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MARCH 2023

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How GSE shops can efficiently utilize personnel to overcome present-day challenges.

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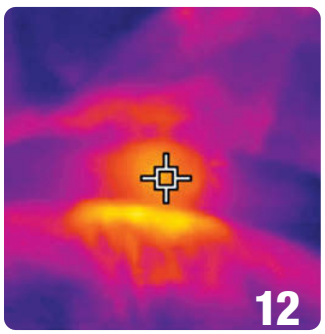

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By AviationPros Staff

Following procedures for FOD checks and conducting FOD walks ensure safe aircraft movements.

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By Christina Marsh

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Editor's Note

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Focused on Improving Safety

An SMS is essential to ensuring operations across the aviation industry are carried out while keeping people out of harm's way.

The ground support industry takes safety seriously – as it should.

In this issue, there are numerous examples of the industry sharing crucial information and demonstrating best practices to conduct ground service safely. In the following pages, you will find information on properly maintaining ground power unit (GPU) cables, updated training to avoid misfueling aircraft and efforts to mitigate ground damage and delays, among others.

Recently, the Federal Aviation Administration (FAA) announced a new rule designed to help airports detect and mitigate safety problems in order to prevent accidents or safety incidents. The keystone behind this rule is a requirement for certain airports to develop and implement a safety management system (SMS).

"The safe operation of our nation's airports is paramount during these historic times in aviation as we work to repair and construct necessary airport infrastructure," FAA associate administrator for airports Shannetta R. Griffin, P.E., said in a news release announcing the new rule. "This rule promotes safety and allows airports to work collaboratively with partners to mitigate risks and avert accidents."

According to information supplied by the FAA, the final rule applies to more than 200 commercial airports across America. Depending on classification and operations, airports that do not have an SMS established will have a timeline ranging from 4-5.5 years to fully implement one. The rule takes effect 60 days after publication in the Federal Register.

> "The safe operation of our nation's airports is paramount during these historic times in aviation as we work to repair and construct necessary airport infrastructure. This rule promotes safety and allows airports to work collaboratively with partners to mitigate risks and avert accidents."
>
> *— Shannetta R. Griffin, P.E.*

In the ground support industry, the concept of SMS isn't new. Ground service providers and FBOs have been utilizing SMS to improve ground operations and secure key certifications in the industry.

An SMS actively looks for safety issues in a business' operations and services offered, considers safety objectives and identifies safety concerns. The framework for an SMS is included in the International Civil Aviation Organization's (ICAO) international standards and recommended practices as part of Annex 19 to the Convention on International Civil Aviation.

For an FBO to achieve registration in the International Standards for Business Aircraft Handling (IS-BAH) program, that business must have an SMS in place. An SMS serves as the backbone of IS-BAH and helps an organization maintain best practices as the SMS matures and evolves.

The IATA Safety Audit for Ground Operations (ISAGO) is an industry global standard designed to improve the safety of ground operations and standardized operational procedures. ISAGO registration requires a ground service provider to implement an SMS if there are no regulations similar to those applied to air and airport operators.

To ensure safe practices are conducted consistently across the industry, oversight and audits are key. An SMS is crucial to identifying risks and taking steps to mitigate potential dangers.

SMS implementation has been best practice for some time now. However, given the importance of safety in aviation, in general, and ground support, specifically, we could see SMS implementation become a necessity. **GSW**

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TOP NEWS

Menzies Pilots New EV and Charging Infrastructure at LAX

Menzies Aviation is piloting Mullen Automotive electric vans and Loop Global charging infrastructure across its operations at Los Angeles International Airport (LAX) as it looks for innovative solutions to support its ambitious goal of becoming carbon neutral by 2033.

Menzies has a global GSE fleet of 27,000 that includes more than 8,000 vehicles, at 250-plus airports worldwide and is committed to switching to electric wherever possible to reduce emissions in line with its sustainability strategy.

Mullen and Menzies have agreed to a 60-day pilot program that will evaluate the Class 1 Electric Vehicle (EV) cargo vans in several use cases across Menzies' LAX operations, such as transporting cabin cleaning teams to aircraft.

Loop will provide EV charging infrastructure and fleet operations software to service the Mullen electric vans through its electric vehicle fleet as-a-service (EVFaaS) program.

"Collaborating with suppliers, airports and our airline customers is absolutely vital for Menzies to achieve its sustainability goals. We have committed to switching to electric vehicles wherever possible to reduce our carbon emissions, however charging infrastructure can be a barrier so it's great to be working with both Mullen and Loop to pilot a solution at LAX. Early feedback is positive and I'm looking forward to seeing the results from this collaboration," said John Redmond, executive vice president Americas, Menzies Aviation.

"We hope this pilot at LAX is just a stepping stone in ushering in a new era of fleet electrification at airports throughout the world," added Dustin Cavanaugh, CEO of Loop Global, Inc.

Upcoming Events

March 27-30
NPMA PETRO 23
Washington, D.C.

April 18-20
MRO Americas
Atlanta, GA

April 21-26
International Aviation Snow Symposium
Buffalo, NY

April 25-26
NATA FBO Success & Management Seminar
New Orleans, LA

May 16-18
IATA Ground Handling Conference
Abu Dhabi, United Arab Emirates

Venice Airport Retrofits Vestergaard BETA Deicers with Radar Sensors in Italy

Venice Marco Polo Airport (VCE) recently upgraded its Elephant BETAs with new radar system technology created by the Vestergaard Company to enable contact-free deicing.

Deicing tusks have been a good solution for many years, but as technology advances, aircraft materials are also changing, and new generation aircraft are constructed with carbon composite materials.

Accidental mechanical contact with these new fuselage structures requires inspection of this area and may result in flight delays.

With the radar system, an aircraft touch is avoided completely. Tusks are replaced by a radar system near the deicer spray nozzle, which initially slows down the movements of the deicer when approaching an obstacle, then stops it completely when a minimum distance is reached.

Retrofitting of the first vehicles was possible for the newer generation of the BETAs and carried out in January. A Vestergaard mobile service team did the installation at Marco Polo Airport, and the units were the first modified in that way in Italy.

At present, numerous aircraft have been deiced with the radar-equipped BETAs. Andrea Florian, safety supervisor at Marco Polo Airport, in a Vestergaard

news release stated the technology is easy to use and works reliably in any weather, including fog or precipitation.

Neste Supplies Sustainable Aviation Fuel to Boeing

Boeing has agreed to purchase Neste MY Sustainable Aviation Fuel supplied by EPIC Fuels, Signature Aviation and Avfuel to power its U.S. commercial operations through 2023. These fuel purchases more than double Boeing's SAF procurement from last year. Neste's SAF will be blended with conventional jet fuel at a 30/70 ratio to produce 5.6 million gallons of blended SAF.

"As one of the top aircraft manufacturers in the world, Boeing is sending a clear message to the entire aviation industry through this purchase that SAF is a key solution to reduce greenhouse gas emissions from flying," said Michael Sargeant, vice president, Americas, renewable aviation at Neste. "We are proud to be a part of this collaboration along with our partners EPIC Fuels, Signature Aviation and Avfuel."

EPIC Fuels, Signature and Avfuel will supply blended SAF for Boeing's eco-Demonstrator program and the company's fuel storage in Washington state and South Carolina. Additionally, EPIC Fuels and Signature will supply blended SAF for generating emissions reduction benefits for Boeing to allocate for company operations including Dreamlifter and executive flights, and commercial airplane deliveries.

ESS Inc. Energy Storage to Accelerate Air Industry Decarbonization for Schiphol

ESS Inc., a manufacturer of long-duration energy storage systems for commercial and utility-scale applications, is delivering its iron flow battery solution to Amsterdam Airport Schiphol in Q1. The Energy Warehouse will be used in a pilot to enable the retirement of polluting diesel generators in the future as part of Schiphol Airport's ambitious sustainability plan.

A pilot will be carried out with the Energy Warehouse to recharge electric ground power units (eGPU). eGPUs are batteries which will replace the diesel ground power units currently used to supply electrical power to aircraft when parked at the airport.

"The decarbonization of air travel is crucial and Schiphol is leading the way," said Alan Greenshields, ESS director Europe. "We are proud to partner with a leading airport operator to demonstrate and pilot the key role that long-duration energy storage will play in helping to decarbonize airport operations and reduce ground level emissions, improving air quality for airport and airline employees and passengers."

"We hope that the partnership with ESS enables Schiphol to advance our electrification and decarbonization strategy," said Oscar Maan, Royal Schiphol Group manager of innovation. "If this pilot is successful, this is a double win as it both reduces our carbon footprint and reduces air pollution."

Government Funding Supports General Aviation's Progress Toward Lead-Free Future

President Biden at the end of 2022 signed a bill that recognizes the collaborative industry-government effort to move general aviation to a fleetwide drop-in, lead-free fuel solution no later than 2030 by including $10 million for additional unleaded fuel testing and evaluation.

The funds allocated by Congress will support the EAGLE partnership and may be used to expedite fuel testing and evaluation for safe unleaded fuels being assessed in the Piston Aviation Fuels Initiative (PAFI) program, leading to an FAA fleet authorization. Two unleaded 100-octane fuel candidates, those developed by Afton Chemical/Phillips 66 and LyondellBasell/VP Racing, are currently undergoing testing under the PAFI program, and are both showing progress.

Additionally the funds may be used to conduct field demonstration programs for 100-octane unleaded fuels that have received FAA Type Certificate (TC) or Supplemental Type Certificate (STC) approvals.

The STC process is one route fuel manufacturers can pursue with the Federal Aviation Administration. General Aviation Modifications, Inc's., G100UL fuel received authorization via the Supplemental Type Certificate path in September. Swift Fuels expects to receive STC authorization of its 100R unleaded higher-octane fuel in 2023.

These funds may also be used to further advance research, development, and innovation to support both of these paths, leading to a possible update to FAA certification guidance.

Hactl Receives Two Honors from the Environmental Campaign Committee

Hong Kong Air Cargo Terminals Limited (Hactl) has received both the Transport and Logistics – Gold Award in the Hong Kong Awards for Environmental Excellence (HKAEE), and Hong Kong Green Organization Certification (HKGOC).

The HKAEE aims to promote the adoption of green management in business. The scheme provides benchmarking against best practice, and recognizes the best-performing companies and organizations.

HKGOC meanwhile benchmarks organizations' green management, encourages environmental practices, and recognizes environmental achievements and commitment. Both the award and certification schemes are operated by the Environmental Campaign Committee.

Hactl executive director and chief financial officer Amy Lam received the award at a ceremony attended by senior representatives of Hong Kong industry, commerce and government.

PEOPLE

dnata Catering and Retail UK Appoints New Chief Executive Officer


McClelland

dnata has announced the appointment of Lynn McClelland as chief executive officer of the company's Catering and Retail Division in the United Kingdom.

In her role, McClelland will head dnata's catering and retail operations at 18 airports across the UK.

With significant experience in previous executive roles, including head of British Airways Global Catering and director of worldwide operations for IAG Cargo, McClelland has delivered large scale change in a wide range of positions within both the transport and food industries."We are delighted to announce the appointment of Lynn with dnata Catering UK. Lynn brings a wealth of international experience and has a demonstrable track record in building high performing businesses and teams, driving operational excellence, understanding our customers' needs, as well as financial and change management," said Robin Padgett, chief executive officer of dnata catering and retail.

"With her broad expertise and passion for culinary excellence, Lynn is well-positioned to lead our dedicated team and help dnata's customers deliver on changing traveler expectations and needs."

dnata currently provides quality catering and retail services to 38 airlines with a team of over 3,000 professionals in the UK.

Hernig Becomes New Managing Director at PACTL for Lufthansa Cargo


Hernig

Carsten Hernig is now deputy general manager and vice president of production, sales and marketing at Shanghai Pudong International Airport Cargo Terminal Co. Ltd (PACTL). He is responsible for production, sales and marketing at the joint venture between Lufthansa Cargo and Shanghai Pudong Airport.

He previously was vice president of the Latin America & Caribbean region at Lufthansa Cargo.

"I am very pleased that we are welcoming Carsten Hernig, an experienced Lufthansa employee, to this important interface," said Dietmar Focke, chief operations officer and chief HR officer at Lufthansa Cargo. "His extensive experience at Lufthansa Cargo, especially in the international arena, makes him ideally qualified for the new tasks."

Hernig has been responsible for various functions in the Lufthansa Group for more than 25 years. He succeeds Christian Haug.

Hooghe Becomes Swissport Chief Financial Officer


Hooghe

Jourik Hooghe has joined Swissport International AG as group chief financial officer (CFO) and has become a member of group management.

He succeeds Iván Nash Vila, who communicated his intention to step down from his position in 2022. Hooghe joins Swissport from Wizz Air, one of the largest and fast-growing low-cost airlines in Europe. He will report to Warwick Brady, president and CEO of Swissport.

"I am pleased to announce Jourik Hooghe as our new Group CFO," said Brady. "Jourik can draw on extensive industry experience in various senior finance and commercial roles. As the CFO of Wizz Air, he successfully guided the airline through the COVID economy. I look forward to having him on the team to support us in creating value for our customers and our shareholders."

Before joining Swissport, Hooghe served as executive vice president and group CFO of Wizz Air. Prior to that, he was senior vice president group strategy, finance and accounting for the Adecco Group.

Magma Aviation Appoints James Gilliard as Head of Commercial

Magma Aviation, a air cargo solutions company, has appointed James Gilliard as head of commercial.

Gilliard brings with him 20 years of aviation industry experience, joining the business following two and a half years at IAG Cargo in London where he was regional sales manager.


Gilliard

Previously, Gilliard held a number of senior roles at Etihad Airways, Gulf Air and Jet Airways.

His career in air cargo began in 1989 with Cathay Pacific, where he spent almost 18 years.

"It's not every day a career opportunity so fitting comes along, so I am thrilled to be joining the dynamic and creative team at Magma Aviation, to support and build upon the success story here," said Gillard.

"The future of Magma Aviation is extremely exciting, and I will relish the opportunity to contribute to those impressive growth plans," he added.

NEW DEALS

DoKaSch Temperature Solutions and All Nippon Airways Sign Master Rental Agreement

All Nippon Airways (ANA) and DoKaSch Temperature Solutions have signed a master rental agreement (MRA). The German specialist for active temperature-controlled packaging solutions is henceforth providing its Opticooler containers to ANA's PRIO PHARMA, a dedicated product for pharmaceuticals, and PRIO TEMP, a temperature-controlled product for non-pharmaceuticals.

The MRA now provides access to DoKaSch TS's globally available container fleet. The temperature-controlled packaging solution is available in two sizes: as Opticooler RAP, providing space for five euro pallets and as RKN for one pallet. Redundant systems for electrification and full air conditioning enable precise heating and cooling without dry ice.

"Securing cold chains are becoming increasingly relevant as Japan's pharma and biotech industry is growing strong. By introducing the active temperature-controlled Opticooler and with very high level of reliability and safety, we would like to enhance our service level to meet our valued customers' increasing demand to secure cold chains," said Dai Yuasa, All Nippon Airways vice president of global marketing, cargo marketing and services.

"Together with the opening of our new service station in Narita and the founding of our own Japan subsidiary, the master rental agreement with ANA is another important step in providing Japanese customers in particular with a reliable option for temperature-controlled transports," added Andreas Seitz, managing director of DoKaSch Temperature Solutions.

Aviator Signs a New Partnership Agreement with Lufthansa Group for Five Years

Aviator Airport Alliance, a full-range provider of aviation services at 15 airports across the Nordics, has announced a new partnership with Lufthansa Group.

Under the agreement, Aviator will provide ground handling and deicing/anti-icing services to Lufthansa Group's airlines, including Deutsche Lufthansa AG, Swiss International Air Lines and Austrian Airlines, at Stockholm-Arlanda airport for the next five years, starting in May. The deal covers around 111 turnarounds per week for the group.

"It is with great enthusiasm that we welcome Lufthansa Group as our new client. We trust that this long-term contract will provide us with ample opportunity to demonstrate our commitment to providing best-in-class services, and we look forward to forging a strong and successful partnership with them. We take pride in delivering quality services, and we are confident that our team's dedication and experience will exceed Lufthansa Group's expectations," said Jo Alex Tanem, CEO of Aviator Airport Alliance.

"After our successful collaboration in Copenhagen and Gothenburg, we look forward to expanding our collaboration with Aviator in Scandinavia. This strengthens the position and brand presence of the Lufthansa Group in Stockholm-Arlanda," said Sven Thaler, regional manager Northern Central Europa from Lufthansa Group.

Saudia Cargo Awards Multi-Station Contract to Worldwide Flight Services

Saudia Cargo has awarded a landmark multi-station contract to Worldwide Flight Service (WFS), which significantly extends cargo handling services across major key airport gateways in Europe and the United States.

WFS will now be handling more than 160,000 tonnes of cargo annually for Saudia Cargo, in addition to providing ramp handling services for air cargo shipments onboard over 5,000 passenger and freighter flights per year.

"WFS is a global leader in providing cargo handling services and by awarding this contract to them, we are certain that our operations in pivotal stations on the European and American continent that are part of WFS' network, will considerably benefit from their highly reliable expertise," said CEO of Saudia Cargo Teddy Zebitz.

"We are honored by Saudi Cargo's trust and confidence in WFS and to be extending our partnership with one of the leading air cargo carriers in the logistics industry. Together, we will combine our efforts to provide the very best service experience for the airline's customers," said John Batten, executive vice president of EMEAA at WFS.

The contract with WFS covers its services at several important stations including Amsterdam, Frankfurt, Paris, London, Manchester, Brussels, New York and Washington.

Preventative Maintenance for GPU Cables

Care should be taken when creating a PM checklist to keep personnel safe while powering aircraft on the ground.

BY BILL STAHL

Preventative maintenance (PM) programs are crucial for proper ground support equipment (GSE) care. This applies to GSE of all types, from belt loaders and tractors to ground power units (GPUs) and pre-conditioned air (PCA) units.

But PM programs are important for GSE parts and components, too. When it comes to GPU cables, regular preventative maintenance is key to avoid serious injuries to ground personnel that use equipment with high electrical capacities.

ITW GSE

Serious employee injuries can be avoided and expensive aircraft damage can be prevented by taking the time to effectively inspect GPU cables before use.

The Importance of PM Programs

To extend cable life and improve the safety of your team, a basic visual inspection of the GPU cable should be done every time the cable is going to be used. Look for kinks, cracking, cuts, drag abrasion or a scrunched jacket. For example, after years of service, it's not uncommon for a cable that is often used on 737s to have a banana-like bend sloping down the cable head. If a potential issue is spotted, it is recommended to perform a load bank test with a thermal imager to check for any hot spots.

Regardless of whether a visual issue is spotted during the inspection, load bank tests should be scheduled quarterly to make sure that the cable maintains satisfactory condition. Many facilities and GSE maintenance teams already have a regular GPU PM schedule, so be sure to check the GPU cable while testing the GPU.

Socket Retention in the GPU Cable Head

Using a proper cable test kit, the socket retention in the cable head should also be inspected regularly to ensure a proper aircraft connection. According to SAE document AIR4365A, loose cable contacts or worn aircraft phase pins can cause "hot plug" issues that can result in loss of the E & F control voltage leading to the aircraft rejecting the external power. Many times, when an aircraft rejects ground power, the GPU is the first thing that we troubleshoot. Often, the issue lies within the cable assembly, specifically at this connection point itself.

The cable head sockets should always have enough tension to hold the cable in place and support the weight of the cable held off the ground. You should never need to rely on a cable strap to hold that tension to the aircraft receptacles. Guidance for the acceptable tension can be found in Military Standard MIL-C-7974, which specifies an insertion force of 80 lbs. +/- 20 lbs. and a maximum extraction force of 100 lbs.

It is recommended that each phase socket (A-D) be tested with a pin gauge tool and a tension meter. Each of these four phases should test anywhere in between 15 lbs. and 25 lbs. The E & F control sockets will have a much lower tension requirement with a minimum of 1-3 lbs. If any phase falls short of the minimum requirement, it is time to replace the contact section of the GPU cable head.

Don't Pair Contact Sections from Different Cable Providers

The very end of the GPU cable head, known as the contact section, sees more wear than any other part of the cable assembly. This is why several GPU cable manufacturers have developed replaceable contact sections, so that the end-user can replace just the worn-down end, saving a lot of money on lifecycle costs.

Do not, under any circumstance, swap a different contact section onto a different manufacturer's cable. Each manufacturer has their own specially

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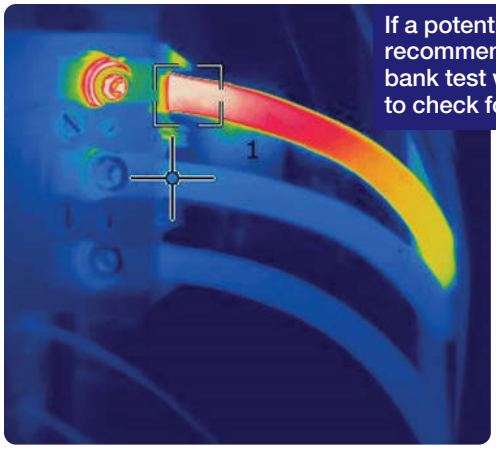

If a potential issue is spotted, it is recommended to perform a load bank test with a thermal imager to check for any hot spots.

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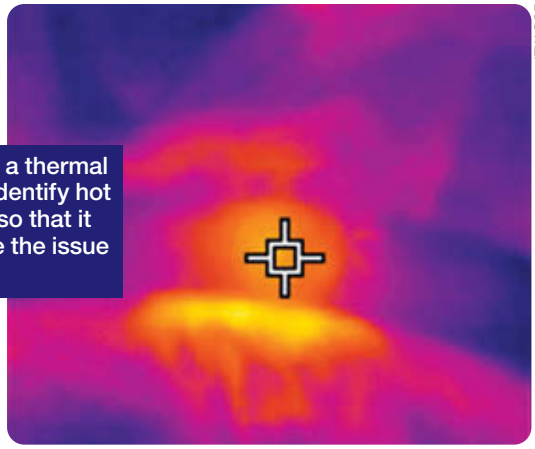

Load bank testing with a thermal imager will be able to identify hot spots within the cable so that it can be replaced before the issue occurs.

made contact sections, which only truly fit their cable. Many make the mistake of forcing a contact section onto another manufacturer's cable; thus, creating a massive safety hazard that could easily lead to water intrusion, which in turn could lead to arc flashes or fires at the aircraft plug.

Adding this to your visual inspection before use any time you're getting ready to power up would prove beneficial. If duct tape is being used to keep a contact section connected to the cable or to patch an exposed conductor, chances are this is a safety hazard and should be replaced immediately.

ITW GSE

Using a proper cable test kit, the socket retention in the cable head should also be inspected regularly to ensure a proper aircraft connection.

Cable Longevity

One of the most common questions we field from our customers pertaining to GPU cables is, "How long do they last?"

Although that's a good question, there really isn't a specific answer to it. There are many variables that contribute to the longevity of these cables.

Independent testing recommends that cables should be replaced after 4,800 insertions. In a hub environment with eight turns a day, that comes out to roughly two years. A high quality 400 Hz GPU cable is made to last several years in a very harsh environment. It's not uncommon to find a cable still in use after 5-10+ years of service. Although we don't like to put a set amount of time on how long a cable should last, a general rule of thumb is that if it's been in use for longer than 10 years, we would recommend retiring it.

The older the cable, the more problems we tend to find. This is why implementing a preventative maintenance program to regularly check GPU cables is so important. Load bank testing with a thermal imager will be able to identify hot spots within the cable so that it can be replaced before the issue occurs.

This is especially important with older cables, which should be tested more frequently than newer ones. After a few years of service, if your cable is still performing at a high level, we would recommend scheduling load bank tests monthly for the remainder of the cable's life.

ITW GSE

It is recommended that each phase socket (A-D) be tested with a pin gauge tool and a tension meter. Each of these phases should test anywhere in between 15 lbs. and 25 lbs.

Conclusion

Basic regular preventative maintenance is key. There are extremely high amounts of electricity passing through these cables every day and the ramp can be a brutal environment for all GSE.

Serious employee injuries can be avoided and expensive aircraft damage can be prevented by taking the time to effectively inspect the equipment before use.

With proper care and maintenance, a high quality 400Hz GPU cable will provide years of reliable service. **GSW**

ABOUT THE AUTHOR

BILL STAHL

Bill Stahl is area sales manager at ITW GSE. He has been with the company's cables and hoses team since 2019. Since coming on board with ITW GSE, he has focused on being a consultant to his customers to ensure that they make the best connections to get the most out of their GPUs and PCAs. He's always willing to assist with training and troubleshooting.

A GUIDE TO GSE MAINTENANCE

How GSE shops can efficiently utilize personnel to overcome present-day challenges.

BY JOSH SMITH

PHOTO 193162238 © VIACHESLAV IACOBCHUK | DREAMSTIME.COM

Across many industries, including aviation, the active workforce and incoming labor pool were drastically affected by the COVID-19 pandemic. Today, businesses around the globe are still working to recruit people to fill job vacancies.

Within the aviation industry, ground support-focused companies are working through personnel challenges on a daily basis.

In the *Ground Support Worldwide* 2023 State of the Industry survey, readers identified finding and retaining staff as the greatest challenge to their businesses.

The next greatest challenge highlighted by businesses was acquiring and maintaining equipment.

These two trending issues paint a unique picture of the challenges being faced by ground support equipment (GSE) maintenance providers.

Personnel Challenges

The number of mechanics in the labor pool have decreased, according to Chris Schaeffer, vice president of GSE at GAT Airline Ground Support. What's more, he notes the experience of those GSE technicians in the labor pool varies greatly.

"They are either high quality or very new to the trade," Schaeffer says. "The high-quality mechanics are looking for higher pay and getting it as is the rule of supply and demand."

The reduced number of veteran GSE mechanics and technicians can be attributed in part to the pandemic's impact on experienced personnel.

"I found mechanics who had years of experience planning to retire in a few years bumped up that timetable post-pandemic," says Schaeffer. "That took away those years of helping mentor less-experienced techs."

Finding and retaining maintenance personnel for the GSE space requires meeting specific criteria both of job seekers and GSE maintenance providers.

"Mechanics with an industrial background understand urgency, can follow a repair manual and are usually good at documenting," Schaeffer notes. "Many of my applicants are heavy duty truck mechanics that want to change into something where they are more appreciated with regular and steady hours for a work-life balance."

Finding a solution to personnel shortages requires a case-by-case approach. According to Schaeffer, finding talented candidates to fill vacant roles is critical. But perhaps more importantly, finding employees who want to learn and grow within the industry can pay huge dividends.

New-hires who wish to learn a skill can start with smaller tasks and then build their knowledge of the industry. While newcomers are assigned less skilled tasks, veteran technicians can be freed up to do repairs that require more experience and training and offer mentorship to team members.

Working as a team, with leaders who value their fellow colleagues, is crucial to keeping mechanics engaged in the GSE industry.

"People can be anywhere to earn a living, but they choose to be here, with you. I make a genuine effort to create an environment of appreciation and respect," Schaeffer says. "Appreciation is in the form of pay, but also seeing mechanics not as a commodity but as tradesmen with years of practice on their craft."

Evolving Maintenance

As GSE maintenance shops continue to recruit the workforce, it is important to consider the types of maintenance tasks that will be performed.

The increased use of electric vehicles (EVs) and a push for more electric ground support equipment (eGSE) across the industry is changing the scope of maintenance required.

eGSE, Schaeffer notes, has far less fluids and filter changes, fewer components to fail, and an easier-to-diagnose drivetrain.

"I've personally and professionally been involved in EVs for a decade and can say they are easier to diagnose," he says, adding that EVs have less downtime and are more robust than their non-electric counterparts.

GSE, in general, is being engineered to require less maintenance and upkeep, according to Gerry Hoadley, director of ground support equipment at Waev Inc.

He notes that routine maintenance is greatly reduced on GSE powered by lithium-ion (Li-ion) batteries, which reduces associated costs.

"This cost reduction stems from many factors," he says.

According to Hoadley, they include a minimal number of moving parts within the drive system, regenerative braking lessening brake pad wear, and battery chemistry that requires no serviceable cooling or heating system.

The batteries themselves require zero maintenance, he adds.

"They also allow for opportunity charging – charge them anytime, for any duration to partially charge or top-off without negatively impacting the battery – eliminating inconvenient charging parameters," he says. "Li-ion batteries also don't require posts to be cleaned or fluid to be monitored or added, making them much more reliable."

"Lithium batteries like to be at a state of 20-80 percent state of charge (SOC), and about 100 degrees Fahrenheit," Schaeffer points out. "Plus, they don't need periodic watering like lead acid, nor to be unplugged after charging.

"Keeping 20-80 percent SOC is relatively easy with battery management and has the biggest impact on the expected life of the battery," he continues. "The battery temperature is a factor, but in my opinion, not enough to warrant liquid cooling. Liquid cooling adds cost, complexity and maintenance for little return on investment."

As equipment evolves and fewer maintenance requirements are engineered into GSE, requirements for maintenance personnel will also change.

"I predict in the next few years, as electric is more accepted and embraced, the need for mechanics will decrease," Schaeffer says. "I also predict the level of training and experience needed will also decrease. The mechanics coming from a 2–4-year program at a trade school will be more effective repairing electric than fluid fuel when they first enter the workforce."

REDUCING MAINTENANCE REQUIREMENTS WITH LI-ION

As battery technology has advanced, electric ground support equipment (eGSE) has become more prevalent in the industry.

According to officials at Waev Inc., GSE that utilizes lithium-ion (Li-ion) batteries are becoming more prolific and offer ground service providers a number of positive benefits. Chief among these advantages are less required maintenance and improved total cost of ownership (TCO) and return on investment (ROI).

"Li-ion batteries last significantly longer than flooded lead-acid or AGM batteries – up to five times as long – contributing to a lower total cost of ownership," Waev officials say. "In addition to the longer battery life, Li-ion vehicles save significant money and time because there aren't ongoing costs – routine maintenance, install labor, annual battery replacements and opportunity costs.

"For customers looking to maximize their uptime, lower TCO and improve ROI, Li-ion is the optimal choice."

Li-ion batteries do not require watering or other maintenance.

Li-ion batteries pack more power and are half the weight of flooded lead-acid and AGM batteries, according to Waev officials.

"Advanced Li-ion batteries provide at least 3,000 cycles and the greatest efficiency without power loss (maintains speed and acceleration, even when climbing hills) as the battery charge depletes," Waev officials add. "An integrated battery management system protects the battery and allows for safe operation, maximizing the battery's longevity by accurately monitoring charging profiles, levels and performance and managing overall battery health under every condition for performance and safety."

In addition to maintenance and TCO benefits, Waev officials note Li-ion batteries also offer sustainability, safety and efficiency benefits as well as charging options and consistent performance in all weather conditions.

WAEV

Waev officials note Li-ion batteries offer sustainability, safety and efficiency benefits as well as charging options and consistent performance in all weather conditions.

PHOTO 193109299 © VIACHESLAV IACOBCHUK | DREAMSTIME.COM

The Impact of Parts Cost and Availability

GSE maintenance has been impacted by supply chain disruptions, but relief may be on the way.

BY JOSH SMITH

Ground support equipment (GSE) maintenance shops continue to face challenges spurred by global supply chain constraints. These factors have made the availability of parts and components challenging and have influenced the price of these items.

"Everything takes longer and costs more, it seems," says Chris Schaeffer, vice president of GSE at GAT Airline Ground Support. "That does influence getting our equipment back into service."

According to Schaeffer, out-of-service units may need to be extended while supply chain disruptions impact maintenance needs. That, in turn, negatively impacts budgets.

"But we make it work," Schaeffer says.

Fortunately, the quality of GSE parts and components has remained similar, Schaeffer observes, adding some suppliers have higher quality than others.

Ultimately, Schaeffer says he is optimistic that the pandemic's effect on the supply chain is waning.

"For hard parts, it seems to be getting better every day, and aviation is a resilient business," Schaeffer says. "There will be a new normal, but not far from what we knew."

As supply chain complications improve, the opportunity to repair and refurbish ground support equipment presents itself.

"Factory fresh machines are taking much longer than it once did," Schaeffer says. "I think that's a blend of part availability – in that one part can stop a machine from being built – and a lack of people to work at the factories building them.

"We are looking deeper at repairing, refreshing (and) restoring our older fleet equipment," Schaeffer adds. "It's case by case, but doing it in house saves time and has given us better control of the finished product."

Computerized Maintenance:
From Reactive to Preventative and Predictive

WFS is utilizing a CMMS to optimize the reliability of its cargo handling equipment.

Worldwide Flight Services (WFS) recently announced it is deploying a Computerized Maintenance Management System (CMMS) developed by software specialists Fiix. According to WFS officials, the CMMS will allow the ground handling company to optimize the performance, reliability and sustainability of its cargo handling, equipment and facility assets.

The CMMS is allowing WFS to transition from reactive maintenance to preventive and predictive maintenance. WFS officials say trials have confirmed the system's ability to reduce equipment downtime, improve productivity and reduce maintenance costs. In the UK alone, equipment breakdowns and maintenance call-outs were reduced from 60 in May of last year, before the trial started, to 12 in October, report WFS officials.

"WFS has a significant and diverse range of cargo handling equipment and facility assets, which enables us to meet our customer service goals and helps to ensure safety and security across of our cargo operating environment," says Sebastien Burnier, head of operations and transformation at WFS. "This not only means having the right equipment in the right place at the right time, it also requires every piece of equipment to be operating efficiently to perform the tasks required.

"Using the Fiix CMMS system gives us full visibility of our equipment via a clear and precise dashboard. It will help us to maintain the highest levels of service, improve productivity, and reduce the downtime and cost pressures of failed or under-performing equipment," he adds.

Supported by Fiix's multilingual implementation team, WFS piloted the CMMS at Paris, Madrid and London. WFS officials say the plan is to continue rolling out the CMMS at other stations across Europe throughout 2023.

The CMMS will allow WFS to register, create work orders and gather history against all assets to support WFS' customer service, safety and security focus; track and measure equipment usage and performance in real time; track and optimize asset performance – collating all equipment information in one place to keep the WFS' cargo handling equipment and facility assets operational, safe and productive; and create work requests with a few taps, by scanning a QR code on the equipment on their mobile device.

Additionally, the CMMS facilitates WFS's ability to receive maintenance requests from users in their preferred language, through the work request portal; create scheduled maintenance routines; track and report on all maintenance work, including completion rates, repair dates, total costs and follow-up tasks; match the right schedule and tasks for each piece of equipment, establishing a complete view of the company's assets, including status, repair history, SOPs and failure codes; and spot any operations causing equipment failure, work delays and compliance issues by using the CMMS analytics dashboard.

"When CMMS implementations span multiple countries and languages, it's critical to have a highly engaged project champion and collaborative project team to stay on track," says Chris Lee, project lead at Fiix. "The WFS team globally have risen to the occasion and are now set up for future success."

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NATA Updates Misfueling Training to Include Unleaded Avgas

An additional fuel grade and an absence of a grade selective nozzle increases misfueling risks.

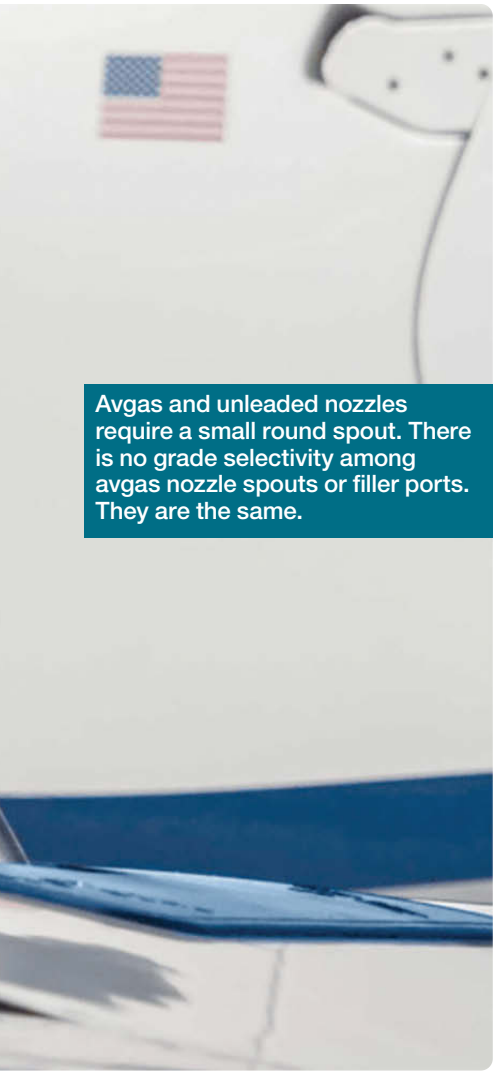
BY REBECCA KANABLE

The National Air Transportation Association (NATA) at the start of this year updated its Safety 1st General Aviation Misfueling Prevention Program to include new misfueling risks associated with unleaded avgas.

The training is available as a free online course and also is a required course for NATA's Safety 1st Over-wing Refueling and Single-Point Refueling ratings, which require Misfueling Prevention and Diesel Exhaust Fluid (DEF) Contamination Prevention to be taken annually.

Safety 1st Ratings are a way to recognize that the knowledge and skills to safely perform specific aviation ground handling tasks have been achieved.

Last year, the Federal Aviation Administration (FAA) and other industry stakeholders announced the Eliminate



Avgas and unleaded nozzles require a small round spout. There is no grade selectivity among avgas nozzle spouts or filler ports. They are the same.

NATA

Avgas 100LL and UL94 avgas nozzle spouts and filler ports are the same. Use extreme caution when dispensing unleaded avgas.

Aviation Gasoline Lead Emissions (EAGLE) initiative, which outlines how the country can safely eliminate the use of leaded aviation fuel by the end of 2030. As more unleaded avgas makes its way to airports, the need for awareness related to unleaded misfueling prevention becomes greater.

Go to any gas station in the United States and there are at least three grades of gasoline. Steve Berry, NATA managing director of safety and training, says some might think it wouldn't be difficult to add a third aviation fuel, in this case unleaded avgas.

However, Berry says the stakes are much higher in aviation.

"You can't just pull off to the side of the road if the wrong fuel was used," says Berry, who has been in the industry more than 20 years.

If the wrong type or grade is used to fuel an aircraft, he says, there is usually enough "good fuel" to get a plane off the ground before the pilot realizes there is a problem.

If, for instance, an aircraft that requires 100LL is fueled with UL94, Berry says the aircraft engine would probably continue to run but not at a power setting that would allow for continued flight. Unless the pilot can act quickly and turn the plane around immediately, the consequences can be catastrophic.

The additional risk imposed by the addition of another grade of fuel is compounded by not having a grade selective nozzle spout for UL94, like there is for avgas and Jet A fuel. Avgas 100LL and UL94 avgas nozzle spouts and filler ports are the same: small and round. Jet A spouts are wide and designed to not fit into avgas fuel ports, and like Jet A spouts, Jet A ports are wide. And while Jet fuel nozzles have a black handle, both avgas 100LL and UL94 have a red handle.

"Use extreme caution when dispensing unleaded avgas," NATA's misfueling prevention training emphasizes.

Currently Swift Fuels' UL94 is the only grade of unleaded avgas that's commercially produced and it's only available at some airports. In the past few months the company expanded its UL94 avgas supply chain network. Swift Fuels works with fuel distributors / suppliers including World Fuel, Avfuel, Titan, Epic, P66 and others, and Swift Fuels CEO Chris D'Acosta says the company plans to expand with additional operating sites in strategic locations. UL94 is a 94+ Motor Octane aviation gasoline without tetraethyllead that meets the ASTM D7547 Unleaded Avgas specification. It's FAA-approved for use in approximately 70 percent of the spark ignition piston fleet. That 70 percent of the spark ignition piston fleet burns about 30 percent of the volume, so it's a bit of an inverse relationship, Berry says, which means there are high-performance aircraft that cannot use UL94.

NATA

Overwing refueling, where aircraft are refueled through the filler ports located on top of the wings is the greatest misfueling risk. This is because both jet fuel, avgas and unleaded avgas can be delivered via the overwing method. Overwing fuel nozzle handles must be color-coded. Avgas nozzles handles should be red. Jet fuel nozzle handles should be black.

Misfueling Missteps

When it comes to the missteps that lead to misfueling, Berry says nothing has really changed.

"It's all about good communication, having a proper fuel order and confirming the grade with each refueling. We wanted to make sure that we kept that message that the basic principles of misfueling prevention haven't changed. It's just that now we have an additional risk."

Misfueling itself is not new.

"It's been a known risk for a long time," Berry says, adding NATA has been working to educate as many people as possible about misfueling.

"If you are putting fuel into airplanes or have been putting fuel into airplanes, misfueling prevention should have already been a part of your training program," he continues. "And now we're just trying to keep it updated to reflect the current reality of the market."

Since the Safety 1st General Aviation Misfueling Prevention Program was introduced in early 2016, more than 13,000 people have gone through the training developed to conform with Energy Institute (EI) standards.

"I think is a testament to people's interest in this. They realize that it's something that's very real and lives have been lost because of misfueling," Berry adds.

It's difficult to quantify what mistakes didn't happen, but Berry notes that 13,000 people understanding the dangers of misfueling has likely had an impact on the industry.

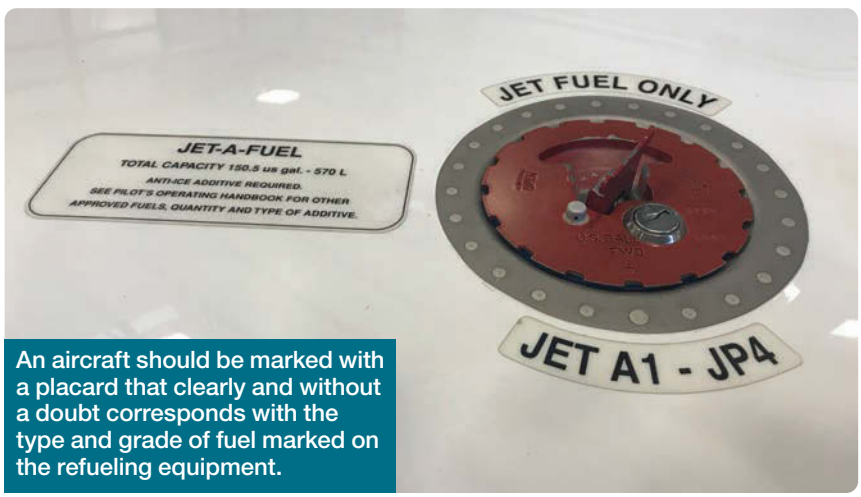
"I do like to think we've made a difference and that we've prevented a misfueling somewhere," he says.

"We take pride in the training that we have and in making sure that aircraft are fueled safely," Berry adds.

In fact, Berry says he wishes that 100 percent of the people who touch an aviation fuel hose would take the training. That includes pilots, line service techs and even passengers who might be asked to help fuel an aircraft.

"If you're putting fuel into airplanes or if you're involved in aviation, if you're even tangentially involved, the training is free. It takes maybe 20-25 minutes to get through the training. And I think the knowledge you take away from it, about how critical it is, I like to think it will resonate with people and leave an impact because people die because of misfueling and it's 100 percent preventable. It's

NATA



An aircraft should be marked with a placard that clearly and without a doubt corresponds with the type and grade of fuel marked on the refueling equipment.

absolutely preventable," he says. "Nobody sets out to misfuel an airplane, but mistakes happen. And they can be prevented with proper training and just remembering what you've learned and putting it into action."

NATA misfueling prevention training will continue to evolve as updates are made in the industry. For instance, Berry says updates can be expected when the Energy Institute has a color code for unleaded avgas; if there is a new grade selective nozzle; and when there is a fleetwide drop-in replacement 100 octane fuel.

"We'll keep up with the industry, try to stay ahead of them as much as we can," he says. "When it comes to formalized training, we have to wait for the standards to be produced."

> "You can literally save lives by verifying the fuel type before you fuel an aircraft."
> — *Steve Berry*

In general, misfueling prevention is not difficult, according to Berry. It comes down to good communication between the pilot and the refueling operator, he explains.

According to NATA, key elements to misfueling prevention include complete fuel orders; selective nozzle spouts; and type and grade verification.

"Every fuel order, whether it's verbal or written, needs to have the aircraft registration (tail) number, the volume of fuel, the type and grade of fuel, and then the refueler just needs to confirm that the placards at the fuel filler port match the placards on the equipment you're dispensing from."

Berry also calls out the work of Keith Clark, senior quality control and technical rep at Phillips 66 and the Save a Life - Verify Fuel Type campaign, which encourages communication between pilots and the FBO.

"It's that simple," Berry says. "You can literally save lives by verifying the fuel type before you fuel an aircraft."

To further safeguard against misfueling, a pilot that requests UL94 needs to have a supplemental type certificate (STC) for engine and airframe.

"That's not the responsibility of the line tech to know that really," Berry says. "It's up to the pilot to communicate the fuel they want. But it is important that the pilot have those placards (showing fuel type) installed on the filler port. That's part of the STC process."

According to Berry, common mistakes that lead to misfueling include a lack of communication, distraction and complacency.

"Really it comes down to human factors," he says.

While misfuelings can occur, he says it's important to know humans get it right most of the time. But he says 100 percent of misfuelings are preventable and the consequences are unforgiving.

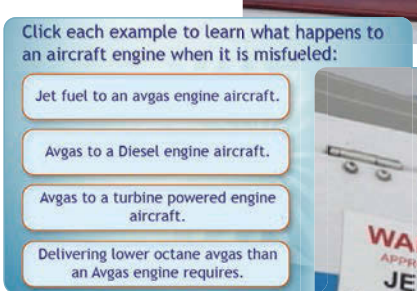
"Refueling is a serious job," he says. "We take it for granted because we do it so often. If you fuel 10 airplanes a day, you're fueling thousands of airplanes over the course of your life. For the average line service tech, maybe tens of thousands, and we get it right nearly every time. But lives have been lost because of a simple preventable mistake. Safe a life. Verify fuel type. Get it right every time. You don't have a choice." **GSW**

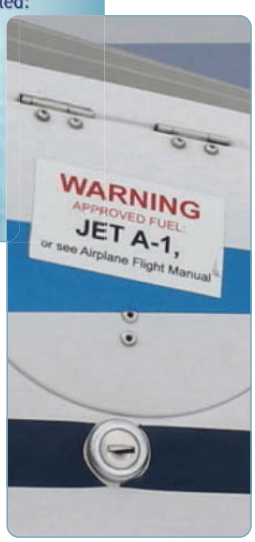
MISFUELING PREVENTION PROGRAM

The NATA Safety 1st General Aviation Misfueling Prevention Program – along with videos, alerts, fact sheets, templates, operational best practices, and other valuable resources — are available at www.preventmisfueling.com

COURSE OBJECTIVES

- Understand aircraft misfuelings and their consequences.
- Learn the key elements to misfueling prevention.
- Be introduced to the misfueling risks posed by unleaded avgas.





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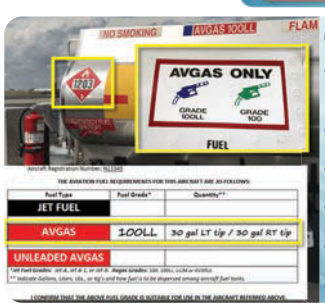


Misfueling causes:

- Lack of communication between pilot/operators
- Ignoring procedures
- Distraction
- Complacency
- Pressure to rush
- Other human factors

Ground Handlers' Data-Driven Mission

By utilizing the Safety Incident Database (SID), the Airport Services Association intends to improve safety while reducing ground damage and delays.

BY MARIO PIEROBON

SID, which stands for Safety Incident Database, is an acronym that the Airport Services Association (ASA) coined in 2020.

According to ASA director general Fabio Gamba, with this acronym, the association's aim is to inaugurate its both novel and traditional concept of allowing its participants, the ground handling service providers (GHSPs), to do two main things.

"One is to create a repository of ground incident, near-miss and hazard database following an agreed upon taxonomy, and the other is to allow the participants to benchmark their own data against the rest of the industry – the rest being obviously only available in aggregated and de-identified form," he says.

Data-Driven Tool

Simply put, SID is a unique tool using data-driven information to support GHSPs' continuous improvement in safety. It aims to help them reduce aircraft ground damage and delays, according to Gamba.

"The definition phase took the association and members around a year or so, and we are now putting the finishing touches to the development phase, having started collecting the data of seven pioneering companies covering around two years of operations," he says.

Being at the end of this pilot phase, ASA is now ready to launch the deployment phase as of the second part of 2023. ASA started working on the concept at a time when the whole world was at a standstill due to COVID, and this has allowed officials to go through all the stages of the definition phase in depth, observes Gamba.

"We feel our feet are on solid ground. We are to announce a turnkey platform that any GHSP, irrespective of the size or geographical location, will feel comfortable with and be able to apply without unnecessary effort," he says. "In order to make sure we are not measuring pears and apples, even the most basic fields must be defined in such a way that they mean the same everywhere and all the time and that there is no space for interpretation."

SID Participation

ASA's mantra is that SID was done "by GHSPs for GHSPs." As this phrase implies and Gamba points out, the taxonomy has been developed exclusively for the operational reality of GHSPs.

"This is important as there are other repositories in place today that are offered to the sector with the same declared purpose, but whose objectives, and hence relative taxonomy, significantly differ," he affirms. "There are not, currently, bespoke solutions to the intrinsic specificities of the sector and this may affect the possibility for the sector to benchmark, a feature that is at the heart of the SID concept."

Indeed, SID is GHSP-specific, although the possibility to include in the future other elements of the

PHOTO 104116271 © PANOM BOUNAK | DREAMSTIME.COM

aviation service provision industry such as, for instance, onboard catering or fueling companies has not been ruled out, observes Gamba.

"There are currently seven ground handling companies (in alphabetical order: Acciona, Airport Terminal Services, Çelebi, dnata, Menzies Aviation, Swissport and WFS) that have volunteered to test the concept by submitting their data so far," he says. "We are discussing with a couple of additional companies which showed a strong interest in the concept and in helping the association constantly improve the model. Once we hit the deployment phase later this year, we do not intend to impose any participation limit. On the contrary, the more the merrier as, from a pure benchmarking perspective, the interest of pitting oneself against other GHSPs is commensurate to the number of participants."

There are a number of conditions for future participants to consider and the first is to be an ASA member, Gamba highlights.

"Participation of the members is free but the complex software running SID, the attribution of a personalized dashboard and all the work behind the scenes to oil the machinery imply recurrent costs that we thought could only be partially covered through membership fees," he says.

In addition, only members having signed a non-disclosure agreement (NDA) are allowed to join, points out Gamba.

"We know and understand how sensitive many of the topics collected via SID may be, and we want to make sure the participants can submit their data in full trust and with the confidence that their data will not, at any point or under any circumstance, be seen and/or identified other than in aggregated form," he affirms.

"Finally, whilst SID has a universal vocation, we only want to onboard companies, which take safety and the constant thrive to improve their operations seriously," Gamba continues. "There can be no free lunch, and companies interested only in accessing the data without submitting their own in an exhaustive and accurate way are quickly spotted and reminded to contribute. This can only work if it is a two-way process."

SID Safety Incident Database

The SID database is specifically designed to better support ground service providers in benchmarking safety performance, identifying trends and enabling more in-depth analysis.

PHOTO 161005363 © VANDERWOLFIMAGES | DREAMSTIME.COM

SID is a unique tool using data-driven information to support GHSP's continuous improvement in safety.

Reporting Taxonomy

As to the taxonomy adopted in the development of SID, Gamba affirms that it was the result of days and weeks of passionate and sometimes quite intense discussions among industry experts, but it is predicated on a number of guidelines that they sensed should underlie SID.

"To begin with, we thought it wise to build a platform that may be easily expanded over time and as per requirement, and hence it needed to be adaptable, robust and easily allow later plug-ins," he says. "We have deliberately chosen to measure and compile data on a restricted number of fields that we knew GHSPs could easily dig out from their system. We felt this was actually key as we want to appeal to a majority of them by proposing a taxonomy that every GHSP can quickly adapt and relate to, not discourage them with an over complex set of fields requiring heavy man-hours in data collection."

In addition, the taxonomy needed to be "technology-agnostic," meaning that anyone, any company irrespective of the corporate methods used to compile their data internally, should be able to

extract the figures requested and submit them as easily as possible, points out Gamba.

"The submission is made via a simple Excel spreadsheet, and the data, following a number of automated steps, is then computed by an outsourced professional aggregator, EcoOnline," he says. "EcoOnline dispatches the results (typically every quarter) in a way that the participant companies, via their individual dashboard, may organize according to their preference, but always following the same pattern: the participant may compare its own data with that of the rest of the industry, aggregated and de-identified. We also produce a quarterly general report, today for internal consumption only, but that could be disclosed publicly once the deployment phase is activated."

What it is Revealing

It is currently premature for ASA to already disclose hard truths or even lessons learned, affirms Gamba.

"There are however a few comments worthy of interest. One of them is that this industry is submitted to intense pressures coming from mainly three different sources: the customers (airlines) obviously, but also the airports (granting of licenses) and more and more the national authorities themselves (oversight, regulations)," he says. "For too long the ground handling sector has been accused of being an unruled black box costing the industry billions of dollars every year in aircraft hits and delays, personal injuries, etc. Without denying that our industry has a direct impact on these matters, we have found all the efforts in trying to measure this impact so far to be certainly laudable, but also to fall somewhat short of their stated purpose. After all, they simply consist in measuring a symptom, without providing incentives to improve."

According to Gamba, SID will facilitate evidence-based discussions with other industry stakeholders on policies that might affect the GHSP community and discuss solutions to drive safety improvement, to identify emerging trends and eventually to incentivize each participant to do what it takes to beat the rest of the industry, thus contributing to lifting its safety records up.

"This is the ultimate objective of SID," he says, "and we cannot wait for the whole industry to join in." **GSW**

ABOUT THE AUTHOR

DR. MARIO PIEROBON

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.

How Video Surveillance Technologies Are Changing the Way Airports Operate

Using camera technology for more than security provides a wider view of airport operations.

BY ANTHONY INCORVATI

Airports are among the busiest locations on the planet. At any given moment, there might be thousands — even tens of thousands — of people present inside an airport, boarding flights, departing flights, grabbing a bite to eat or just killing time before they depart. Most people at an airport have just one goal in mind: to get to their destination safe and sound — and on time.

As travelers are ready to spend money on post-pandemic vacations, airports — and airline employees — must be ready to handle this influx of passengers, even as staff shortages and precarious viral outbreaks may continue to loom. Fortunately, new and emerging surveillance technologies have allowed airports to leverage additional operational capabilities that are helping to keep things running smoothly in the face of adversity.

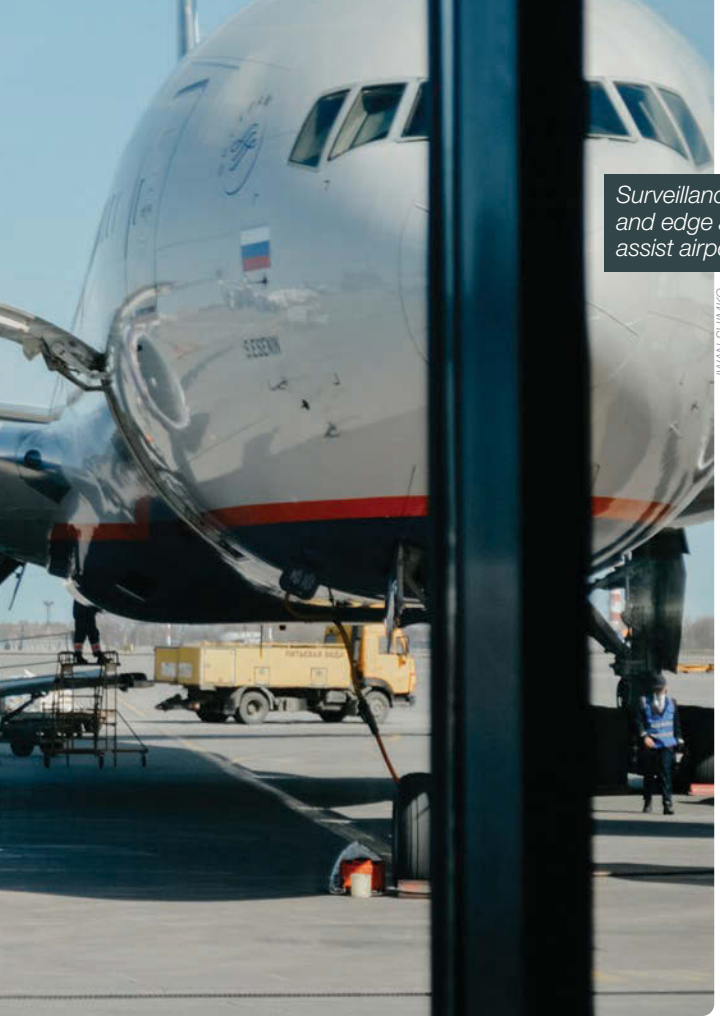
Leveraging Improved Technology

As the demands continue to increase, airports are considering how to manage the increased volume as efficiently as possible. Security teams at many of the globe's most forward-thinking airports now recognize that surveillance technology like internet protocol (IP) cameras equipped with advanced analytics can play a role that goes well beyond traditional security measures. In fact, many users of the video system are of non-security-related functions including operations, maintenance and others. The vital surveillance role these devices play helps improve the overall traveler experience in three ways: it can drive efficiency, increase profitability and — even in the face of lengthening queues — assist with creating a better passenger journey.

Before the invention of the IP camera, surveillance devices had limited utility in airports, serving primarily to help investigate crimes after the fact. True, a security team member might notice a significant commotion occurring on a bank of wall monitors, but in general, the technology was reactive rather than proactive. Continuous advances in camera technology have changed this. Not only has image quality improved dramatically over the past decade, but chipsets have also become more advanced, increasing processing power and enabling these devices to run analytics applications natively at the network edge. Thanks to today's AI capabilities, data can now be aggregated and analyzed on the devices themselves, sending relevant metadata to cloud servers and decreasing the amount of bandwidth and data storage needed to operate. This has made modern analytics solutions significantly more accessible and allowed airports to handle larger deployments of cameras with vastly improved capabilities.

Among the new abilities the technology has enabled are immediate alerts that are more suitable for real-time operations. Today's AI-enabled IP cameras are better than ever at tasks like object recognition, motion tracking and more. They can be trained to issue alerts when certain conditions are met — such as trespassers in a restricted area, a vehicle traveling in the wrong direction, or aggressive or violent behavior within the terminal. By raising an alarm as soon as suspicious or offending behavior is detected, this technology can dramatically decrease response times and even allow potentially dangerous incidents to be stopped before they can escalate.

While this technology has its roots in security, it has also enabled airports to optimize their operations at the speed at which situations happen when they happen. Airports are now deploying this same technology in ways that allow them to



Surveillance technologies and edge analytics can assist airport operations.

IWAN SHIMKO

not just keep their facilities safe, but drive further operational efficiency.

Keeping an Eye on Passenger Flow

Landside traffic can be hard to keep track of, and there are many stops a passenger makes before getting on an airplane, including the check-in and security screening processes. There is a reason why many flyers arrive hours early: they know the process of navigating an airport can be difficult and time consuming, especially when there will be an abundance of other travelers simultaneously doing the same.

Surveillance technologies and edge analytics can assist airport operations in monitoring the number of passengers on the premises. Cameras in the airport parking lot can do much more than look out for car thieves and muggings — they can also be equipped with occupancy analytics technology that can be used to help provide a snapshot of parking space availability, passenger counts leaving parking areas and heading to the terminals, and other interesting use cases. This is effective in real time, allowing operators to make informed decisions. This data can be analyzed to identify peaks and valleys over time, helping airports (and airport businesses) better understand their staffing needs.

As passengers migrate from curb to gate, queue monitoring technology can also add significant value. Queue monitoring enables analysis of activity levels in specific regions while tracking how many people are standing in predefined areas, including airline check-in desks and kiosks, passport control and security. As the system collects data, it generates real-time push alerts to airport staff. It can also trigger a pre-recorded audio message if the queue is too long, urging passengers to maintain social distancing or disperse. This technology can also display the average wait time and churn rates, which can help staff members make adjustments as needed, such as opening new check-in desks when there is an influx of people in need of assistance. This technology can all be operated entirely from a central control room, offering airport security and operations teams complete visibility of the entire operation.

Airport businesses can benefit greatly from access to this information. The airside of a traveler's journey might include them trying to find the correct terminal, grabbing a cup of coffee, or using the restroom before boarding. Surveillance devices can help measure that foot traffic, tracking where passengers tend to go first when they arrive, when they get through security,and while they wait for their flight. Analyzing passenger flow as they move around the airport, including into and out of retail establishments, can help inform store location decisions and optimize wayfinding.

And of course, airports need to understand the people coming and going every day. Modern analytics can be used to analyze trends and behaviors, including the volume of passengers with carry-on baggage, families with young children or babies and ones who may need wheelchair assistance or other accommodations. This can help them not only better prepare for the needs of their passengers, but may help inform layout decisions and available resources. The technology can even be used to maintain facilities such as restrooms more effectively and efficiently by ensuring their quality and cleanliness over time.

Investing in the Future

Modern surveillance technology can help in ways that go far beyond traditional security applications and into the realm of operations and business intelligence. Today's devices can help reduce passenger assistance delays and improve airport layouts and staffing, helping airports deliver customers a more positive experience on their journey — and keeping airport staff happier, too.

Over the next several years, airports will continue to expand their surveillance capabilities and leverage the valuable new insights they generate, improving both efficiency and profitability while creating more satisfying flying experiences for travelers and more efficient working conditions for staff. **GSW**

ABOUT THE AUTHOR

ANTHONY INCORVATI

Anthony Incorvati leads the business development activity for the Axis Communications transportation market segment for Axis Americas region. In that role he formulates overall business segment strategy, drives brand awareness, and cultivates partner and end-user relationships in the transportation space covering Aviation, Public Transport, ITS/ Traffic, Maritime and Cargo & Logistics.

As Airlines Cut Flights, Scheduled Charter Operations Are Filling the Void

Important questions must be addressed as charter industry operators and brokers bring the advantages of private air travel within the reach of more communities.

BY CURT CASTAGNA

Both commercial service and general aviation airports play a vital role in the nation's air transportation system – providing freedom of mobility, attracting investment and generating employment in local communities.

The Airline Deregulation Act, passed in 1978, gave air carriers great discretion to determine which markets to serve domestically and what fares to charge for that service. Soon after, Congress established the Essential Air Service Program to help support a minimum level of scheduled air service in small communities and connect them to the nation's transportation network.

However, as documented by the U.S. Government Accountability Office, air service to small communities has declined since 2007 and airports of all sizes have lost capacity in the number of available seats and flights offered to the traveling public.

During the COVID-19 pandemic, 68 airports across the nation lost commercial air service, negatively impacting the essential movement of people and goods. Private jet operators reacted quickly to meet the need for essential air services independent of federal funding, with aircraft operations rebounding more rapidly at general aviation airports than at commercial airports.

In some rural or remote areas where there is limited commercial service, business travelers have chosen to fly privately rather than spend an extended number of hours waiting for a connection to a larger hub.

In light of these facts, it is hard to overlook the importance of general aviation airports as commercial airlines continue to cut back on service, flights and personnel.

There are approximately 5,100 public use airports in the nation accessed by general aviation aircraft, compared to approximately 500 that offer commercial airline service. This means that business aviation reaches 10 times the number of U.S. airports than do the airlines, while contributing $150 billion to U.S. economic output and employing more than 1.2 million people.

Today, there is a growing national trend for on-demand aircraft charter brokers to market and sell flights on a per-seat basis as a more affordable alternative to chartering an entire aircraft. In many cases, these third-party brokers post schedules (including the departure time, departure location and arrival location) on websites and smart phone applications that match passengers with available aircraft.


NATA

This business model for public charter flights, known as "charter by the seat," brings private aviation to a broader, more diverse segment of the traveling public and provides essential air services to local communities. The operations are regulated by the Department of Transportation (14 CFR 380) and are considered permissible under federal rules by the Federal Aviation Administration (FAA).

However, at many of our nation's general aviation airports, these scheduled commercial charter operations have caused some community members and public officials to question whether selling single seats on charter aircraft – particularly those with published and planned flight departure times – should be prohibited. The public controversy seems to stem from what distinguishes a scheduled Part 121 commercial airline operation from a scheduled Part 135 charter operation. Per the FAA, Part 135 on-demand aircraft charter operators, who own or manage the aircraft, may offer up to four scheduled round-trip flights per week in an aircraft with up to nine seats. If the aircraft is configured for more than nine seats, it can only be operated at a Part 139 certificated airport.

Therefore, scheduled commercial air carrier service – including airline, regional air carrier and cargo flights – are prohibited at general airports that do not hold a Part 139 operations certificate. However, scheduled flights operated under Part 380 are permissible at those airports regardless of the aircraft type or number of seats since they are not considered scheduled by the FAA.

The DOT permits Part 380 public charter companies, who do not own or

operate the aircraft, to advertise and sell single seats on flights conducted at general aviation airports in aircraft with over nine seats. If a Part 135 on-demand operator wishes to operate five or more scheduled round-trip flights per week under a published schedule, it must first obtain commuter operations specifications under Part 380 of the DOT's regulations.

This means that in order to take advantage of the public charter rules, a Part 135 on-demand air carrier must enter an arrangement with a Part 380 public charter operator that can sell seats on the flights for which authority was granted. Only a Part 380 public charter operator may publish and advertise scheduled flights beyond what is permitted under Part 135.

Also, Part 380 of the DOT's regulations requires all persons who wish to arrange public charter flights to first submit a charter prospectus to DOT which contains information about the proposed charter program. The DOT publishes this information several times per year.

In general, public use airports have limited authority under federal law to restrict operations that can safely and legally use those airports. However, airport sponsors may exert some authority to regulate scheduled charter operators to protect airport safety and efficiency, provided the regulations are not discriminatory. Should the FAA deem such an action to result in unjust discrimination to aeronautical activities, it could result in an airport jeopardizing its federal grant assurances.

While the FAA generally recognizes the airport sponsor's authority to regulate operations, some public charter operators are actively filing lawsuits against municipalities that seek to limit their operations. To survive a legal challenge, any regulation of public charter flights must be able to withstand a federal grant assurance challenge.

A growing issue of public concern is whether passengers buying single seats should be subject to the same security screening process as those flying on a commercial airline. Current TSA regulations state that for charter jets carrying more than 61 passengers, the passengers are required to pass through normal security. Light private jets, which normally seat four to eight people, are therefore exempt from going through the same inspection as commercial flight passengers.

As charter industry operators and brokers bring the advantages of private air travel within the reach of more communities, important questions must be addressed. How would prohibiting public charter flights impact the inclusionary process of serving a more diverse segment of the traveling public? Is it equitable or just to transfer the noise impacts of certain aircraft operations from one community to another? How will limiting flights now considered legal by the FAA and DOT impact interstate commerce?

It seems the technology landscape is evolving so quickly that federal regulatory agencies are struggling to keep pace. It is only a matter of time until similar questions are asked about emerging industries in urban air mobility, such as eVTOL and air taxis.

To protect the integrity of our nation's air transportation system and ensure essential air services are provided to local communities, policy discussions must take place at the federal level. **GSW**

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Curt Castagna, president and CEO of Aeroplex Group Partners, is also president and CEO of the National Air Transportation Association, the immediate past chair of the Los Angeles County Airport Commission, and president of the Van Nuys and Long Beach airport associations.

Mobile Column Lifts Raise GSE Maintenance Safety

The ST 1130 and ST 1175 lifting solutions from Stertil-Koni connect wirelessly to allow technicians to perform maintenance inside the shop or out.

BY JOSH SMITH

Like other industrial vehicles, ground support equipment (GSE) requires regular, routine maintenance to perform at peak efficiency.

However, given the heavier capacities and large diameter tires on certain equipment – like pushback tractors, it can be difficult for GSE mechanics to get under the vehicles to service them.

In the late 1990s, Stertil-Koni introduced its ST 1175 mobile column lift, which offers a capacity of 40,000 pounds per column, explains Tim Kerr, engineering sales support manager at Stertil-Koni.

"The 1175 was specifically designed to lift some of those heavier airport tugs – the ones that would weigh in excess of a 100,000 pounds. And really prior to its introduction, there really wasn't anything out on the market to really lift those vehicles. So, it was a real challenge for a lot of these ground support equipment maintenance facilities," Kerr says. "Our engineering team got developing, basically took our original version of our mobile column and they just expanded it to this larger column and beefed up all those components to lift up the 40,000 pounds per column.

"And that's really where the 1175 was born."

With a lifting capacity of 29,000 pounds and the ability to lift vehicles with wheel diameters of 79 to 88 inches, the ST 1130 model – the ST 1175's "little brother" – was developed 13 years later.

"Those larger vehicles, like the airport tugs, for example, have this very large diameter tire, so that 1130 was really focused on lifting those large tires on those vehicles," Kerr says.

The ST 1175 and ST 1130 are part of Stertil-Koni's range of mobile column lifts, which includes five other lifting compacities.

"Obviously, the other versions are a much smaller size than the 1130 and 1175," Kerr explains. "But functionally, they're all identical across the entire range of mobile columns."

Meeting GSE Maintenance Needs

The ST 1175 columns can be operated individually, in pairs or as a complete set. In a configuration of four column lifts, the ST 1175 is capable of lifting 160,000 pounds.

While it may not be needed for GSE maintenance, the mobile column lifts are capable of achieving up to 32 columns in a single set, working simultaneously and synchronizing with each other.

Both of the mobile column lift models elevate equipment to 81 inches for additional room to work. They feature numerous safety features including a mechanical locking system, which is always active even when the column is shut off.

"First and foremost is we always pride ourselves here on safety. So that's obviously the number one feature," Kerr says, noting the mechanical locks are featured every 2 inches for increased safety.

The lifts also offer automatic load protection, an emergency stop on each column and a splash-proof electrical system.

Because the mobile column lifts sync wirelessly, tripping hazards are eliminated because there are no cables on the ground in the area where maintenance personnel are working.

"There's no cable on the floor. You're not plugged to the wall. You have completely mobile, versatile columns that can be used anywhere at any time," Kerr says.

The ST 1130 comes standard with EARTHLIFT technology, which is a regenerative system that collects gravitational energy to recharge the unit's batteries when the column is traveling down.

"You can get more cycles out of these before you have to plug them back in and charge them," Kerr says.

ebright Control System

Since being first introduced, Kerr says both the ST 1175 and ST 1130 have undergone facelifts to make the units more sleek and modern. But when it comes to updates, he says none has been more significant than the addition of Stertil-Koni's ebright Control System as a standard option.

Featuring a 7-inch, color touchscreen, ebright offers users controls with lift data, maintenance notifications and a visual

STERTIL-KONI

The ebright system offers users access to lift data, maintenance notifications and a visual display of programmable lifting heights, among other features.

STERTIL-KONI

Both the ST 1175 and ST 1130 elevate equipment to 81 inches for additional room to work. They feature numerous safety features including a mechanical locking system, which is always active even when the column is shut off.

STERTIL-KONI

Among other features, the ebright system uses sensors to constantly monitor that all the columns are synchronized while lifting and lowering equipment.

display of programmable lifting heights, among other features.

"It gives you the real-time parameters of the lift – lifting height, the battery status; it'll tell you when the batteries are getting low to get charged. It's going to give the operator any sort of troubleshooting that may pop up, it'll give an error message on the screen. It can give him maintenance reminders to, perhaps, do a visual inspection or check the oil or whatever it may be on the lift," Kerr says.

"It's one of the most interactive operating systems you'll see on any lift in the industry."

While the ebright system provides detailed information and configures mobile columns via a wireless MESH network, it offers users a basic, intuitive interface.

"You have an up button, a down button and an unlock button, just like a traditional lift," Kerr says. "I know a lot of our users have really taken to the ebright system and just how easy it is and how simple it is and just how intuitive it is to use."

The ebright system adds safety features to a configuration of mobile column lifts. It uses sensors to constantly monitor that all the columns are synchronized while lifting and lowering equipment.

"For example, if one of these vehicles may be a little heavier in the rear than it is in the front, then the front columns are probably going to be going up a little bit faster than your rear columns," Kerr explains. "The ebright system recognizes that. It sees that maybe they're getting a little bit out of sync and they'll automatically correct those front columns to slow them down to allow the rear columns to catch up so that you're always keeping that vehicle perfectly level throughout the entire range of motion."

Accessories for Versatility

While many vehicles are lifted by their tires, some applications in the GSE world may necessitate vehicles being lifted in other locations, such as the frame. To solve this challenge, both the ST 1175 and ST 1130 offer detachable pick-up forks, wheel adapters and other accessories.

"It's really going to come down to the type of vehicle and where it's recommended lifting points are," Kerr says, adding company officials work with customers to determine every possible option to lift every vehicle in a fleet so all required maintenance tasks can be performed.

The mobile column lift's versatility has elicited positive feedback from customers, according to Kerr.

"Traditionally they were using in-ground system lifts to lift some of these vehicles. But sometimes if the tug isn't able to get onto the lift because it's already broken down somewhere outside or couldn't quite make it, we can bring the lifts to the vehicle rather than bring the vehicle to the lift," he says.

When selecting a lifting solution for a GSE maintenance shop, Kerr encourages purchasing decision-makers to conduct a survey of their entire fleet and take any vehicle that they plan to lift and maintain into consideration.

"It's really important to know factors such as the wheelbase, the weight of the vehicle, the type of maintenance that'll be performed on the vehicle. All these different factors will basically lead them to make a decision on what can we buy that will be the most versatile lift to capture the largest percentage of our fleet," Kerr says.

By having the proper lifting solution in the shop, Kerry says faster turnaround times for maintenance-related tasks can be achieved.

"Time is money," he says. "So, selecting the proper equipment to get vehicles in and out of that shop is going to save our customers money in the long run and that's going to be a huge benefit to them." **GSW**

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GSE SERVICES

FORTBRAND SERVICES

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XCED AVIATION SERVICES
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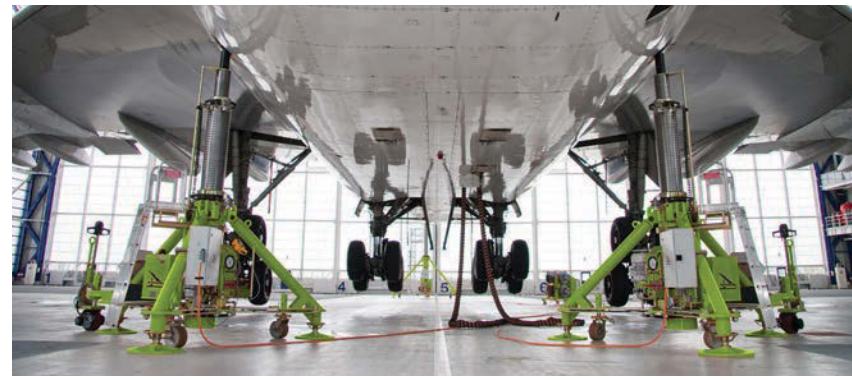

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WOLLARD INTERNATIONAL

Models TML-704 and TML-704H lift up to 2,000 lbs. (909 kg) distributed loads and up to 500 lbs. (227 kg) concentrated loads. Hydraulic stabilizers allow full capacity at maximum extension. Lever-actuated stabilizers deploy for lift and retract for travel. Lifts have an elevating work platform height to 16 or 30 feet (488 or 914 cm), giving workers repair access to most aircraft. Low-profile travel mode is only 43" (109 cm). With a top speed of 20 mph (32 km/hr), both models have a 109.25 sq. ft. (10.15 sq. meter) platform area, giving access to broad working areas of wings, tail sections and fuselage without need to reposition the unit. Its large 216" x 88" platform (533 cm x 208 cm) is ideal for multiple technicians and power tools. Scissor lifts feature heavy-duty, rectangular tubular steel construction. Modular engine/transmission package simplifies maintenance and repair. Diesel, diesel T4F, gasoline and electric 80VAC power trains are available.

AviationPros.com/12440140

BATTERIES ON BOARD EZ RIG CRANE

EZ RIG CRANE

The Batteries on Board EZ Rig Crane can lift 2,400 pounds to 26 feet or lower, or pull up 13 stories while still rolling through a 3-foot door. The crane is now able to operate off rechargeable battery power and not require plugging into an 110V power source. The crane is available in two battery options, lead-acid and lithium batteries.

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60-GALLON AIR COMPRESSOR

JENNY PRODUCTS INC.

Jenny's G5A-60V single-stage air compressor features a 60-gallon vertical air tank and an industrial-grade 5-horsepower motor. Designed for long-lasting, reliable performance, the compressor is ideal for use in shops. The G5A-60V provides 27.8 CFM at 125 psi through an American-made cast-iron compressor pump. The pump offers a splash lubrication system using Jenny "Ultimate Blue" synthetic compressor oil. An oversized flywheel and a directional air shroud further assist in pump cooling.

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A.T. JUNIPER (LIVERPOOL), LTD.

The 2x25 gallon engine compressor washing rig is the mainstay of the Juniper range. Versatile enough to tackle most engines when partnered with our growing list of wash probes, lances and spray rings, yet maneuverable enough for the most remote areas of an airfield.

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The Hydraulics International, Inc. (HII) Portable Electric Driven Gas booster is rated to 10,000 psi for breathing air/N2 and 4,500 psi for oxygen service. Ideal for filling or topping off cylinders, tires, accumulators, struts and life rafts. Its two-stage and double-acting design uses no belts or pulleys, making it the quietest electrically operated booster in its class at only 60 decibels. Complete with safety controls, filters, gauges and valves.

AviationPros.com/10027134

Spotlight on: Dan Boucher

BY JOSH SMITH

Ground Support Worldwide: What attracted you to a career in the ground support industry?
Dan Boucher: I have been an aviation enthusiast my entire life and always enjoyed being around aviation. After receiving my private pilot certificate, I thought aviation would just be a hobby. In 2012, PCS, which specializes in powertrain development, identified an opportunity to bring some of our powertrain technology to the industry. This was my first glimpse into ground support equipment at major airports for the large carriers. This was a perfect fit as it combined my passion for engineering and aviation.

GSW: What has kept you engaged in the industry?
DB: There are two components that have kept me engaged in the industry. The first is the amazing technology evolution that is happening in the transportation industry. This includes obviously battery electric vehicles, but also hydrogen-based systems and autonomous vehicles. This technology has the potential to make the ramp safer, more efficient and sustainable. The second component is the people of GSE. The greatest technology in the world doesn't work in GSE if the operators don't have the desire and dedication throughout their organization, from leaders to team members on the ramp, to be open to understanding the new technology and how it can help their operation.

GSW: How have you seen the ground support industry change the most during your career?
DB: The entire world is changing right now as propulsion systems besides internal combustion are becoming more prevalent. There has been electric GSE for decades, but there were some pieces of equipment on the ramp that were better served with internal combustion from an engineering point of view, including battery or energy requirements. With all major automotive OEMs investing billions of dollars in battery and drive unit technology, I believe there are now commercially viable electric propulsion solutions for all GSE on the ramp.

GSW: Has this been to the benefit or detriment of the industry?
DB: Long term, this change to advanced powertrain technology is a benefit to the industry. Short term, this is going to require additional effort to transition to this new technology, including new diagnostic equipment, development of new maintenance procedures, compatible charging infrastructure and more.

GSW: What's the next big thing coming to the ground support industry?
DB: In terms of equipment and operation, the next big thing will be how autonomous ground support equipment can be worked into the airport environment. The technology has existed for years and there are numerous reports of airlines evaluating this equipment. The key with implementing any new technology is how to get measurable benefits, especially financial benefits. This reminds me a little bit of when telemetry entered the industry. Everyone wanted it and it provided some nice-to-have data points, but for the business case for the operators to make sense, it took a very specific, custom GSE-tailored approach. The engineering exists for autonomous vehicles on the ramp, but it's how they are integrated into the operation that will determine the adoption rate.

In terms of the next big thing coming to aviation that will require a major change to the landscape of the ground support industry, it will be the introduction of electric vertical takeoff and landing aircraft, or eVTOLs. With major airlines investing millions of dollars in stakes of eVTOL startups, the needs from the ground support side must evolve. The aircraft are very different and the supporting GSE will look different.

Job Title: President
Company: Powertrain Control Solutions (PCS)
Location: Ashland, VA
Years of Experience in Ground Support: 10 years
Years with Current Company: 19 years
Industry committees, associations, working groups served on:

SAE AGE-3 Liaison from 2016 to present.

Subject Matter Expert (SME) for the IATA GSEE Technical Group for the 2017-2019 term.

GSW: What would you say to encourage someone to join the ground support industry?
DB: The ground support industry is an exciting industry that combines multiple disciplines of engineering with global travel and experiences. The people within the ground support community also make this industry a great place to work for an entire career. As I compare the ground support industry to other industries that I have worked in, one thing that always stands out is once someone enters the ground support industry, they often spend the rest of their career within the industry. This is a great sign that this industry provides numerous opportunities for professional growth over many years. GSW

This interview was edited for length. To read the full interview, visit AviationPros.com/21295663

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