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DECEMBER 2019/JANUARY 2020

Ground Support

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GROUND SERVICE PROVIDERS

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Airport Cyberattacks:
Beyond Ransomware

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Cover photo courtesy of Power Stow

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ONLINE EXCLUSIVES

Why Small Town Companies are the Future of Private Aviation

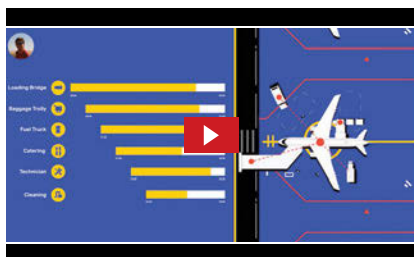


Kazi Rahman, Founder
& CEO, Firnas Private

Executive aviation is gaining altitude thanks to its reliability, cost-efficiency and flexibility, three key variables that have changed how companies are doing business all over the world.

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VIDEOS



IATA CEDAR

IATA's Ramp of the Future is getting ready to take off with a connected, ecological, digital, autonomous ramp (CEDAR).

AviationPros.com/21113525

BLOGS



Two Interesting Changes in Aviation...

By Ralph Hood

As the need for pilots and technicians grows, Garmin has announced its Autoland solution, which is designed to calculate a flight plan to a suitable airport, initiate an approach and automatically land the aircraft without pilot or passenger intervention.

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ARTICLES

Airlines Turn to Optimization Software to Address Aircraft Maintenance Challenges

By Luis Alvarez

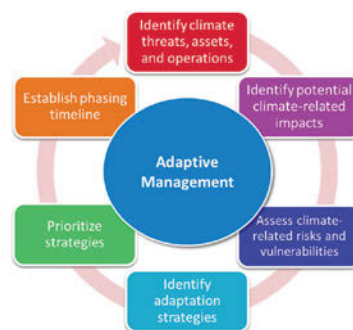
Challenges and new market dynamics are driving airlines to turn to optimization software to streamline and enhance their maintenance processes.

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Airlines and Airports Spend a Record \$50 Billion on Improving the Passenger Experience

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► TOP NEWS

Swissport Opens Pharma Center in Brussels

Swissport International has opened its new Pharma Center for temperature-sensitive cargo shipments at Brussels Airport. Dedicated to the handling of pharmaceutical shipments, the new facility is adjacent to Swissport's existing air cargo facility and offers 3,620 square meters of temperature-controlled warehouse space.

"We are delighted to be able to serve our customers at this state-of-the-art facility for their most sensitive products," said Luzius Wirth, executive vice president of Europe, Middle East and Africa at Swissport Inter-



national. "We can now provide a seamless, high-quality service from the trucks to the aircraft cargo hold. The Swissport Pharma Center at Brussels Airport will play a key role in our growing global network of temperature-controlled warehouses."

The facility's new, automated material handling system with its 432 rack and ground positions, caster decks and associated forklifts and pallet movers, which are exclusively operated in the high-sensitive pharma area, ensure an efficient and safe handling.

Swissport has signed a 20-year lease contract for the new facilities and is investing roughly 11 million Euros in interior fittings. Construction work at the new facility started in January 2019 and will take about two years to complete in a phased approach.

Banyan's FXE FBO Earns IS-BAH Stage 1 Accreditation

Banyan Air Service based at Fort Lauderdale Executive Airport (FXE) has earned the International Standard for Business Aircraft Handling (IS-BAH) Stage 1 accreditation.



"We are proud to be the first FBO at Fort Lauderdale Executive Airport to earn this accreditation," said Kenny Gibson, Banyan's training manager. "Safety is very important to us at Banyan and the IS-BAH accreditation demonstrates our commitment to providing industry best practices to our customers. We are very proud to have earned this accreditation."

IS-BAH accreditation involved a complete audit of Banyan's FBO processes and procedures for safety. Gibson led the effort in this process with the help of seven other teammates: Ryan Bartman, Alex Casanova, Dennis Porebski, Eddie Osborne, Carlos Robins, Eric Veal and Louis Homsher.

"Kenny and his team have been working on this project for the past 18 months; reworking our manual, standard operating procedures and implementing best practices which was then audited over the course of three days," Jon Tonko, Banyan's director of customer support said. "I am so proud of the team for all the extra effort while still serving our guests on a daily basis."

Carolina GSE Expands New Servicing and Distribution Center

Carolina GSE, a global distributor and repair facility for aircraft ground support equipment, announced the expansion of a new GSE servicing and distribution center in the Craven County Industrial Park to accommodate their continued focus on GSE servicing, along with distribution for aircraft maintenance and ground support equipment.

With their sales and support office in Greenville, N.C., and a distribution center in



► Upcoming Events

Jan. 26-28

AirCargo 2020
Nashville, TN

March 10-13

NBAA Schedulers and Dispatchers
Charlotte, NC

March 10-12

IATA World Cargo Symposium
Istanbul, Turkey

April 14-17

Petro Expo 2020
Alexandria, VA

April 24-29

International Aviation Snow Symposium
Buffalo, NY

April 28-30

MRO Americas
Dallas, TX

May 5-7

NBAA Maintenance Conference
Hartford, CT

May 10-13

AAAE Annual Conference
Denver, CO

May 17-20

IATA Ground Handling Conference
Mexico City, Mexico

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Chicago, Ill., the new facility doubles the current repair and distribution center in New Bern, N.C., and supports the company's growth strategy. The new facility is slated to open at the end of the year.

"We are very excited to expand our presence in New Bern, and it is the right step in our growth strategy," said John Werner, president. "This new facility allows us to expand our skilled GSE service team as well as increase our ability to service current and future markets."



dnata Gains IATA's CEIV Pharma Certification at DWC

dnata, one of the world's largest air services providers, has been certified by IATA's Center of Excellence for Independent Validators in Pharmaceutical Logistics (CEIV Pharma) for its pharma handling processes at its cargo facility at Dubai World Central (DWC). The accreditation complements dnata's existing CEIV Pharma certification at Dubai International (DXB), demonstrating the company's ability to move pharmaceutical products under the strictest standards across its operations in the UAE.

"Air cargo has been playing an increasing role in the transportation of temperature-sensitive cargo, including pharmaceutical products," said Bernd Struck, senior vice president, UAE cargo and DWC airline services, dnata. "We constantly enhance our operations to meet the growing demand, and invest in cutting-edge technologies to provide the highest possible value to our customers. The achievement of the prestigious CEIV certification at our DWC cargo hub demonstrates the quality and reliability of our services."

"Improving industry logistics networks to achieve supply chain excellence increasingly requires transparency and cooperation amongst all supply chain partners to provide the high quality services customers demand to ultimately safeguard patient safety," Glyn Hughes, global head of cargo, IATA, said. "We are delighted to recognize dnata's cargo facility at Dubai World Central as an additional CEIV Pharma certified entity, raising the bar in the industry with a commitment to quality and continuous improvements. I congratulate dnata on this achievement."

The CEIV Pharma program was created by IATA to provide a globally consistent and recognized pharmaceutical product handling certification that focuses on airfreight and temporary storage. The stringent standards set by CEIV Pharma and the rigorous assessments conducted either meet or exceed many of the current worldwide regulations.

► PEOPLE

Mena Appointed Interim CEO Swissport North America

Frank Mena, chief commercial officer of Swissport Americas, will take over from Dany Nasr as CEO Swissport North America with immediate effect.



Mena has extensive leadership experience and can rely on an experienced North American team. He spent most of his career in the aviation industry. After joining Swissport as a general manager in 1991, he held several executive management roles, among them as COO Ground Handling USA. More recently, he served as chief commercial officer Americas. Mena will report to president and CEO Eric Born.

Swissport also appointed Rudolf Steiner as head of cargo EMEA, while Mark Skinner has become head of

business development and sales EMEA. Steiner, formerly Swissport's senior vice president and head of commercial EMEA, is a recognized industry expert with over 20 years of experience in the Air Cargo business. Skinner, formerly senior vice president Middle East and Africa, most recently developed and managed Swissport's principle emerging markets projects, with successful market entries and green field start up organizations in Saudi Arabia and in Oman.

7PSolutions' Middleton Promoted to VP, Global Business Development

Dereck Middleton has been with 7PSolutions since it was founded in April of 2010. Over the past nine years, he has been instrumental in the design and development of 7P's RouteWatch SaaS as well as overseeing and ensuring 7P customers' requirements are exceeded.

Moving into his new role as vice president of global business development, Middleton's primary focus is the continued growth within the company's current business as well as acquiring new customers and business partners. Previous experience within the air freight industry, specifically the pharmaceutical cold chain, has afforded him the ability to understand the challenges associated with the supply chain and allows him the insight to help build specialized programs to fit each customer's unique requirements.



► NEW DEALS

Universal Partners with CJET to Enhance Service Levels at ZBAA

Universal Weather and Aviation, Inc. and China's Capital Jet (CJET) have signed an agreement to work together to enhance service levels for business aviation operations at Beijing Capital Airport (ZBAA).



CJET is the only authorized ground service and customer passage provider for private aviation in and out of ZBAA, as well as the greater Beijing metropolitan area. Per the agreement which went into effect Dec. 1, Universal Aviation China will provide on-ramp ground handling within CJET's FBO at ZBAA, the airport's lone FBO.

"The combination of our local expertise, award-winning ground handling service and safety standards with CJET's experience and commitment to improving business aviation infrastructure will help reduce our clients' risk and stress when operating to Beijing," said Greg Evans, chairman, Universal. "We look forward to developing training and information sharing programs with CJET that will further advance and ease the business aviation operating environment throughout China."

"Universal has an extensive history and reputation for excellence in China," said Ma Yin, general manager of Capital Jet Co. Ltd. "We are thrilled to partner with them to continue the great progress we've made in recent years of raising international service standards."

United Airlines Signs up with WFS for Debut Cape Town Services

United Airlines will partner with World-wide Flight Services (WFS) as its cargo handling provider for the first-ever



nonstop service by a U.S. carrier between New York/Newark and Cape Town. WFS in Cape Town has been awarded a three-year contract by United to serve the new, seasonal route, which commences Dec. 15 through to March 28.

"For WFS to be selected as United's partner in Cape Town is testament to the high service standards we strive to achieve. The WFS team in Cape Town take great pride in the quality of service we deliver for our airline customers and



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look forward to contributing to the success of United's new route. The airline is a welcome addition to our growing business in South Africa and this direct cargo capacity to and from New York will be a great boost for the local cargo community," said Malcolm Tonkin, general manager-cargo for WFS in South Africa.

This new contract follows an announcement earlier this month that WFS had become the first air cargo handling company in South Africa to be awarded Good Distribution Practice (GDP) certifications for its temperature-controlled pharma facilities, aligned to ISO9001:2015, in Johannesburg and Cape Town.

Menzies Awarded Contracts by Sunwing Airlines Across North America

Menzies Aviation, a global aviation logistics specialist, announced new contract agreements with Sunwing Airlines at three North American stations.

From Nov. 6, Menzies Aviation will deliver ground handling services for the Canadian leisure airline at stations including Ottawa Macdonald-Cartier International Airport and Winnipeg James Armstrong Richardson International Airport in Canada, and Fort Lauderdale-Hollywood International Airport in Florida.



With a term of three years, these contracts encompass passenger, ramp and cabin cleaning services. Across the three airports, 150 Menzies Aviation professionals will handle approximately 900 flights per annum for Sunwing Airlines.

"It is great to see Sunwing Airlines broadening our successful relationship to span 18 airports across North and Central America," said Menzies CEO Giles Wilson. "These awards are testament to the success of our partnership so far, and the hard work and quality service delivered by Menzies Aviation employees on the ground. We are particularly thrilled that our Canadian business continues to grow rapidly, and look forward to deepening our presence in North America."



AAT Welcomes Royal Air Philippines

AAT is honored to be appointed by Royal Air Philippines as their cargo terminal operator in Hong Kong. Royal Air Philippines has inaugurated a brand new direct route connecting Hong Kong and Bohol. Passenger charter services operate twice per week from Sept. 30, 2019, using A319 aircraft.

ABM Partners with JetBlue Airways for Fueling Services

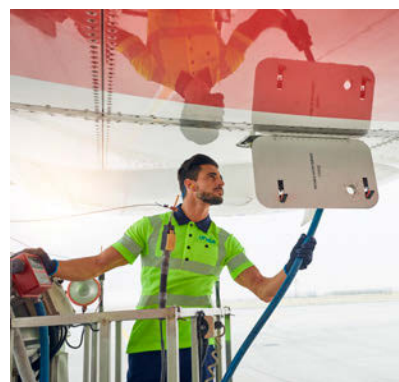
ABM, a provider of facility solutions, announced that the company will be responsible for into-plane fueling services for JetBlue flights out of George Bush Intercontinental Airport (IAH).



"We partner with JetBlue for a number of services at airports across the country, including catering logistics, as well as janitorial and passenger services, and we are excited to add into-plane fueling," said Stan Livingston, vice president at ABM.

ABM's Aviation team has quickly grown the into-plane fueling services line since introducing it on March 1, as part of its extensive solution offerings for airlines and airports. With the addition of JetBlue, ABM now fuels more than 140 flights daily across three airports.

"ABM is a long-time, trusted partner and we look forward to the expertise they bring to the table for into-plane fueling services, which is a critical part of any airline operation," said Brad Barton, senior analyst, JetBlue.



dnata Expands Operations at Washington Dulles International Airport

dnata has significantly expanded its operations at Washington Dulles International Airport (IAD). Having been awarded a three-year contract by Lufthansa Group, the company invested \$4 million (USD) in equipment and hired 125 aviation professionals to its team to provide dedicated support and services to its newest airline customers and their passengers at the airport.

Starting from November, dnata delivers ground and passenger handling, aircraft cleaning and deicing services for four airlines of the airline group, including Lufthansa, Swiss International Air Lines, Austrian Airlines and Brussels Airlines.

"We are delighted to expand our long-standing partnership with Lufthansa Group at Washington Dulles. The airlines of Lufthansa Group all share our passion for safety, quality and service excellence, and we are proud to be their ground handler of choice at nine airports in the United States. We keep investing in our team, infrastructure and equipment to cement our leading position and continually provide the best possible services to all of our over 60 airline customers in the world's largest aviation market," David Barker, CEO of dnata USA, said.

"Lufthansa and Austrian Airlines are excited to grow the North American relationship with dnata at Washington Dulles International Airport (IAD)," Holger Bremes, director commercial airport infrastructure, Lufthansa Group, added.

"With our very positive service experience from destinations like BOS, LAX, SFO and JFK we are looking forward to providing first class service to our customers with our handling partner at Washington Dulles."



Hactl Adds Southern Air Inc. to Ramp Handling Business

Hong Kong Air Cargo Terminals Limited (Hactl) – Hong Kong's major

independent cargo handler – has been awarded the contract to provide ramp handling for Kentucky-based freighter operator Southern Air Inc.

The wholly-owned subsidiary of Atlas Air Worldwide Holdings operates 21 rotations per week through Hong Kong. All Southern Air Hong Kong services use B777 freighters, most of whose space is allocated to DHL Express.

"We are very pleased to extend our responsibilities for Southern Air to include ramp operations. This enables us to provide them with the enhanced efficiency of a seamless terminal- and ramp-handling service – just as we now do for over 40 other freighter operators in Hong Kong," said Hactl's executive director, Vivien Lau.

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Airport Cyberattacks: Beyond Ransomware

Take a thoughtful and proactive stance in addressing cybersecurity issues and other industrial network security vulnerabilities.

By Edy Almer

Recently, Cleveland Hopkins Airport (CLE) was hit with a ransomware attack. The attackers hijacked the airport's flight display systems so that instead of seeing arrivals and departures, all travelers could see was CLE's logo. While inconvenient, the attack appeared to be benign and CLE chose not to pay.

According to the FBI, the U.S. government does not encourage the paying of ransoms, but acknowledges that technical issues, timeliness and cost of restarting systems from backup might sway a company towards payment. Even in cases where the ransom is paid and systems are restored, it's wise to assume the network is still compromised. Re-infections can occur, and if the attackers left a backdoor in the network your problems are far from over. So, it's imper-

ative to run vulnerability scans and risk assess your networks.

When it comes to cybersecurity, airport CIOs and security managers typically attend only to their Information Technology (IT) networks. As IT networks become more secure, cyberattackers have had to find new ways into target networks. As a result, they've become increasingly focused on finding and exploiting vulnerabilities in Operational Technology (OT) networks.

IT networks pertain to digital systems used to create, manage, move and store data. OT networks, on the other hand, control physical systems. At airports, critical systems including baggage control, runway lights and air conditioning systems are all powered by OT or Industrial Control System (ICS) networks. OT systems gen-

erally pre-date IT networks and unlike IT systems, were designed to be left alone for long periods of time. Despite their criticality, OT systems at airports and elsewhere are rarely subject to the same level of monitoring and oversight as conventional IT systems.

That's due in great part to the fact that OT systems were considered to be beyond the reach of cyber attackers. That may have been true for a long time, but in 2015, the Ukrainian power station Prykarpattyaoblenergo fell victim to a cyberattack that shut down power for 225,000 people right before Christmas. That cyberattack was a game changer in that it showed the world that OT systems could be compromised, to great effect. There have been other successful hacks of OT systems since then, including ransomware attacks.

As a result, we've seen a huge spike in the number of airport Chief Information Security Officers (CISOs) reaching out to us to explore how they can protect their OT networks. It's not technically difficult for an attacker to move from an IT system – say a laptop or a web server – to an OT network controller, which is usually a Windows machine, but attacks on OT systems can cause substantial physical damage or paralyze airport operations, which can substantially raise the stakes.

So, when it comes to their industrial networks, airport CISOs we talk to are less concerned about whether an attacker will demand a ransom or steal data, and extremely concerned about how vulnerable their systems are to any attack. Their concerns run the gamut from the mundane to straight out of the movies. Here are a few we hear often enough that we wanted to share them:



BAGGAGE HANDLING SYSTEMS

Because they are the most customer-facing OT system found in airports, they're a common target. These systems are extremely attractive targets for an attack because oftentimes, they can be executed remotely – the attacker wouldn't even need

to board the plane to execute the attack. All that's required is for a single person to fall for a simple phishing email and an attacker can introduce OT-specific malware into the airport network – malware designed to find its way to the baggage handling system to execute the attack.



AIRCRAFT TUGS

Many modern tugs are wireless and there's a huge push to make all next-gen tugs wireless, driverless, and OT and IT connected. Attackers could potentially hijack a tug's weight sensors and back a large jet into a gate at the velocity used for a small plane, causing it to crash through the wall of the airport. Creative attackers could hack these systems for other purposes than physical damage, which is likely why airport CISOs across the globe mention this risk vector.



DE-ICING SYSTEMS

The liquid chemicals used for de-icing are stored at on-site facilities. If those systems were attacked and the composition of the solution was altered, it could easily cause ice to form on the body of a plane. Tampering with the aerodynamics of a plane by hacking into de-icing systems is one way to cause it to crash without loading explosives onto it, which is likely why as obscure a risk vector as it is, de-icing systems are often one of the first OT systems airports monitor.



FUEL PUMPS

An attacker could, for example, hack into a fuel farm, causing the wrong type or mixture of fuel to be pumped into a plane, resulting in anything from engine problems to an explosion.



PEOPLE MOVERS

People Movers or Automated Guideway Transit (AGT) systems are OT-powered autonomous shuttles that ferry airline passengers between terminals. If a cyber-attacker were to compromise its signal or safety systems, they could effectively grind operations to a halt, or in a worst-case scenario, cause a shuttle, or shuttles, to crash.

These are just a sampling of the OT-related attack scenarios that cybersecurity leaders at airports around the world are concerned about – irrespective of whether the attackers want a ransom, are making a political statement or have some other agenda.

The unfortunate reality is that it is way easier to breach an organization's cyberdefenses than it is to defend them. Thankfully, we are seeing airports take a thoughtful and proactive stance in addressing these and other industrial network security vulnerabilities. **GSW**




► ABOUT THE AUTHOR:

Edy Almer leads Cyberbit's product strategy. Prior to joining Cyberbit, Almer served as VP of Product for AlgoSec, during this period the company's sales grew by over four times in 5 years. Before AlgoSec, Almer served as VP of Marketing and Business Development at Wave Systems, an enterprise security software provider, following its acquisition of Safend where he led business development, marketing and product management. Prior to Safend, Almer managed encryption and endpoint DLP products within the Endpoint Security Group at Symantec. Almer also was CTO for Partner Future Comm, Orange's Corporate VC arm, and served in the IDF intelligence corps. Almer holds a B. Sc. in Electrical Engineering from the Technion and an MBA from Tel Aviv University.

A photograph of an airport tarmac under a cloudy sky. In the foreground, a black luggage cart with a white suitcase is visible. To the left, a grey metal cart with the number 48 is partially covered by a white tarp. In the background, a white truck with the Gategourmet logo is parked, along with several other luggage carts. The text 'HERE TO' is overlaid in white, and 'ASSI' is overlaid in large green letters.

HERE TO

ASSI



GSE manufacturers are making improvements to equipment to help ground handlers perform their work on the ramp and at the baggage carousel injury free.

By Josh Smith

Work performed on airport ramps around the world can be difficult and physically taxing. In order to keep ground handlers from suffering injuries, the GSE industry is constantly evolving and creating new equipment to keep users safe.

Power Stow and Telair International, along with partners Swissport and AUXIVO are among those advancing GSE designed to protect the people who repeatedly load and unload baggage.

Help Loading the Aircraft

Qantas Airlines was in search of an aid to load and unload their aircraft in combination with their on-board sliding carpet loading system. The airline connected with Telair and the RTT Longreach was subsequently born.

The self-contained, bolt-on extension for belt-loaders allows users to handle baggage and cargo at a comfortable working height, sliding the items off the belt-loader safely.



It can be operated with either a joystick or handle with the use of only one hand, explains Andrew Freeman, manager of U.S. sales and field services at Telair.

“Up/down and inward/outward operation is fully powered and side-to-side movement is manual,” he explains, adding the latter function is designed to protect the doorway of the aircraft.

“It can be used at the front and back of any diesel or electric belt-loader,” he con-

tinues. “It has a unique ball tray design at the front, allowing the loader to easily position cargo in the direction needed without heavy lifting.”

The RTT Longreach can also completely retract, so that it does not protrude when the belt-loader is being driven on the tarmac.

The device, which can be installed by the OEM or by Telair as a retrofit, is used in Australia, Denmark, Sweden, Norway, Dubai, Germany, London, the Netherlands

and Singapore by airlines, ground handling companies and airports.

“Being that the RTT is developed in Sweden, and initially designed for Qantas in Australia, we focused on creating a system that works in all climates,” Freeman explains, adding it can also be used in the terminal.

Freeman says the RTT Longreach’s goal is to create ergonomic cargo loading conditions, to protect users from injury while increasing efficiency.

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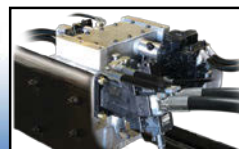
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"The RTT takes the heavy lifting out of the equation by allowing the user to manipulate the belt-loader to his or her needs," he says, noting a unit can handle 50 kilos of cargo at a time and 150 kilos when the RTT is in a supported position. "It bridges the gap between the belt-loader and the aircraft, presenting the cargo to the loader – as opposed to having to reach for it."

In addition to user safety, company officials say the equipment can speed up

operations. It can mitigate aircraft damage as the RTT is designed to extend into the cargo compartment, allowing the belt-loader to be positioned further away from the aircraft. Likewise, it offers a level of protection to the cargo.

"The belt has also been widened to better accommodate wide body loading as the angle greatly changes due to the height difference of the belt-loader and wide body aircraft," Freeman says.

Inbound Baggage

Safe ramp operations are important, but ground service providers need to safely handle luggage once inside the terminal as well.

Power Stow is known for its extendable belt loader system, the Rollertrack Conveyor system, which provides unique operational features and benefits to airports, ground handlers and airlines such as American Airlines, Delta, United and Southwest. Power Stow has now launched a new device with



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Photo courtesy of Power Stow

the main purpose of assisting in unloading baggage and cargo from containers and baggage carts to the arrival belt in the sorting area, explains Ben Reeves, vice president of Power Stow Americas.

“Using the Transfer Belt significantly reduces baggage handlers’ workload. Heavy twisting and lifting movements become obsolete,” Reeves states. “Operators enjoy easier workdays and are more productive.

“The Transfer Belt also makes the baggage handling gentler as it transfers bags from the cart to the baggage conveyor. The operator simply slides the bags onto the Transfer Belt, which then guides the baggage onto the conveyor belt,” he adds.

Most of the Transfer Belt’s functions, including movement, belt start and break release are all controlled via a multipurpose handle on the side of the device while ‘Stop’ and ‘Complete’ have their own dedicated buttons located on both sides of the machine.

“A single operator can handle a large number of items in an efficient and ergonomically correct manner,” Reeves notes, adding heavy lifting and twisting motions are eliminated while capacity per operator and loading speed are increased because baggage and cargo can be removed from ULDs or carts without lifting or carrying items.

“The operator uses one-third of the lifting force by simply pulling the bags onto the

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Transfer Belt instead of lifting and twisting. Thereby, this semi-automatic unloading method significantly reduces the risk of back and shoulder injuries, resulting in better working conditions and less sick leave.”

Currently used by baggage handlers at airports in Europe, the U.S. and Asia, the Transfer Belt is a retrofittable device and an add-on to new or existing arrival belts. Power Stow performs the installation of the Transfer Belt units, according to Reeves.

“The first prototype was initially made as a sub-project to a larger scale project concerning automatic unloading,” Reeves notes. “However, the principle of the Transfer Belt proved to be very efficient in itself and easy to adapt to a wide variety of different arrival belts.”

Since the initial prototype was tested in 2018 at different airports worldwide, a few technical improvements were made, including upgrading the system to 24 Volts,



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reducing weight and lowering power consumption. Power Stow has implemented a more modular design for easier serviceability, added additional safety features such as light indicators and sound warnings and secured UL-certification.

An Added Lift

While supported lifting and twisting can limit injuries, Swissport began testing AUXIVO's LiftSuit in 2018 to reduce physical strain.

"The LiftSuit is worn like a standard

backpack with two leashes tied around the legs. It has crossed rubber bands, running across the back, which store energy during the forward bending movement of the upper body and release it when the employee brings himself back in an upright position," explains Swissport senior communications manager and spokesman Stefan Hartung.

"This reduces the employee's muscular activity by up to 20 percent."

Since more extensive long-term tests require certification according to European Union (EU) standards, Hartung says the LiftSuit is currently at the end of its developing phase and in the process of receiving these benchmarks. However, the device was recognized at the IATA Ground Handling Conference (IGHC) with the IATA Innovator Award.

"Swissport plans to, together with the manufacturer AUXIVO, conduct long-term



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tests starting in the first quarter of 2020," Hartung says, adding it is expected to be available to the market later that year.

According to Hartung, the current model of the LiftSuit is a result of continually improving the wearing comfort and integrating the luminous effects of the mandatory high-vis vest.

"This was done based on feedback from Swissport employees, suggesting that this would make wearing the vest obsolete. Thus, improving the comfort significantly during hot weather conditions," he points out.

The LiftSuit is lightweight in design and easy for ground service personnel to put on.

"Due to its unique design without any rigid elements, it is very easy to store and in no way disturbing during its use," Hartung says. "The freely adjustable straps allow for a one-size-fits-all that can reduce the number of suits needed significantly."



While it has been developed for use by ramp agents in the baggage sorting area and in aircraft holds, Hartung says it is not limited to those areas, and further applications in other areas are imaginable.

"The LiftSuit has been developed to pri-

marily prevent and reduce musculoskeletal injuries during physical work activities," Hartung says, adding it has delivered tangible results. **GSW**

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Safety From the Ground Up:

IS-BAH's Mission for Safer Ground Operations the World Over

With more than 200 locations achieving Stage 1 certification, IS-BAH adoption continues to grow rapidly.

By Walker Jaroch

Since its inception in July of 2014, the International Standard for Business Aircraft Handling (IS-BAH) has become an industry standard. The program, designed to “promote use of industry best practices blended through a progressive Safety Management System (SMS) for ground handling service providers (GHSPs) for the business and general aviation sector, including fixed based operations (FBO) and business aircraft handling agencies (BAHA),” has been adopted the world over.

Terry Yeomans, program director of IS-BAH, says that, as of writing, the current figures show that 207 locations have achieved IS-BAH Stage 1, with 70 of those at Stage 2 and two more locations at Stage 3.

Each stage of IS-BAH builds upon the next. Stage 1 confirms that an SMS infrastructure has been adopted and that safety management procedures are being appropriately targeted. Stage 2 ensures that the location's safety management procedures are continuing and that any safety risks are being effectively identified and managed. Stage 3, then, verifies that the safety management procedures are fully integrated into the location's operations and that they are being sustained.

Yeomans says that he's been pleased by the adoption of IS-BAH and the quick growth the program has seen. He adds that a large part of the willingness of FBOs to take on the program is thanks to the positive word of mouth from those already enrolled.



Photo courtesy of American Aero

"I'm pleasantly surprised at the geographical spread of those who have now adopted through to registration the IS-BAH and the range from small, two persons, to the large networks and chains that employ hundreds. That's what we had hoped for, but to see it this early in the program is a positive for all. It's been helped by the willingness of the trailblazing FBOs – not only to support the management of safety in their operations, but to suggest their peers do the same," Yeomans says.

Some of the common feedback that Yeomans says that he's received from IS-BAH accredited locations are that while it can be tough when first adopting, it is ultimately more than worthwhile in the long run. Part of that can be, as Yeomans notes, due to a perceived overcomplication on the part of an FBO when developing and implementing an SMS.

"SMS is just organized common sense. The difficult bit is building trust in the system and realizing that sometimes you have to go back to go forwards more effectively. The SMICG manual 'SMS for Small Operators' is a good document to use for reference to start off," Yeomans explains. "We always let people know that they should take their time and not rush it. Inch by inch is a cinch; yard by yard is hard."

Seeing the Benefit

ExecuJet, which manages 26 international FBOs on behalf of Luxaviation Group, has 11 IS-BAH accredited locations. Their Berlin FBO was the first German location to receive IS-BAH Stage 1 accreditation in 2015 and is currently Stage 2 accredited. In total, six of ExecuJet's locations have become Stage 2 accredited – Brussels, Dubai International, Dubai South, Johannesburg, Zürich, as well as Berlin.

Ettore Poggi, president – fixed based operations, Luxaviation Group, says that they saw the benefit of the IS-BAH adoption soon after the program's launch.

"We recognized the significance of IS-BAH very early on and identified it as an opportunity to further exhibit our commitment to exhibiting the highest standards in terms of safety and service," Poggi says. "Since adopting the IS-BAH accreditation, we have directly seen an increase in safety awareness, a decrease in incidents and a number of com-



mercial benefits, including operators opting to use IS-BAH certified locations."

Another early adopter of IS-BAH, American Aero FTW achieved IS-BAH Stage 1 accreditation in February 2015, Stage 2 in February 2017 and Stage 3 in October of 2018. American Aero was the first FBO in the western hemisphere to make Stage 2 accreditation and the first in the world to achieve Stage 3.

From its first introduction, American Aero FTW saw IS-BAH as the new standard of safety and something worthwhile to pursue.

"When IS-BAH was first introduced in 2014, we understood that this was about establishing a rigorous new safety standard for ground handling. Our founder and management team understood the value and determined immediately that we would lead the industry in this effort," says Angela Thurmond, general manager of American Aero FTW. "We knew we could achieve IS-BAH registration because American Aero already had a culture in place that constantly sought out ways to improve safety. While earning IS-BAH registration is a challenging process, we found it easier to adapt to the IS-BAH mentality because of our existing philosophy of constant improvement for the benefit of our customers."

Affiliated with a corporate flight department that has achieved International Standard for Business Aircraft Operations (IS-BAO) Level 3 certification, American Aero received guidance from their affiliate when beginning the IS-BAH process.

"The affiliated flight department has traveled the world and experienced FBOs of all types. With that guidance, American Aero has adopted the best features of the best FBOs – and then raised them a notch," Thurmond describes. "With help from its sponsoring flight department, American Aero did not hesitate to pursue IS-BAH certification when it was first introduced."

Thurmond describes American Aero's leap from Stage 2 to Stage 3 accreditation as a natural progression of the safe environment they provide for their customers and employees. Though to ensure they made the progression, American Aero followed four specific steps: Retooling and expanding their safety performance indicators; strengthening the relationship between their safety manager and their accountable executive; increasing their emergency response plan drills; and ensuring a "just culture."

"The challenge to make the leap from Stage 2 to Stage 3 was to retool and expand our safety performance indicators, or SPIs, used to determine overall functionality of safety performance. We had to take a 'deep dive' into years of data to match where our safety targets, alert levels and goals should be for an operation that has been measuring safety performance for five years," Thurmond says.

"One of the main tenants of IS-BAH is a shared accountability. An organization that seeks to maintain a just culture and a positive work environment must hold itself

accountable for any negative outcomes created by errors or oversight in the training it provides or in the systems and procedures it puts in place,” she continues. “Equally, its employees within that organization must be held accountable for following procedure and participating in the SMS. However, for this sharing of accountability to succeed, both parties must be careful in the assignment of blame for when things don’t go as planned or an accident or incident occurs. Everyone within the organization must be allowed to speak freely and honestly about something that went wrong in order to make corrections. At American Aero, we encourage our staff to report safety issues and mistakes that are committed by their superiors. This fosters the idea that anyone is capable of making a mistake, and anyone can bring it up for discussion for learning purposes, without fear of retribution.”

For ExecuJet, Poggi explains their multiple FBO locations and associated IS–BAH accreditations were an easy adoption when coupled with ExecuJet’s prior, self-implemented safety culture.

“ExecuJet already has a high standard of operating procedures in place with a company-wide safety management system and a ‘no blame’ incident reporting culture – IS–BAH has brought this all together in a recognizable form for all staff to take on board. We have our own IS–BAH accredited auditor who conducts internal inspections to enable ExecuJet to maintain our high standards and undertake third party audits for other FBOs. We view this as helping the industry as a whole to be safer,” Poggi says.

Poggi adds that they’re making plans for IS–BAH Stage 3 accreditation, but in the immediate are shoring up their Stage 2 accreditations and getting their new FBOs IS–BAH Stage 1 accredited.

“Stage 2 is a process of continuous improvement and in order to maintain this level of certification, continuous improvement must be demonstrated. Stage 3 is in planning phase and we will continue to access the benefits provided, but for the immediate future we will focus on continuous improvement and moving our new FBOs to Stage 1 and 2 accreditations,” explains Poggi.

Getting Started with IS–BAH

While the program has grown greater than expected, there are still locations without IS–BAH accreditation. As IS–BAH and its benefits have become more prolific, more and more operators are beginning to require IS–BAH accreditation to do business with an FBO, Yeomans says.

That push along with the great word of mouth from participating FBOs is getting more FBOs involved with the program, but as

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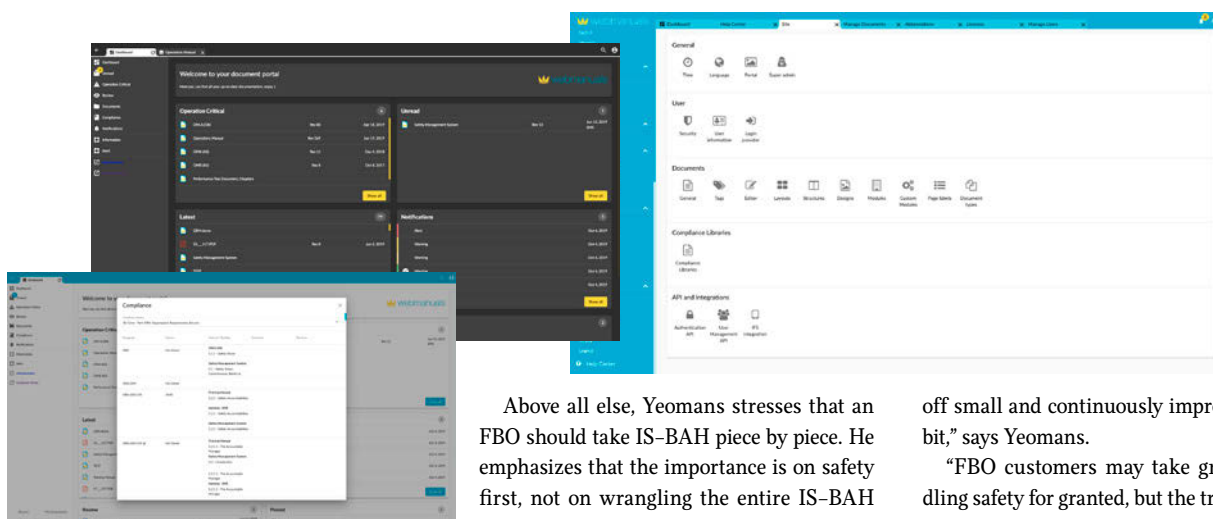
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Photos courtesy of Web Manuals

Yeomans notes, where and how to begin can be tough.

For operations looking to begin the IS-BAH process, Yeomans says that the best starting place is with an IS-BAH Workshop. The workshops go over the background and general information of IBAC and IS-BAH, implementing an SMS, as well as implementing and improving organization, training, standard operating procedures (SOPs), company operations manual, emergency response planning, environmental management, occupational health and safety, transportation of dangerous goods, security and the IS-BAH auditing process.

For locations looking to get started or currently seeking IS-BAH accreditation, an important step is keeping current with IS-BAH regulations and its supporting manuals. Web Manuals, a digital, cloud-based document management solution, offers 20 IS-BAH related documents as part of its digital library, with one IS-BAH client utilizing the service worldwide.

“One of the keyways that Web Manuals can help an FBO become IS-BAH accredited is through its capacity as a safety and security enabler. For an FBO to be recognized with IS-BAH status, they must exhibit the highest practices and standards in safety management. Using Web Manuals’ document digitalization tool, users can keep important manuals up-to-date, ensuring they adhere to the very latest regulatory changes. Above all, digital manuals save customers valuable resources and ensure that operations are safe, efficient and compliant,” says Martin Lidgard, founder and CEO of Web Manuals.

Above all else, Yeomans stresses that an FBO should take IS-BAH piece by piece. He emphasizes that the importance is on safety first, not on wrangling the entire IS-BAH program at once.

“It’s tough thinking outside the box and working through the processes of their everyday operations, document what they do and where. The whole system is built on starting

off small and continuously improving bit by bit,” says Yeomans.

“FBO customers may take ground handling safety for granted, but the truth is it can never be assumed,” Thurmond adds. “Safety is a byproduct of competencies. Achieving IS-BAH certification is about developing and demonstrating those competencies, yielding safer operations.” **GSW**



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Ground Handling Keeps Pace in Argentina

Although infrastructure constraints and employee turnover are a challenge for the country's ground handling industry, business is on the rise.

By Mario Pierobon

During recent years, the commercial aviation industry has increased considerably in Argentina. Despite constant crisis scenarios in the country, as the industry itself expanded worldwide, Argentina has not been the

exception. Indeed, Argentina's aviation market has great potential in the Latin American region and has taken a more liberalized approach in recent years.

The industry has grown positively, which has created new employment opportunities and it has

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begun to tackle infrastructural constraints and develop airports.

The Aircraft Ground Handling Industry

"We have seen an increasing number of new airlines entering the market – Norwegian, Flybondi and JetSmart, as well as the development in Buenos Aires of El Palomar which is the first low cost airport in Argentina. We have also witnessed an approximate 60 percent growth in total domestic passengers between 2015 and 2019," says José Canales, senior vice president LATAM at Swissport. "In our view the domestic market will continue to grow despite the economic uncertainty and low-cost carriers working diligently to expand their networks and increase their presence in Argentina even as currency pressure has depressed international demand."

Canales says the ground handling industry closely follows these growing opportunities, but the industry is somehow limited as it cannot participate in ramp services which are controlled by Intercargo, a government related entity.

"We believe that the monopoly of the ramp, infrastructure constraints and mounting trade union opposition could decelerate growth opportunities in Argentina, if not managed adequately," he says.

Alex Verschoor, CEO of CrossRacer – a partner of Universal Weather & Aviation, points out that while numerous renowned airlines have started flying directly to Argentina (to Ezeiza International Airport in Buenos Aires (EZE), in particular) after several years now airlines have reduced frequencies, but still fly.

"General aviation is not an exception, as the flights flow figures have been in the same trend throughout the years," he says.

Employee Turnover Rates

Employee turnover always has been present in the industry in Argentina, although it has considerably decreased over the last several years in direct correlation with the economic crisis.

"Unemployment has increased from 7 percent to 10 percent over the last four years. This notwithstanding, a 10 percent employee turnover is to be expected.



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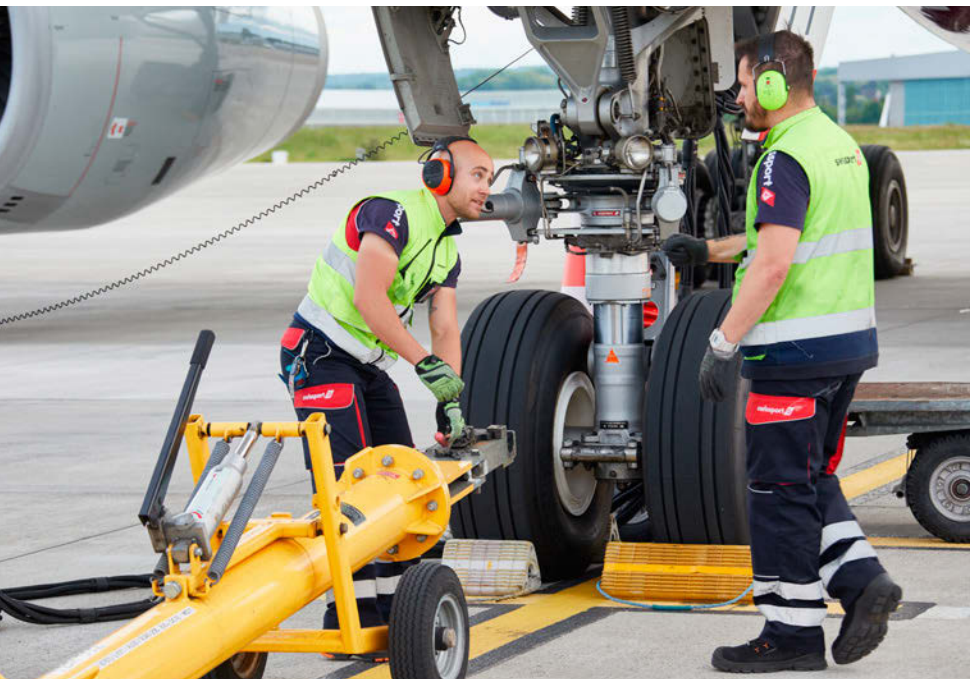


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Personnel training and professionalization is key to retain personnel, especially the most skillful employees," says Verschoor.

Swissport, indeed, is not experiencing a high employee turnover rate in Argentina.

"Good recruitment practices, the thorough on boarding process of new personnel as well as close coaching and mentoring from management help maintain a healthy retention rate," says Canales. "This is also influenced by the fact that the current unemployment rate in Argentina is the highest jobless rate since early 2006. Hence employees are taking care of well-paid jobs from international companies such as ours and the 7 percent growth in the aviation industry in Argentina has helped generate approximately 5,600 additional direct employment jobs."

Infrastructural Constraints

The main operational challenge for the aircraft ground handling industry in Argentina is given by the infrastructure constraints, which are typically a challenge in the region, not just in Argentina.

"Due to the fact that domestic and intra-regional traveling has grown at a faster pace than airport infrastructure, the resilience and resourcefulness of our people in the region make it work somehow," says Canales. "We believe that the main challenge the ground handling industry in Argentina faces is agreeing on the national air transport policy in coordination with all the main stakeholders (government, airport operators, airlines, trade union, ground handlers) to build general consensus to guarantee the successful implementation of key initiatives for the development of the industry."

"When we talk about infrastructure, we do not only refer to the airports but also to the national authority agencies. It is fair to say that this has improved in the past years, but it is far from being ideal," adds Verschoor. "As far as general aviation is concerned, there are almost no efficient facilities in airports throughout the country."

A distinctive feature of Argentina is that there are significant differences

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in terms of the development of aircraft ground handling services between urbanized and peripheral areas of the country. According to Verschoor, this is another infrastructure related constraint.

"In the outback of Argentina, for example, it is hard to find multi-language ATC operators. Not all airports are international, therefore it takes extra time and paperwork to request a domestic airport to become international for a particular flight. Immigration and customs get involved here," he says. "This is an issue especially when time is limited and bureaucracy calls in. It is very important to have enough experience to settle everything in time and to know exactly what it is needed. Under these circumstances, things can be set in a reasonable amount of time."

Canales notes that while Argentina's two leading airports are in the capital of Buenos Aires, Aeroparque and Ezeiza, representing approximately 60 percent of all traffic in Argentina, the remaining top 10 airports, which are in total responsible for just under 90 percent of the nation's traffic, have also shown a level of growth in the last 3-5 years.

"Airports operating close to urbanized areas of the country are obviously growing at a faster rate. But the growth is being experienced in general and just recently Swissport opened up operations in Ushuaia, the capital of Tierra del Fuego and southernmost city in the world," he says.

Argentina has been developing infrastructure investment plans throughout 20 provinces to revamp airport terminals, runways and air navigation systems estimated at \$640 million (USD).

"During the last government legislature (2015-2019) there was a clear political decision in improving such issues," says Verschoor. "Now we are facing a government transition period and we are uncertain on the direction this will take, hoping it will be sustained. We are all expectant and optimistic as we all know this is very important for Argentina's economic development, amongst other economic measures." **GSW**



▶ ABOUT THE AUTHOR:

Mario Pierobon is a safety management consultant and content producer. He currently is working on a research project investigating aircraft ground handling safety. You may reach him at marioprnb@gmail.com.



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MSP Takes on Winter

Airport staff in the Midwest and other cold-weather locations are preparing year-round to keep flights on time.

By Jen Bradley

Minnesota's winters in recent years have proven challenging, and busy, for airport ground support staff, says Mark Rudolph, manager of the Field Maintenance Department at Minneapolis-St. Paul International Airport (MSP).

To honor and recognize this airport team's tremendous efforts in winter weather, they were awarded the Balchen/Post Award for the 2018–19 winter season. The award was presented at the American Association of Airport Executives' International Aviation Snow Symposium in New York this past spring.

"For our team, this is like winning the Stanley Cup," says Rudolph of the 160 people who are called out during ice and snow events at MSP. He

says the management team and on-the-ground staff worked proactively and collaboratively to respond to the 30 snow and ice control call-outs last year, a number which is becoming more common after the last few seasons.

"In February alone, we had some personnel without a day off the entire month," he adds. "Their dedication is a sacrifice. When people get to go home or have holidays with family, they are coming into work."

Photo courtesy of MSP

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Ready for the Ride

The “Polar Coaster,” as meteorologists are calling it, is expected to bring frigid temps and above average snow/ice again this winter. To prepare for the unknown, MSP trains year-round and then ramps up meetings and weather/equipment-specific trainings in the fall.

Winter operations’ meetings involve all tenants and necessary employees – a time to help them learn about winter operations at MSP, as well as procedures and equipment which may be new from the previous season. Communications then extend to pre-snow event conference calls, which airlines are invited to participate in, as well as post-event critiques, to review pros and cons of response efforts.

Personnel efforts are just one part of the prep work before the winter season hits. Rudolph says reliable, quality equipment is a must as well. This year, his department has upped its pavement deicing abilities with additional sprayers to pretreat runways with potassium acetate. The timing with this is critical, as he explains, they don’t want to apply it and have the chemical wash off before it can bond to the pavement.

“We’re basically standing by with those deicers watching surface temperature readings from the runways that our managers see live,” he says. “When the temperature is just right, we can apply that chemical. What we do is scientific, because we have to factor in winds, temperatures, etc.”

Lessons Along the Way

Rudolph came to MSP in 1999, and says that in his 20 years, he’s learned, first and foremost, to listen to his employees, and encourages all airport managers to do the same.

“You need to listen to your boots-on-the-ground, so to speak,” Rudolph explains. “Take their input, watch their behaviors, because once they’re called out, they don’t go home until a snow event is over.”

Then, he offers as advice, that the efforts around pre-planning cannot be underestimated.

“Pre-planning is huge with all of our stakeholders,” Rudolph adds. “We need to have everyone on the same page, not only the Field Maintenance Department, but the air traffic control tower, our tenants.

Everybody has to be on the same page to make this work.”

After listening and planning, winter operations’ staff must be flexible.

“Things change,” he says. “This is a dynamic environment. Sometimes we have to scratch the first plan and go to Plan B.”

Rising to a Super Challenge

As Super Bowl LII host in 2018, Minneapolis had its hands full with a big snow event the same week, right before thousands of football fans headed through MSP.

“People were tired,” says Rudolph. “I was just so impressed that our team management



Photo courtesy of MSP

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and on-the-field staff came together to represent the state of Minnesota and MSP."

A snowy January and February led up to a lot of extra hours working overtime to make sure planes flew, but employee morale remained high during the Super Bowl travel peak hours.

Rudolph says they didn't quite know what they were getting into, and planned for the worst, but everything proved to work for the best and provide an amazing experience for both the staff and the entire airport community.

"It's really a team," he emphasizes about winter operations. "Nobody here says 'I did this or that.'"

Rudolph says when the weather gets tough, he remembers something a colleague told him once: "I look up in the terminal windows and think of that little boy or girl sitting there watching us move snow so they can get to their destination – somewhere warm.' It's cool when your employees recognize that." **GSW**



▶ ABOUT THE AUTHOR:

Jen Bradley, owner of Bradley Bylines, is an aviation writer based in Wisconsin. She may be reached via her website at www.bradleybylines.com.

DEPARTURES Terminal 2-Humphrey						
Departing to	Airline	Flight Partner	Time	Status	Gate	
Baltimore	Southwest	35	6:00am	On Time	H8	
Boston	JetBlue	2288	6:00am	On Time	H8	
Brussels	Airbus	836	10:17am	On Time	H8	
Camden	Sun Country	671	6:00am	On Time	H1	
Charleston	Southwest	35	6:00am	On Time	H8	
Chicago - Midway	Southwest	519	7:10am	On Time	H8	
Cincinnati	Southwest	2091	6:15am	On Time	H8	
Dallas - Love	Southwest	35	6:00am	On Time	H8	
Dallas - Love	Southwest	8922	6:00am	Cancelled		
Denver	Southwest	743	6:10am	On Time	H8	
Denver	Southwest	1127	6:40am	On Time	H8	
El Paso	Southwest	2061	6:35am	On Time	H8	
Fort Myers	Southwest	8922	6:00am	Cancelled		
Houston - Hobby	Southwest	35	6:00am	Cancelled		
Las Vegas	Sun Country	101	6:00am	On Time	H4	
Los Angeles	Sun Country	421	7:00am	On Time	H8	
Miami	Sun Country	313	7:00am	On Time	H8	
Montego Bay	Sun Country	725	6:40am	On Time	H8	
New Orleans	Sun Country	585	7:50am	On Time	H1	
Oakland	Southwest	2061	6:35am	Cancelled		
Orlando	Sun Country	341	6:55am	On Time	H5	
Phoenix	Sun Country	603	7:55am	On Time	H7	
Phoenix	Southwest	934	8:15am	On Time	H4	
Portland	Sun Country	293	8:40am	On Time	H4	
Florida Gate	Sun Country	746	8:50am	Cancelled		

Photo courtesy of Sun Country Airlines

SUN COUNTRY THRIVES IN WINTER

R. Brian Davis, vice president of ground operations for Sun Country Airlines says that it's rare for them to cancel a flight due to snow.

"We have an industry-leading 99.8% completion factor," Davis says.

"However, safety is our number one priority in our decisions."

He says that aircraft deicing procedures are very well defined, and the airline follows strict FAA guidelines, at all times. They own their own deicing trucks but use a third-party ground support provider for labor. While Davis explains Sun Country doesn't have a no-cancellation policy, its four deicing trucks and weather monitoring help make decisions and can deice four aircraft in an hour.

Davis explains there is an additional cost for deicing to maintain the company's flight completion rate, but it's well worth the investment.

"Especially being based in Minnesota," he adds. "Our operation is uniquely poised to operate throughout the toughest of winter weather."

Rising to meet Minnesota's harsh winter weather hasn't always been easy, but Davis says his team's greatest accomplishment came last year during the polar vortex, which hit this Midwest airport.

"Because of our preparedness in cold-weather situations we were able to move forward and not cancel any flights on this day," he notes. "We have hired employees and management that are well-versed in cold-weather operations and believe we have one of the very best teams in the industry."

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More Oversight for Safer Fueling

The TCS 3000 electronic register ensures accuracy for ground service providers tasked with safely loading fuel into aircraft.

Fueling an aircraft is a complex procedure where each delivery must be performed safely and accurately.

So, Total Control Systems (TCS) has developed a register to help control and automate the delivery process. The TCS 3000 is an electronic register designed to transform the way fuel is delivered. It has been engineered to control most vehicle delivery operations. Fuel marketers have a legal obligation to have a meter on their fuel truck for custody transfer, explains Dan Murray, president of TCS, adding there must be a printed or digital delivery ticket for the point of sale. The register also becomes a central resource for all the digital sensor integration and intelligence on the vehicle.

While TCS began manufacturing flow meters in 1995, the development and design of the TCS 3000 began in 2008. Production began two years later and flow meters were put into the field.

"There were multiple controllers on refuelers at the time with the inability to integrate. We were limited on what was commercially available at the time," Murray says. "We had to basically start from scratch and that is where we came up with the TCS 3000 register."

Murray says the TCS 3000 holds up better than previously utilized electronic registers.

"Our company revolves around a critical industry where time is money. These guys out there have large, expensive refueling equipment. The last thing they want to have happen is to take that truck out of service because the electronic counter does not work," Murray says.

TCS offers an exchange program for users who are looking to upgrade or are in need of a quick repair.

"Sometimes bad things happen and we have to work with the customer to keep them going. The exchange program works great for that.

It's been available since we released the TCS 3000 to market and I believe it provides value to the airlines, operators and FBOs," Murray says.

Often, if a register is connected to the TCS HUB, the company's cloud-based server and data repository, TCS can simply pre-program an exchange register front cover and send it to the

By Eavan McGrath



All photos courtesy of TCS

customer for an easy replacement. What's more, any ticket that was ever created, along with the last calibration report, are viewable on the computer screen.

"If they have to do an exchange or have a failure at any point, they can print out or take a picture of what is on the delivery screen. And when we replace the register, we can make sure all the conditions and parameters are set up the same way," Murray says. "Often times, the weights and measures guy will compare the two and sign off without having to recalibrate."

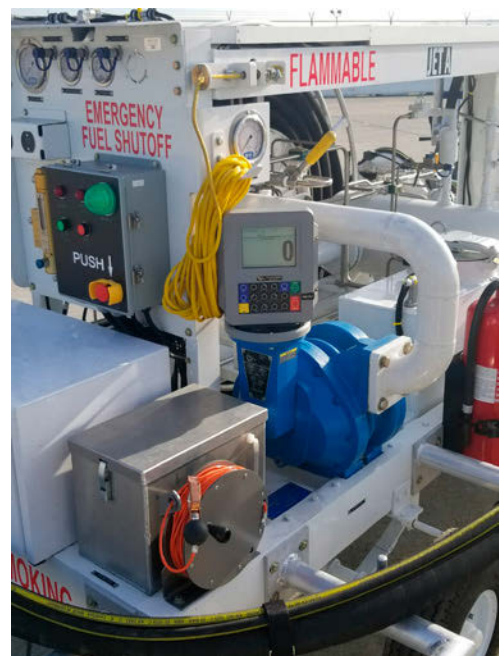
TCS Hub uses data collected from the meter to export delivery tickets to various back office accounting software and provide reporting, trends and analysis of refueling and maintenance on the refueler and tank farm.

"We have resources and videos on how to program, operate and calibrate the TCS

3000 register, in addition to various other vehicle related information too. Fleet managers can generate a report on refuelers at one location or of their entire fleet from around the world. Everything is available online," Murray notes.

The TCS 3000 register and the TCS HUB give companies the ability to manage their fleet on the go. It provides the efficiencies and maintenance that companies can manage their trucks from one to the other to make sure everything is running as expected. TCS focuses on developing safety features within product settings to set permissives that are required on vehicle refueling.

"Delivery shutdown permissives for out of tolerance of OnPoint integrated technologies, such as the additive, differential pressure, density and water by controlling the pumps and control valves," Murray elaborates.



One of the main features is the OnPoint Pneumatic or Electronic Additive Injection.

"The additive measurement and control is not automated currently today. We measure, control and automate the injection, ensuring the precise measurement of additive for every delivery request. Then we provide a delivery ticket with this additive information, giving the pilot an assurance that his request was carried out as expected," Murray says.

Murray notes TCS has created a 7-inch display screen with 2-inch characters that is easily viewable by day and night from 50 feet away, along with multiple other delivery screens available for all other all pertinent information to be shown.

"You can see your on-board tank inventory, additive, differential pressure, density and water on a delivery screen without having to print it on a ticket," Murray says. "All of these things are extremely important for operators to manage their fleet. We have very clear icons on the screen that tell you what is going on and there is a diagnostic message screen below. It basically gives ground handlers a blueprint on how to run it."

Ten years into the development of the TCS 3000 registration product line, TCS debuted its Generation 2 model in 2019.

The key difference between the Gen 1 and the Gen 2 models, explains Murray, is the



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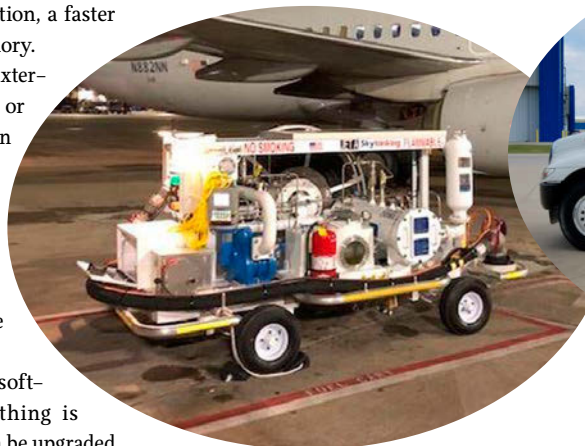
internal wireless communication, a faster processor and increased memory.

"In Gen 1 you can only use external cellular Bluetooth, Wi-Fi or radio modems. In Gen 2, we can still use those same external modems, but we also have an internal cellular Wi-Fi Bluetooth modem. There is also a 7-inch display versus a 5.7-inch display. The core software is the same," Murray says.

Regardless of the level of software or registration, everything is backwards compatible and can be upgraded.

"These software upgrades are relevant to safety, security and quality aspects that come up from time to time with regulation and policies that we have to be able to incorporate. All of our software upgrades are not to just add new features, but to make sure that our product is legal with regional metrology requirements," Murray points out.

Having the right equipment is paramount, especially for difficult applications such as flight schools or ground service fueling at night when there can be hundreds of refuelings done in a short amount of time. TCS can tailor the product to this specific application to preform faster and more efficiently.



"They must buy the electronic register first. All the software there is capable of being upgraded. You can also add different equipment integration to the register whenever you feel like it," Murray continues. "The most fundamental thing that you have to do is get the register on there. If you want wireless communication, you must advise what you want to do with it. We need to know which modem is preferred. We do a sight serve to figure out what is actually best.

"We also do RFID for ground fueling equipment," Murray says, noting this technology can help prevent gas or diesel misfuelings. "We provide the traceability

to the into-plane service company as far as what ground service equipment has been fueled and which ones have not."

According to Murray, more upgrades can be expected as this register will never be completed.

"Right now, we control the additive injector per meter," he says. "We are developing and releasing early next quarter a three-injector controller. The refueler will use our OnPoint additive injectors to properly inject, control and measure FSII, CI/LI and SDA for NATO grade F24 jet fuel on the fly."

Another new development for 2020 will be the introduction of a UL/Atex Zone 1 housing construction for terminals and fuel farms. [GSW](#)



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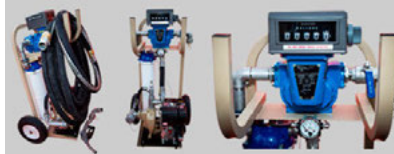


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Small Changes, Big Results

Resolve to do the little things better and see where you end up this time next year.

We've reached the time of year where it is customary to evaluate our lives and make declarations for improvement before the calendar flips to January.

This is a great practice for our personal and professional lives. But, of course, New Year resolutions can start with noble intentions and fizzle out a short time later.

While attending the NATA Ground Handling Safety Symposium this fall, Mike France, the association's managing director of safety and training, encouraged attendees to examine their list of takeaways from the event. Then he instructed everyone to identify three small changes, improvements or updates that could be implemented right away.

This idea really stuck with me.

Large, long-term goals are important. That goes without saying. But how often have we fallen into the trap of taking on more than we can handle?

That's why making small changes is logical. A minor tweak to a daily task can build better habits over time and lead to larger improvements.

So, I share Mike's words with you, and encourage you to do likewise. Whether you're employed by a GSE manufacturer, ground handling company, airline or otherwise, take a critical look at your day-to-day operations. Are there small changes that could be applied to improve safety, efficiency, organization, thought processes, etc.?

Sometimes the biggest improvements start with the slightest steps. So, don't overlook small details. Resolve to do the little things better and see where you end up this time next year.

Happy New Year.

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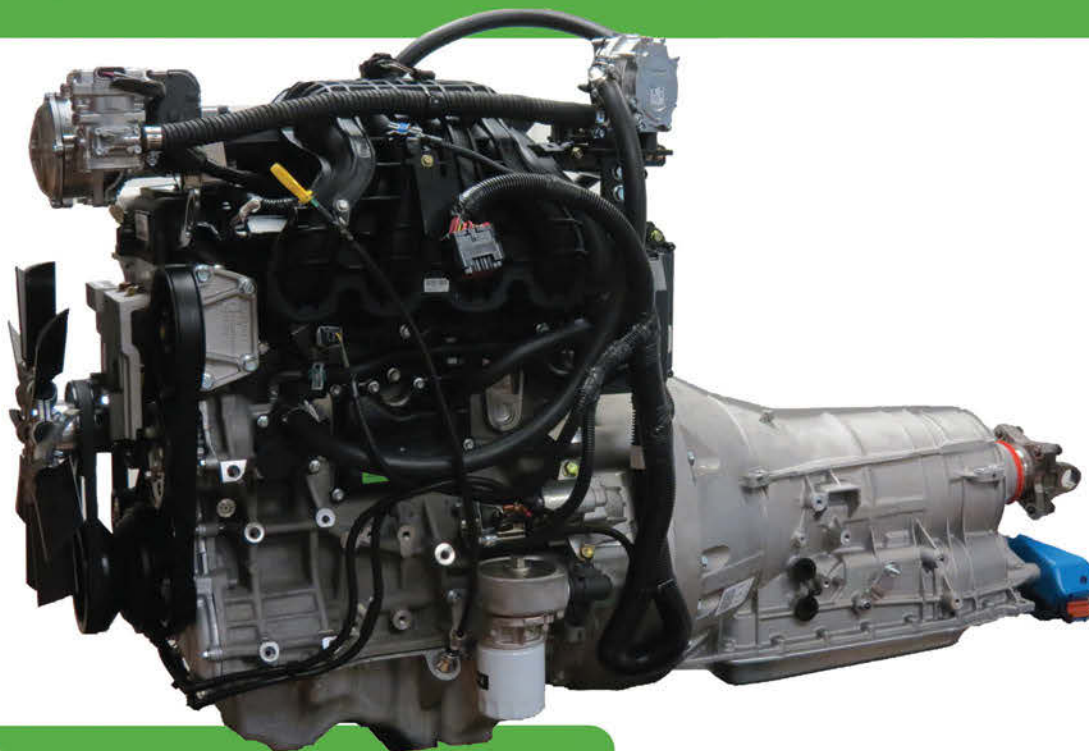
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