushing a fully loaded A321 for 1,000 yards, or 10 miles of travel unloaded, which equates to approximately 3–6 percent of charge per push. The lithium technology can also make use of opportunity charging to extend the vehicle’s run-time, if needed.

“The Battery Management System (BMS) installed on the TUG ALPHA 1 utilizes a telemetry system that monitors the health and performance of the battery. The BMS is basically the brains behind lithium technology, and its job is to ensure the battery is performing as expected by reviewing things like state-of-charge levels, battery temperature, etc.,” Chaffin says. “If anything faults and produces levels that require attention, the BMS system will shut down the battery until the issue is resolved.”

Additional Features

The TUG ALPHA 1 was developed to feature automotive-style throttle and braking. The pushback also offers creep forward functionality as a driver lifts his or her foot off the brake, which allows crew members to inch forward when connecting the plane.

“All models are also equipped with everything you need from LED headlights, E-stops and even fender storage areas perfect for small equipment like batons or vehicle chocks,” Chaffin says.

The cabin area was engineered for three people and centrally positions the driver for enhanced visibility to the tow-bar. Ergonomic features and other characteristics like suspension seating, tilt steering and an easy-to-reach touchscreen control panel are designed for user comfort while audio jacks located in the front and rear of the vehicle ensure clear communication with crew members.

“The TUG ALPHA 1 also has plenty of options for customers to consider including full or economy cab, HVAC system, maintenance jacks and a J1772 on-board charger for the lithium model,” Chaffin adds.

Currently, Textron GSE has several demo units deployed with customers who operate narrow-body aircraft.

“Feedback has been very positive, and customers have been impressed with the functionality, safety and all the standard features that the TUG ALPHA 1 offers,” Chaffin notes.

“Part of the Textron GSE new product development process is to include feedback from its customers regarding vehicle use,

working conditions and functionality,” he adds. “This collaboration explored all facets from vehicle design to its operation and identified opportunities to enhance performance beneficial to the customer.”

The TUG ALPHA family consists of four products – the TUG ALPHA 1, TUG ALPHA 3, TUG ALPHA 4 and TUG ALPHA 5 – built to handle aircraft of varying weights.

The TUG ALPHA 1 utilizes common parts found across the TUG ALPHA family, reducing the number of unique parts required to perform maintenance.

When spec’ing pushbacks, ground handlers need to consider ballast weight, which is important as it relates to the gross vehicle weight of the aircraft; pushback distance and functionality; performance requirements such as governed speed, cab, lights, etc.; the working environment, such as snow, ice and inclines, as draw bar calculations factor in all conditions and necessary requirements; and safety enhancements like handrails and remote maintenance components.

General pushback maintenance may include inspecting the vehicle’s lighting; ensuring tires have adequate tread and are inflated to the proper pressure; checking hitch components for abnormal wear; performing daily fluid checks and routine scheduled maintenance as outlined in the owner’s manual.

“Selecting the proper pushback based on the aircraft and job performed ensures you have the right product to support on-time departures,” Chaffin concludes. **GSW**

▶ CT5 BAGGAGE TRACTOR **Charlotte of America**

The CT5 comes with a choice of two gas engines – either a Ford 4-cylinder, 2.5-liter engine or a 4-cylinder Kubota. It also is available with a Kubota diesel engine. A Paillard axle is in front and an Newage axle is in back.

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▶ SIPSHITCH **AERO Specialties**

The SiPsHitch patented linear force monitoring system alerts tractor operators to overstress situations before they cause aircraft nose gear damage, affording improved levels of protection in towing operations. SiPsHitch is a add-on option for all makes of aircraft towbar type tractors.

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▶ AP8950SDB-AL-250 TOWBARLESS PUSHBACK

JBT LEKTRO, Inc.

JBT LEKTRO's AP8950SDB-AL-250 is an emissions free, towbarless pushback tractor. Certified to tow virtually every narrow-body airliner from the B757 down through regional turboprops, this tug can handle them all.

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▶ PUSHBACKSIM TRAINING SIMULATOR **L3 Commercial Training Solutions**

The PushbackSim allows users to simulate aircraft ground handling operations, minimizing aircraft damage and improving ground operator safety. New employees can practice basic and advanced skills needed to be safe and efficient. Experienced operators can master their abilities in periodic refresher training. The PushbackSim allows for repeat training scenarios year-round with zero risk to employees, equipment or aircraft.

AviationPros.com/12375020



▶ CHALLENGER 150E **Trepel Airport Equipment GmbH**

Trepel's electric conventional aircraft tractor allows users to handle B737 and A320 fleets while also pushing out the B767-200/300 at maximum ramp weight. The hydro-pneumatic front-axle suspension provides driving comfort for the operator. Options include open drivers stand with side safety bars and solid tires.

AviationPros.com/12432218



▶ MODEL 140 LOW PROFILE PUSHBACK TRACTOR

Wollard International

The Model 140 has 8,000 to 14,000 lbs. DBP ratings in a low-profile, multi-purpose tow tractor with a low center of gravity, which is well established in pushback and cargo hauling applications. It has a planetary reduction drive axle, which reduces driveline stress, amplifies torque and places engine horsepower and RPM at usable ramp speeds. It features a plate steel, electric-welded, unibody chassis. The tractor is ideal for corporate, regional jet and FBO pushback duties. Model 140 can be powered with gas, diesel, LPG or CNG, and can be customized with many factory-installed options.

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ELECTRIC TOW TRACTOR

Nandan GSE Pvt. Ltd.

The Nandan GSE Electric Baggage Tractor is designed to tow baggage carts from the airport terminal building to the aircraft and vice-versa.

They are also used in outdoor areas when environmental considerations have to be taken into account. Features include: a robust system designed in accordance with IATA/AHM 930 and BIS; ergonomic operator compartment, smooth-profile design and direct hitch visibility allow operator safety; fully electric technology will help to reduce carbon emissions which is the need of the hour; high power and efficient electric motor; warning devices; emergency operation and safety protection devices; high durability and reliability; designed with carefully matched components, resulting in minimal or no unscheduled maintenance or repair; and user-friendly controls.



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BAGGAGE TRACTOR - STANDARD GSE, MODEL STD-KM20

Aeroservicios USA Inc.

This tractor offers a Nissan K25 gasoline, 2.5L 4-cylinder engine. It includes a Cyclone air cleaner, alternation with IC regulator, integrated ignition assembly, neutral safety switch, super pre-heater control system, engine key stopping device, oil water deposit ion separator, lasso-type hand brake, power-assisted steering, hydraulic torque converter, pin-type two-stage towing bar and more.

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MARK III LOW PROFILE TOW TRACTOR

Trowin Industries Inc.

The Mark III Low Profile Tow Tractor has recently been refined to include the Cummins QSF2.8 T4 Final diesel engine. This engine choice joins the gas, LPG, CNG and electric options available. The Mark III can be rated from 3,000 to 6,000 DBP and has a wide array of options available.

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PHOENIX E

Goldhofer Airport Technology

The full electric towbarless aircraft tractor Phoenix E meets all requirements in pushback and long-distance towing for approximately 70 percent of all passenger and freight aircraft. Using 700V technology and lithium-ion batteries, the Phoenix E offers the same performance as the diesel-driven Phoenix D. With fast charging and intermediate charging options, the Phoenix E is always ready to go. The active thermal management system makes the use of this tractor efficient and ensures a long battery life. Additionally, Goldhofer's remote access tool allows users worldwide online access to their Goldhofer fleet.

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B950 HEAVY-DUTY TOW TRACTOR

JBT

The B950 is JBT's 31,750kg to 45,360kg GVW tow/pushback tractor capable of servicing large RJs up to B777/B787 aircraft. Easy to operate, the B950 drives like a car with automatic transmission, front axle leaf springs, a tight turning radius and available 4-wheel steer and 4-wheel drive options. Easy to maintain, the heavy-duty pushback tractor has ground-level access to nearly all maintenance and service points and is available with an integrated hydraulic jacking system and elevating cab. The reliability of the B950 offers its "ring-of-steel" protection, diagnostics capabilities and superior drive components.

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COMET 4 FC FUEL CELL TOWING TRACTOR

MULAG Fahrzeugwerk GmbH u. Co. KG

The Comet 4FC is ideal for baggage handling in sorting areas, on the apron and indoor industrial use. With its electrical drive powered by a fuel cell system the towing tractor is CO₂-emission free and thus ideally suited for indoor use as well as continuing powerful operation on the airport.

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TECKNOSIM PUSHBACK AND TOW SIMULATOR

Tecknotrove Systems

The Tecknotrove Systems TecknoSIM Pushback and Tow Simulator has been specifically designed for training and skilling of pushback operators. The simulator combines the original controls of pushback equipment with a high definition curved display screen and is mounted on a 3 DOF electric motion platform to create a realistic and immersive training experience. TecknoSIM simulates both towbar and towbarless pushback equipment with actual vehicle dynamics and realistic airport environment. The simulator allows training operators pushback operations on 15 types of aircraft from the Airbus range A330 to A380 and Boeing range 737 to 787. Once the simulator is integrated with multiple desktop stations, it allows multiple people to operate in the same environment.

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MODEL HTSB TRACTOR

Harlan Global Manufacturing, LLC

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SPACER 8600 Mototok America LLC

The Mototok Spacer 8600 is suited for pushback operations. The Spacer 8600 comes with a NTO license for 737s and 320-family, with others to follow soon. With low initial and maintenance costs, the eco-friendly electric drive and the one-man-operation, without the need of any driving license, users can utilize this tug for all apron and hangar operations.

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AV50E LITHIUM ELECTRIC BAGGAGE TRACTOR A&V Rebuilding, Inc.

A&V Rebuilding is now offering zero-time baggage tractors repowered using a specifically engineered lithium electric drive system. These electric tractors are built on the platform operators are accustomed to, so additional operator training is minimal. The A/C drive system is designed for use exclusively with lithium batteries. There are multiple charging options available and lithium A/C repower kits are also available for existing fleets.

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AIRCRAFTCADDY DNW AIRCRAFT PUSHBACK TUG DJ Products, Inc.

The AircraftCaddy DNW Aircraft Pushback Tug is ideal for larger aircraft up to 35,000 lbs. It works well on single- or dual-nose wheels and offers an electric winch to pull aircraft onto a Lazy Susan. It is battery-powered for smooth and silent operations. With a heavy-duty steel frame, it is capable of traveling 0-3 mph forward/reverse.

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AIRCRAFT TUGS Skybus, LLC - Global GSE

Global GSE has a wide variety of aircraft pushback tractors, airport tugs and baggage tractors for sale and in stock. The company offers smaller tugs from 3,000-pound drawbar pull through to heavy aircraft pushback tractors with the ability to tow aircraft up to 750,000 pounds.

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Eagle Tugs, a Tronair Company

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When Teamwork is Most Crucial

Looking around the industry, there are countless examples of the great things that can be achieved when we work in concert.

A year ago, when we published the 2020 Global Issue, I offered some reflection in this column about the state of the industry amid the COVID-19 pandemic. There was plenty of uncertainty then, but it was mixed with optimism. And while our industry is still feeling the effects of lockdowns and travel restrictions a year later, that optimism hasn't been misguided. The industry is continuing to adapt and it's beginning to emerge from last year's setbacks.

As detailed in the pages of this year's Global Issue, technology has allowed us to stay connected, new solutions are helping facilitate safe passenger travel and ground service providers are rising to the task posed by hefty cargo demands. It's taken a great deal of collaboration from key stakeholders across the industry.

Similarly, organizers have toiled to safely bring the International GSE Expo back to Las Vegas. It took tremendous teamwork, and like the rest of our industry, the events team at Endeavor Business Media and our partners at IAEMA worked around the clock to find solutions to every challenge encountered to reconnect us.

Speaking of strong teams, the editorial staff at *Ground Support Worldwide* and *AviationPros.com* welcomed a new member this summer. Becky Kanable is a veteran journalist equipped with the skills to help us grow our coverage across print, digital and multimedia platforms. We're excited to have her onboard and encourage you to welcome her to the industry. She can be reached at Becky@AviationPros.com.

Effective teamwork is key, no matter the goal. From providing ground service for commercial aviation, to developing new GSE technology, to producing a trade show, the value of teamwork is on full display. There is still a ways to go before we're back to a pre-pandemic state. But we're well on our way as our industry is beginning to reap the awards of working together.

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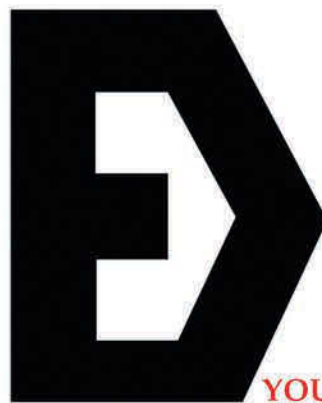
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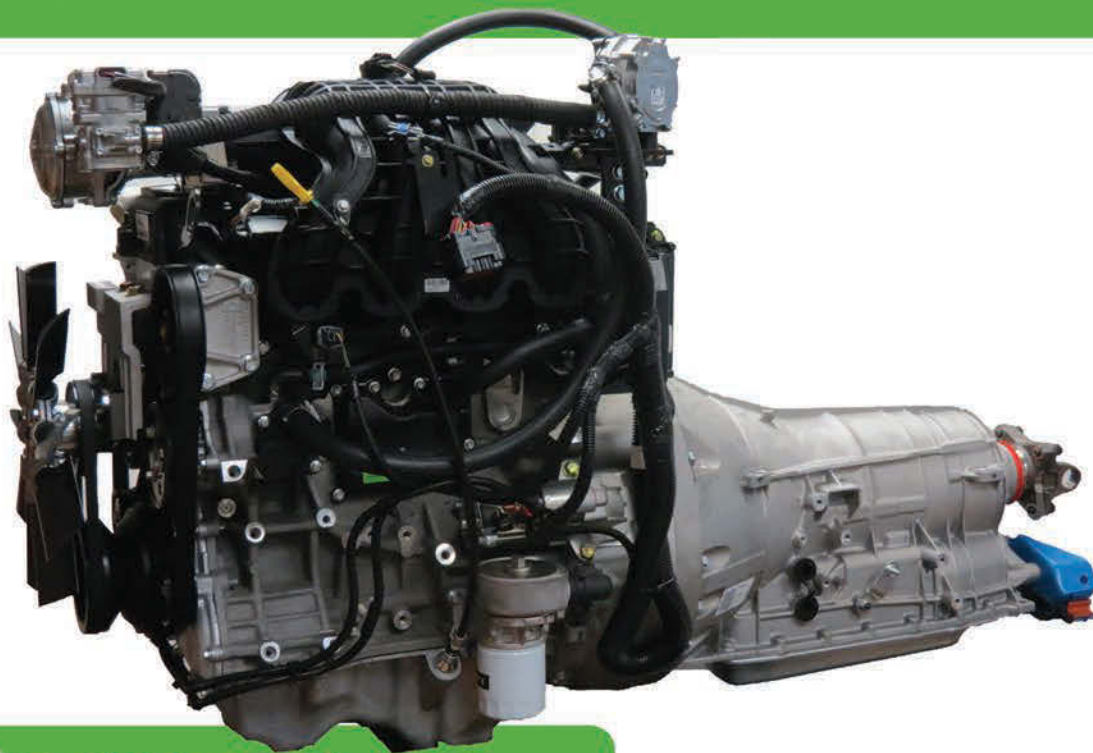
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